Mind the Side Effects:

Remittances and Economic Structure

Spotlight 2. Mind the Side Effects: Remittances and Economic Structure

Several South Asian countries are among the EMDEs with the highest remittance inflows relative to GDP. While remittances help to reduce poverty and improve household education and health, large inflows can create currency appreciation pressures and international competitiveness losses, with adverse consequences for exports, non-agricultural sectors, and private investment. Governments can encourage remittance inflows but offset the associated loss of competitiveness by reducing other costs of doing business. For example, they can shift away from trade-related taxes and create an environment conducive to faster productivity and employment growth.

Introduction

Governments in Bangladesh, Nepal, Pakistan, and Sri Lanka—South Asia's most remittance-reliant countries—struggle to accelerate export growth, productivity growth, and private investment. In 2023, labor productivity in these countries was 40-80 percent of the average for emerging markets and developing economies (EMDEs), exports were 4–18 percentage points of GDP below the EMDE average, and private investment was 2–17 percentage points of GDP below the EMDE average.

These difficulties may partly reflect a deeply entrenched economic structure that has been shaped by more than a decade of rapidly growing and sizable inflows of remittances. Since 2017, remittances have been a larger source of foreign exchange inflows to EMDEs (other than China) than any capital inflow (figure SL2.1). This has also been the case in South Asia. And because remittances are often transmitted through unofficial channels, they may be considerably larger than reported in official data.

Four South Asian countries—Afghanistan, Bangladesh, India, and Pakistan—are among top-10 sources of migrants in the world. One South Asian country (Nepal) ranked among the quarter of EMDEs with the highest remittance inflows relative to GDP in 2023, and Pakistan and Sri Lanka received above-average remittance inflows (figure SL2.1).

A large body of literature has documented that remittances increase household incomes, education, and health and help smooth consumption during income shocks (see annex SL2.1 for a review of the literature). Conversely, a reduction in remittances has been shown to raise poverty and delay economic mobility (World Bank 2024a). However, as a side effect, remittances also create unique policy challenges.

Over the longer term, large-scale remittances have been associated with real exchange rate appreciation, a shift in demand from tradable to non-tradable goods, consumption and housing booms, trade deficits, export and manufacturing weakness, and lower labor force participation. In turn, weak exports and private investment have been shown to slow productivity growth, capital accumulation, and structural transformation from agriculture to non-agriculture—ultimately weakening long-term sustainable ("potential") growth. This suggests that large remittance inflows can adversely shape the economic structure and development path of EMDEs, including in South Asia.
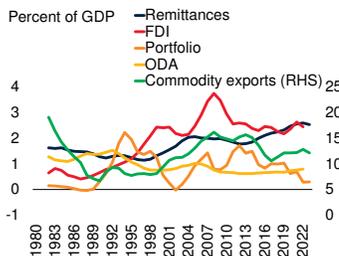
Questions. This spotlight addresses the following questions:

- How do large remittance inflows alter the structure of economies over the long term?

- Does the long-term impact of remittances on the economic structure and development path differ from that of other sources of foreign exchange, such as official development assistance (ODA), foreign direct investment (FDI), portfolio inflows or commodity exports?

- Which policies can help mitigate the distorting effects of large-scale remittance inflows?
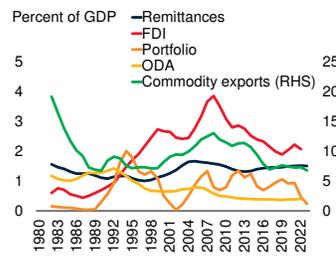
FIGURE SL2.1 Remittances, capital inflows, and commodity export earnings in EMDEs

In EMDEs, remittances have been larger than foreign direct investment, official development assistance and portfolio investment inflows since 2017. South Asia's remittances are above-average and Nepal's are in the top quartile of EMDEs. In most South Asian countries, remittances are a larger source of foreign exchange inflows than foreign direct investment, official development assistance, and portfolio investment combined.
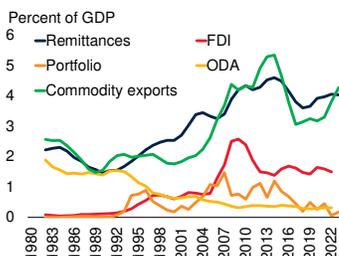
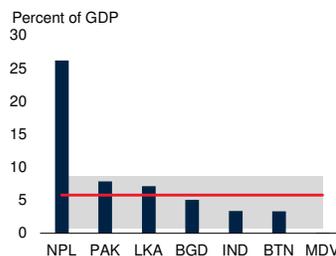**A. Foreign exchange inflows: EMDEs excluding China**
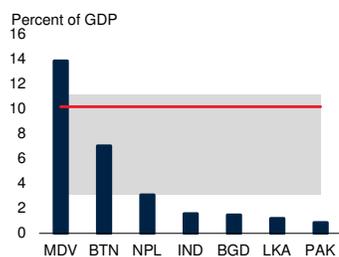
B. Foreign exchange inflows: EMDEs including China
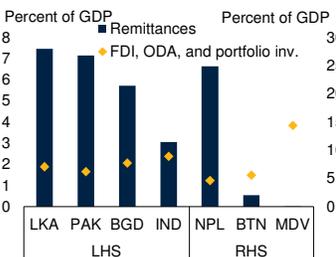
C. Foreign exchange inflows: South Asia

D. Remittances: South Asia and other EMDEs

E. FDI and ODA: South Asia and other EMDEs

F. Remittances and other foreign exchange inflows, 2014–23 average

Sources: International Financial Statistics (IMF), World Development Indicators (database), World Bank.
Note: BGD = Bangladesh; BTN = Bhutan; EMDEs = emerging market and developing economies; FDI = foreign direct investment; IND = India; LHS = Left-hand side; LKA = Sri Lanka; MDV = Maldives; NPL = Nepal; ODA = official development assistance; PAK = Pakistan; RHS = Right-hand side; SAR = South Asia Region (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka). Commodity exports are the sum of agriculture raw materials exports, food exports, fuel exports, and ores and metals exports. Data for remittances, portfolio investment inflows, and commodity exports are through 2023; data for FDI and ODA are through 2022. All aggregates are nominal GDP-weighted averages. Afghanistan is excluded because of a lack of data.
A.B. Figure shows three-year moving average of inflows of remittances, ODA, FDI, portfolio investment, and commodity exports earnings in percent of GDP into up to 150 EMDEs (excluding China in A, including China in B).
C. Figure shows three-year moving average of inflows of remittances, ODA, FDI, portfolio investment, and commodity exports earnings in percent of GDP into South Asia.
D.E. Figure shows the remittances-to-GDP ratio in 2023 (D) and FDI- and ODA-to-GDP ratio in 2022 (E) for South Asia. Grey shade indicates interquartile range for non-SAR EMDEs. Red line indicates non-SAR EMDE average. Data for Bhutan in D refer to 2022.
F. Figure shows remittances in percent of GDP and the sum of FDI, ODA, and portfolio investment in percent of GDP for each SAR country. Data are 2014-23 average for remittances and net portfolio investment inflows and 2014–22 average for FDI and ODA.

Main findings. This spotlight has several new findings.

First, in a global sample of EMDEs, remittance-reliant EMDEs generally lag behind in some key engines of short-term growth and long-term development. They exhibit significantly lower export-to-GDP ratios, private investment-to-GDP ratios, and non-agricultural employment ratios compared with other EMDEs. Conversely, they have higher consumption-to-GDP ratios and import-to-GDP ratios, in line with findings in the microeconomic literature on remittances.

Second, even after controlling for their level of development, remittance-reliant EMDEs around the world tend to converge toward having smaller private investment, exports, and non-agricultural sectors—all symptoms of weaker development paths.

Third, in contrast to remittances, FDI, portfolio investment inflows and foreign exchange inflows from commodity exports are not associated with convergence toward lower exports or private investment. This is in part by construction, as these inflows are subcomponents of exports and private investment. ODA, however, is associated with weak exports, private investment (but higher total and public investment), and non-agricultural sectors, similar to remittances.

Fourth, since a large literature has established that remittances are a critical foundation of household income in remittance-reliant economies, policies should focus on removing obstacles to remittance inflows. The policy challenge is to offset the related loss of competitiveness by reducing the cost of doing business, including by shifting taxation away from trade and payroll taxes and adopting more business-friendly regulations and practices. This approach could also entice households to allocate more remittances into investment, including investments in their own start-ups (Piras 2023) and human capital (Askarov and Doucouliagos 2020). If more remittances are channeled through the official financial system, they can be intermediated into greater savings and private investment.

Contributions. The spotlight makes several contributions to the literature reviewed in annex SL2.1.

First, this study highlights the impact of remittances on EMDEs' long-term growth path. Many studies have shown the short-term stabilizing impact of

remittances or the cross-country differences in macroeconomic outcomes between remittance-reliant economies and other EMDEs (annex SL2.1). To the authors' knowledge, no study has yet examined whether remittance-reliant economies have different points of convergence compared with other EMDEs.

Second, this study systematically explores asymmetries in the impact of remittances to illustrate how remittances change the *structure* of output, rather than the *level* of output. For example, many studies show that remittances affect consumption or investment, but none analyzes the relative size of these two effects.

Third, to draw on best practices for policies, this study explicitly compares the varied long-term correlates of remittances with those of aid, FDI, portfolio inflows, and large commodity exports. Theoretically, these inflows may have similar effects on the structure of the economy to those of remittances, as they all create real appreciation pressures. Some studies have compared the real exchange rate appreciations associated with remittances and aid (Balde 2011; Jayaraman, Choong, and Chand 2016; Martins 2013), FDI (Ahmed 2009; Hao et al. 2021; Upadhyaya, Dhakal, and Thapa 2013) or commodity exports (Jayaraman, Choong, and Chand 2016; Ma and Wang 2023). However, none of the previous empirical studies has systematically documented the economic structure and long-term development paths associated with all types of large foreign exchange inflows.

Methodologies. Two approaches are used to establish differences in economic structures between high-remittance and low-remittance economies. Specifically, the analysis focuses on differences in consumption and investment (in percent of GDP) and their ratio, exports and imports (in percent of GDP), and agricultural and non-agricultural employment (in percent of the working-age population). First, to document that there are meaningful differences, this spotlight tests differences in average macroeconomic outcomes between high-remittance EMDEs (those with remittances in the top quartile among EMDEs) and low-remittance EMDEs (those with remittances in the bottom quartile among EMDEs).

Second, to focus on long-term development, this spotlight draws on the convergence literature to identify "convergence clubs". As pointed out by

Tomal (2024), in contrast to standard economic theory, research has shown that not all economies converge to the same long-run equilibrium. Baumol (1986) was the first to suggest that economies may be grouped into so-called convergence clubs—groups of countries that follow similar growth paths and share specific economic characteristics. Instead of all countries converging to a single steady state equilibrium, the convergence club literature suggests that each convergence club moves toward a different point in the long run (Durlauf and Johnson 1995; Quah 1997). The spotlight uses a two-step approach (annex SL2.2). In the first step, the algorithm by Philips and Sul (2007; 2009) groups countries into convergence clubs defined by their narrowing cross-country differences over time (dubbed "sigma" convergence). In the second step, clubs are tested for statistically significant differences in their remittances, FDI, ODA, or portfolio investment inflows or commodity exports (all in percent of GDP).

While the annex tables present additional indicators, the main text focuses on convergence clubs for non-agricultural employment, private investment, and exports. Exports and private investment are key engines of productivity growth and capital accumulation, which form the foundation for long-term sustainable, potential growth (Kose and Ohnsorge 2024). Rapidly growing non-agricultural sectors are a key feature of the structural transformation that characterizes a robust long-term development path (Herrendorf, Rogerson, and Valentinyi 2014; World Bank 2024b).

Neither methodology establishes any causal relationship, although the next section relies on the literature to show the channels through which remittances may affect economic structure. The purpose of this spotlight is not to establish causality, but to document empirically the challenges faced by remittance-reliant countries. The spotlight refers to international remittances only.

Data. Most of the data have been drawn from the World Bank's *World Development Indicators* database. The portfolio inflow data have been taken from the IMF's *International Financial Statistics*. The real effective exchange rate, private investment and consumption data are from the World Bank's *Macro Poverty Outlook* database. The agriculture and non-agriculture employment share data come from Ohnsorge, Rogerson, and Xie (2024). These data yield a sample of up to 154 EMDEs for 1980–2023.

Symptom or cause?

Remittances can be both a symptom and a cause of weaker engines of long-term growth. Poor prospects for income growth or job creation, especially outside of agriculture, encourage migration. This is consistent with significantly higher remittances in countries with small labor markets (figure SL2.2). There is empirical evidence that weak structural characteristics and poor growth are important drivers of remittance flows. For instance, Beaton et al. (2017) find that remittances are driven by structural variables in the home country of migrants, including low per capita income and a high share of the rural population. Fagiolo and Rughi (2023) find a robust U-shaped relation between per capita income at home and remittance flows.

Once out-migration generates large remittance inflows, the challenges can become self-perpetuating. Large remittance inflows into foreign exchange markets create real appreciation pressures that can resemble the "Dutch disease" that has been documented for large commodity exports or ODA inflows.[1]

By supporting household incomes, remittances reduce poverty and improve education and health outcomes—but they also raise consumption. Remittances have been associated with greater household consumption in Bangladesh (Lee et al. 2021) and Nepal (Mishra, Kondratjeva, and Shively 2022), greater non-housing consumption in China (Zhu et al. 2014), and greater luxury consumption in Jamaica (Stephenson and Wilsker 2016).

However, increased consumption has sometimes come at the expense of weaker private investment. This has been shown for India (Mallick 2012), East Asian countries (Tung 2018), and a group of large emerging markets (Su et al. 2021).

Real exchange rate appreciation caused by remittances has been documented in Latin America and the Caribbean (Amuedo-Dorantes and Pozo 2004; Vargas-Silva 2009); in Asia (Hien et al. 2020); in Sub-Saharan Africa (Owusu-Sekyere, van Eyden, and Kemegue 2014), in large cross-country samples

(Acosta, Lartey, and Mandelman 2009; Azizi 2021; Polat and Andres 2019; Zhang et al. 2021), in countries with large numbers of emigrants (Ratha and Moghaddam 2020), and in several individual countries (Al-Assaf and Al-Tarawneh 2016; Eltalla 2019; Ito 2017).

The loss of competitiveness caused by real appreciation dampens exports. It also discourages investment in tradables sectors, which tends to be predominantly private rather than public investment.

By sapping momentum in private investment and exports—typically two major segments of non-agricultural sectors—remittances can also hold back non-agricultural activity and employment. In addition, a steady and large flow of remittances might substitute for labor income, raise reservation wages (the lowest wage at which workers accept a job), and discourage labor supply (Bussolo and Medvedev 2008). This could particularly slow non-agricultural employment, which typically requires relocation out of rural areas.

This impact of remittances may vary depending on the economic environment. In particular, some studies have found that better institutional quality and deeper financial markets are associated with more investment-oriented remittances flows. For example, in countries with stronger financial, political, or policy institutions, remittances tend to be associated with higher private investment (Issifu 2018; Su et al. 2021). In countries with deeper financial systems, remittances have been associated with stronger growth accelerations, partly because financial systems channel remittances toward productive investments (Lartey 2013; Lartey and Nigatu 2021).

Development paths

Economic structure. Remittance-reliant economies have structures that are tilted away from non-agriculture sectors, exports, and private investment—tilted away from the parts of an economy that are typically associated with faster productivity, output, and employment growth, as well as faster structural transformation along the development path (Dieppe 2021; World Bank 2024b). This is already apparent in a comparison of averages between the quartile of countries and decades with the highest remittances relative to GDP and the quartile with the lowest remittances

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[1] "Dutch disease," a term coined in 1977 by the Economist magazine to describe events following the discovery of the Groningen gas field in the Netherlands, captures how a sudden development of one economic sector causes a real appreciation of the country's currency—which hurts exports, jobs and investment in other sectors, while increasing imports and consumption.
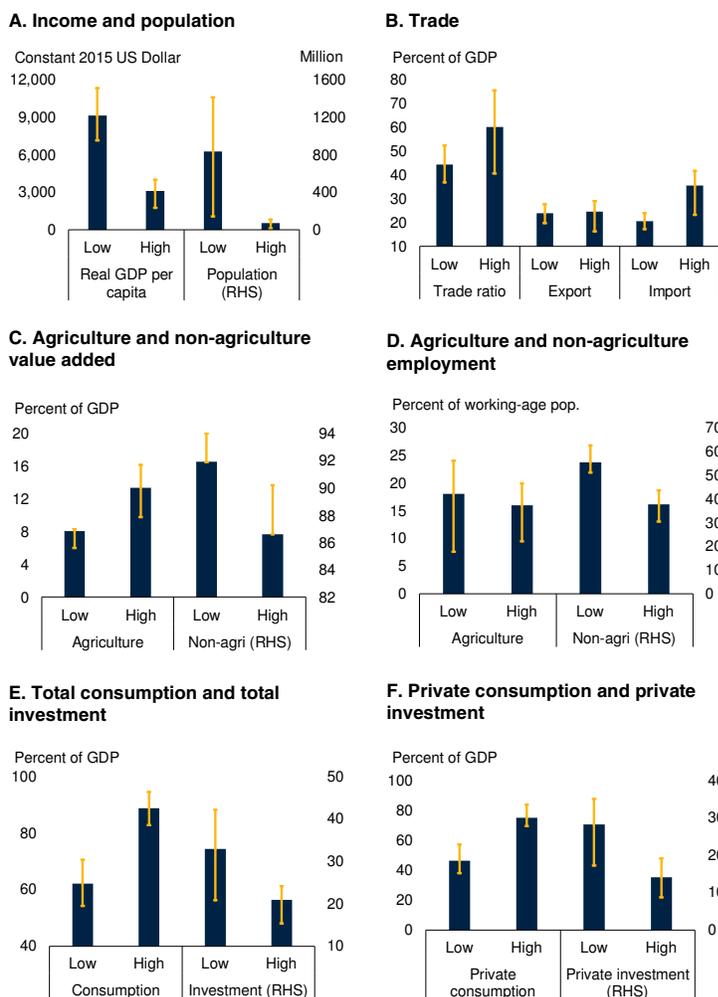
(figure SL2.2). Compared with the quartile of country-decade pairs with the lowest remittances (relative to GDP), private investment was, on average, 14 percentage points of GDP lower in those with the highest remittances; non-agricultural employment was 18 percentage points of the working-age population lower; and imports were 15 percentage points of GDP higher.

Convergence clubs. The long-term development paths of remittance-reliant EMDEs also suggest that the key engines of growth run weaker in these countries. While remaining agnostic about causality, EMDEs can be split into several convergence clubs with different development paths. The methodology described in annex SL2.2 yields two convergence clubs based on imports, private consumption, private investment (all in percent of GDP), and non-agricultural employment (in percent of working-age population) and four convergence clubs based on exports in percent of GDP. There is considerable overlap between club members: around 20–40 percent of the members belonging to the clubs with the highest private investment, highest exports, and highest non-agricultural employment overlap.

- *Non-agricultural employment.* One set of countries has been on a trajectory of steadily rising non-agricultural employment ratios, whereas another group of countries has been on a near-flat trajectory. By 2022, the average non-agricultural employment in the group on the rising trajectory was 20 percentage points of the working-age population higher than in the group with the near-flat trajectory. The group with the near-flat trajectory included India, Maldives, and Pakistan, whereas Bangladesh, Bhutan, and Sri Lanka were part of the club with a rising trajectory.

- *Private investment.* One group of countries has been on a trajectory of gradually rising private investment relative to GDP, while another group has been on a declining trajectory. By 2022, on average, the former group had 11 percentage points of GDP higher private investment than the latter. In South Asia, Pakistan is part of the club with declining investment ratios. Bangladesh, Bhutan, and India are part of the club with a rising trajectory, largely because of their high private investment-to-GDP ratios in the late 2010s (Bangladesh), early 2010s (Bhutan), or mid-2000s (India) that have since subsided.

FIGURE SL2.2 EMDE characteristics, by magnitude of remittance inflows

High-remittance economies tend to be lower-income and less populous, with greater agricultural dependency and weaker investment.

A. Income and population

B. Trade

C. Agriculture and non-agriculture value added

D. Agriculture and non-agriculture employment

E. Total consumption and total investment

F. Private consumption and private investment

Source: *Macro Poverty Outlook* (World Bank), World Development Indicators (database), World Bank.
Note: Bars represent country-decade real GDP-weighted average of EMDE country characteristics for the top ("High") and bottom ("Low") quartiles, based on average remittances-to-GDP ratios. The data refers to 1980–2023. The whiskers are interquartile ranges.
A. GDP per capita is measured in constant 2015 U.S. dollars, with the sample including up to 153 EMDEs. Total population is measured in millions, with the sample including up to 154 EMDEs.
B. Total exports and imports, exports and imports of goods and services, in percent of GDP. Sample includes up to 139 EMDEs.
C. Value added in agriculture, forestry, and fishing, in percent of GDP, and non-agriculture value added, in percent of GDP. Sample includes up to 150 EMDEs.
D. Employment in agriculture, forestry, and fishing, in percent of working-age population and non-agriculture employment, in percent of working-age population. Sample includes up to 139 EMDEs.
E. Final consumption expenditure, in percent of GDP, and gross fixed capital formation, in percent of GDP. Sample includes up to 135 and 131 EMDEs, respectively.
F. Households and non-profit institutions serving households in final consumption expenditure, in percent of GDP, and private gross fixed capital formation, in percent of GDP. Sample includes up to 134 and 131 EMDEs, respectively.
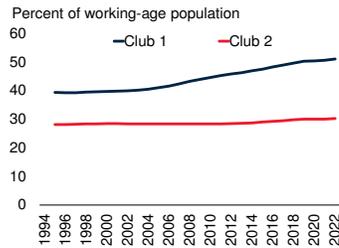
- *Exports.* One group of countries has been on a trajectory of gradually rising exports relative to GDP, while another three groups have been on a declining trajectory. By 2022, the first group had on average 20–31 percentage points of
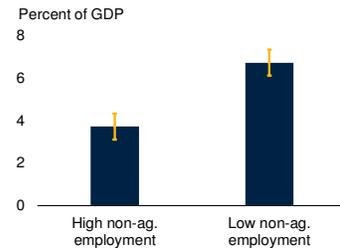
FIGURE SL2.3 Macroeconomic outcomes, by convergence club

Countries in convergence clubs that are associated with slower development paths and structural transformation—characterized by lower exports, smaller non-agricultural sectors, and less investment—have experienced higher remittance inflows.
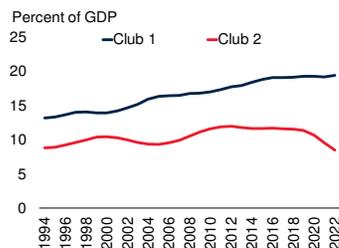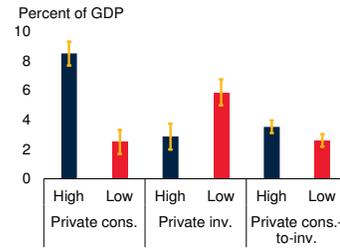
A. Non-agricultural employment

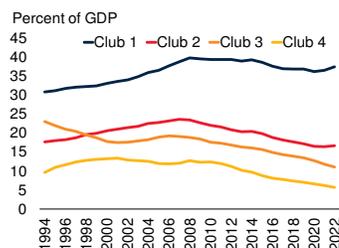**B. Remittances, by convergence club for non-agricultural employment**
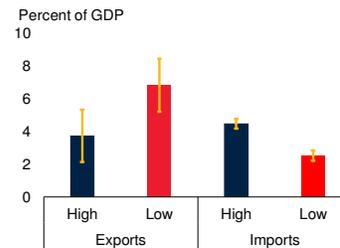
C. Private investment

D. Remittances, by convergence club for private consumption, investment or their ratio

E. Exports

F. Remittances, by convergence club for exports and imports

Sources: *Macro Poverty Outlook* (World Bank), World Development Indicators (database), World Bank.
Note: Convergence clubs are groups of countries whose differences in macroeconomic outcomes narrow over time. This analysis is based on the convergence clubs estimated using the methodology of Phillips and Sul (2009). The methodology is detailed in annex SL2.2.
A.C.E Five-year moving averages of cross-country average of macroeconomic outcomes in each convergence club.
B.D.F. Bars show average remittances in percent of GDP for each club during 1990–2022. Whiskers indicate 90 percent confidence intervals. Data is based on annex table SL2.A2A. "High" indicates average for convergence club with highest macroeconomic outcome (non-agricultural employment in percent of working-age population [B]; consumption and investment in percent of GDP, and consumption-to-investment ratio [D]; or exports and imports in percent of GDP [F]). "Low" indicates average for convergence club with lowest macroeconomic outcome.

GDP higher exports than the latter three. In South Asia, Bangladesh, Nepal, and Pakistan were part of a club with declining exports ratios, while Bhutan and India belonged to the club with rising export ratios.

Remittances in convergence clubs. Countries with higher remittances (relative to GDP) have been in convergence clubs characterized by lower private investment, lower non-agricultural employment, and lower exports (figure SL2.3). On average, remittances were about 3 percentage points of GDP higher in convergence clubs with the lowest private investment, the lowest non-agricultural employment, or the lowest exports compared with convergence clubs with the highest levels.

Convergence: Remittances versus other foreign exchange inflows. The long-term development paths of remittance-reliant countries differ considerably from those of EMDEs that rely heavily on other types of foreign exchange inflows (figure SL2.4). Only ODA inflows are associated with the same combination of weak exports, weak private investment, and low non-agricultural employment.

- *Commodity exports*. Commodity-reliant economies tend to be in convergence clubs with high exports and investment. This partly reflects the fact that commodity exports are a constituent part of exports. It may also reflect the heavy construction and maintenance investment that is often needed to extract and export commodities.

- *FDI*. FDI-reliant economies tend to be in convergence clubs with higher exports. This may reflect the fact that FDI is often concentrated in export sectors and aimed at global value chain participation.

- *ODA*. Similar to remittance-based economies, ODA inflows are larger in countries that are members of convergence clubs with smaller non-agricultural employment, less private investment, and weaker exports. However, ODA inflows are also bigger in clubs with higher total investment, which suggests that ODA is often designed to support public investment projects.

- *Portfolio investment*. High portfolio investment inflows are not associated with convergence toward lower investment, exports, or non-agricultural employment, perhaps because portfolio investment itself is often targeted at export sectors and funds investment in non-agricultural sectors. Portfolio investment can also be more volatile than the other types of inflows and may therefore have less impact on long-term convergence.

Remittance surges

Nepal and Pakistan offer examples of the impact of shifts or accelerations in remittances on the structure of recipient economies.
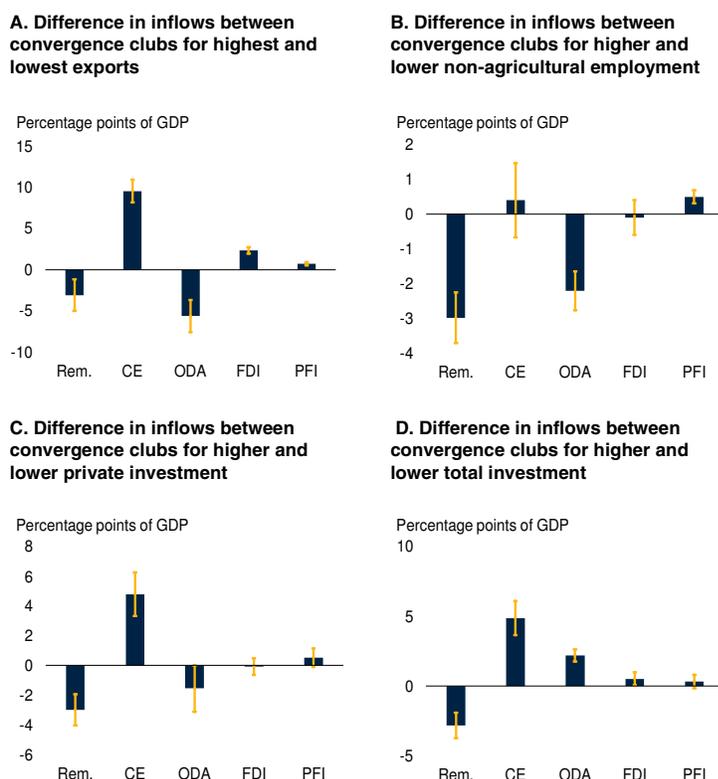
Nepal: Remittances. In 2001, an intensification of conflict and political instability coincided with increasing demand for labor in East Asia, the Middle East, and India, as well as with policies to facilitate labor migration. For example, in the early 2000s, a formal memorandum of understanding was agreed upon between Nepal and Malaysia, and various initiatives were undertaken to channel remittances through formal channels (Pant 2006; World Bank 2005). As a result, remittances inflows accelerated sharply starting in 2002 until 2016—in both years structural breaks are identified by the Bai-Perron test (annex SL2.3, figure SL2.5). Before the acceleration period, remittances were about 1 percent of GDP, whereas since the acceleration they have hovered around 23–27 percent of GDP.

Nepal: Shifts in economic structure. The significant increase in remittances was accompanied by changes in Nepal's economic structure. Macroeconomic outcomes differed statistically significantly between the pre-surge period (1993–2001) and the period after the surge leveled off (2017–23).

- *Exports* fell by 9 percentage points of GDP after the remittance surge and Nepal lapsed into the convergence club with the lowest export ratios around the time the surge started (annex table SL2.A7A). Meanwhile, imports increased by 12 percentage points, and current account deficits widened.

- *Consumption* increased by 2 percentage points to 82 percent of GDP—well above the EMDE average. In contrast, investment benefited from new hydropower projects, supported by financing from international institutions and FDI. These factors propelled Nepal into the convergence club with the highest total investment-to-GDP ratios.

- *Non-agricultural employment* increased by 10 percentage points of the working-age population, but from an exceptionally low starting point. By 2022, non-agricultural sectors still accounted for only 30 percent of the

FIGURE SL2.4 Foreign exchange inflows, by convergence club

Only official development assistance—not foreign direct investment or commodity exports—is associated with the weakness in private investment, exports, and non-agricultural employment that accompanies large remittance inflows.

A. Difference in inflows between convergence clubs for highest and lowest exports

B. Difference in inflows between convergence clubs for higher and lower non-agricultural employment

C. Difference in inflows between convergence clubs for higher and lower private investment

D. Difference in inflows between convergence clubs for higher and lower total investment

Sources: International Financial Statistics (IMF), *Macro Poverty Outlook* (World Bank), World Development Indicators (database), World Bank.
Note: CE = commodity exports; FDI = foreign direct investment; ODA = official development assistance; PFI = portfolio investment; Rem. = remittances. Whiskers indicate 95 percent confidence intervals. Charts show the average difference in remittances, FDI inflows, portfolio investment inflows, ODA inflows, and commodity exports (all in percentage points of GDP) between the convergence clubs with the highest and lowest exports in percent of GDP (A), the highest and lowest non-agricultural employment in percent of working-age population (B), highest and lowest private investment in percent of GDP (C), or highest and lowest total investment in percent of GDP (D).

working-age population, well below the 44 percent average in other EMDEs, and were converging toward significantly below-average long-run levels (World Bank 2024b).

Pakistan: Remittances. As oil prices began to rise steeply in 2002, migration to the Gulf Cooperation Council countries soared, drawing in many South Asians, including Pakistanis. At the same time, remittances into Pakistan, which had declined for a decade, also began to surge and this surge appears to be ongoing. During 2002–23, remittances have averaged 5.5 percent of GDP per year, compared with 3.1 percent of GDP per year during 1987–2001.

FIGURE SL2.5 Remittance surges in Nepal and Pakistan

Nepal's remittances surged between 2002 and 2016 and Pakistan's remittances began to grow sharply in 2002. Both surges were accompanied by slowing exports and, in Pakistan, by slowing private investment and below-average non-agricultural employment ratios.

A. Remittances: Nepal

B. Remittances: Pakistan

C. Exports: Nepal

D. Exports: Pakistan

E. Non-agricultural employment: Pakistan

F. Private investment: Pakistan

Sources: *Macro Poverty Outlook* (World Bank), World Development Indicators (database), World Bank.
Notes: NPL = Nepal; PAK = Pakistan.
A.B. Charts show the remittances-to-GDP ratio. The vertical line shows the year(s) of the structural break. The structural break year is estimated using the Bai-Perron test, which identifies a break in the data in a linear regression of remittances on a constant term and a time trend, without a predetermined break date. Coefficients of constant term and time trend are allowed to vary across breaks.
C.D. Blue line shows Nepal's (C) or Pakistan's (D) exports-to-GDP ratio. Red line shows convergence path for exports-to-GDP ratios (that is, the relative transition paths, as explained in annex SL2.2, rescaled by the EMDE average exports-to-GDP ratio).
E. Blue line shows Pakistan's non-agricultural employment in percent of the working-age population. Red line shows convergence path for Pakistan's non-agricultural employment ratio (that is, the relative transition paths, as explained in annex SL2.2, rescaled by the EMDE average).
F. Blue line shows Pakistan's private investment-to-GDP ratio. Red line shows convergence path for Pakistan's private investment-to-GDP ratio (that is, the relative transition paths, as explained in annex SL2.2, rescaled by the EMDE average private investment-to-GDP ratio).

Pakistan: Shifts in economic structure. In Pakistan, as in Nepal, the surge in remittances after 2002 (as well as growing fiscal and financial sector challenges) coincided with a period of pronounced weakness in private investment, exports, and non-agricultural employment ratios. Macroeconomic outcomes differed statistically significantly between the pre-surge period (1987–2001) and the surge period (2002–23).

- *Exports* fell by 4 percentage points of GDP once the remittance surge got underway. Throughout the sample period, Pakistan has been in the convergence club with the lowest export ratios (annex table SL2.A7B).

- *Private investment* declined by 1 percentage point of GDP while private consumption strengthened by 7 percentage points of GDP. Consequently, around the time of the surge in remittances, Pakistan dropped into a convergence club that was associated with lower private investment.

- *Non-agricultural employment* increased by 8 percentage points of the working-age population during 1990–2022, broadly in line with the average EMDE but starting from barely half the initial level in 1990. By 2022, non-agricultural secto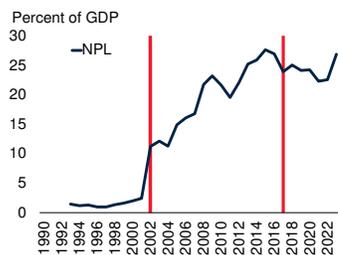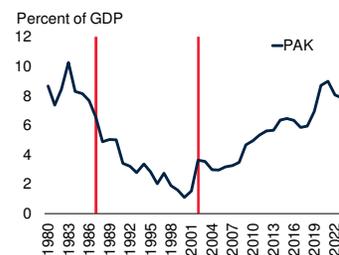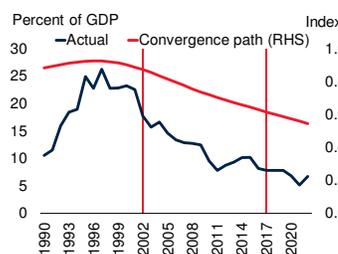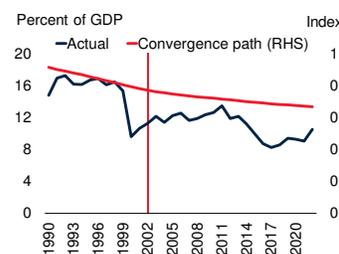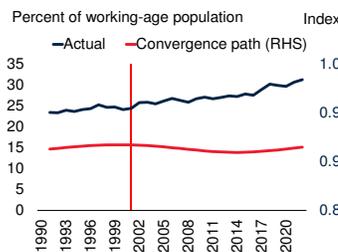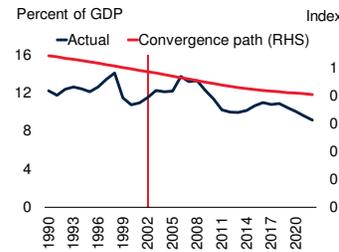rs still accounted for only 31 percent of the working-age population, well below the 44 percent average in other EMDEs, and were converging toward significantly below-average long-run levels (World Bank 2024b).

Subnational economic structure. Similar shifts have also sometimes occurred at the subnational level. For example, India's state of Kerala received remittance inflows amounting to around 20 percent of net state domestic product, on average, between 1991 and 2013 (Kannan and Hari 2020). During this period, Kerala's economic growth was driven by construction and services, while private investment and non-agricultural job creation were subdued (Balasubramanyam and Balasubramanyam 2015; Kannan 2023).

Conclusion

An extensive literature has documented that remittances are a critical source of household income in remittance-reliant economies. They help smooth consumption in the event of shocks, support the most vulnerable households, and fund household investment, especially in education and health. Therefore, removing obstacles to remittance inflows should be a policy priority, including by improving access to formal financial channels for such flows and by reducing transaction fees or taxation of remittances. A better remittance infrastructure could further unlock gains from migration (World Bank 2022).

To capitalize on migration, several best practices for major host countries have been identified (World Bank 2023a). In addition to reducing remittance cost and incentivizing remittance flows through the financial system, they include strengthening knowledge spillovers from the diaspora through improved business climates, support for returnees, support for migrants with robust consular services, and skill upgrading in areas that benefit both domestic markets and destination countries. A large diaspora may also be a source of stable bank deposits or stable government financing, although, thus far, the amount of financing raised in EMDEs through diaspora bonds is low (World Bank 2023b).

At the same time, policies are also needed to mitigate the adverse side effects of large remittance inflows: weak private investment, exports, and non-agricultural sectors. These macroeconomic side effects themselves may have distributional consequences. For example, the number of people affected by adverse side effects may outweigh the number of direct beneficiaries of remittances, and those household that are adversely affected by the side effects may be less affluent than those that directly receive remittances.

Some of the macroeconomic side effects of remittances discussed in this spotlight have also been observed in countries that rely heavily on commodity exports or inflows of ODA or FDI or portfolio investment. For these countries, the macroeconomic management of such exports or inflows has been extensively discussed in the literature. Best practice for managing large commodity export inflows includes establishing sovereign wealth funds (Das, Mazarei, and Hoorn 2010; James et al. 2022), while best practice for managing large, volatile portfolio inflows involves introduce macroprudential regulation (IMF 2022).

Although the policy challenges created by large remittances have some parallels to those created by large inflows of capital or commodity export receipts, no such best practices have been established.[2] In part, this may reflect the nature of remittances. Because recipients are often informal and dispersed across households, remittances are less

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[2] Some studies have found that flexible exchange rate regimes are associated with a weaker non-tradable bias of remittances (Lartey 2016; Lartey, Mandelman, and Acosta 2012).

readily taxed or regulated than export revenues generated by one or a few large companies or portfolio flows channeled through a regulated financial system.

Nevertheless, governments can mitigate the adverse side effects of large remittance inflows with policies that will enhance the economy's competitiveness and improve prospects for firm productivity and employment growth.

- *Sterilize inflows*. Where monetary policy is unencumbered by exchange rate pegs, central banks can consider sterilizing remittance inflows to accumulate foreign reserves and lean against the accompanying real exchange rate appreciation. This policy response is likely to be more effective in the case of temporary remittance surges than in the case of permanently large inflows. Over the longer term, it has been shown to hinder financial development (Oliva and Khinashvili 2024).

- *Deepen financial systems*. Measures to channel remittances through formal channels—such as reducing fees and taxes, financial and entrepreneurship training, and savings incentives—can enhance the short-term benefits of remittance flows while also helping to deepen the financial system and widen access. In turn, deeper financial systems may improve the allocation of large foreign exchange inflows, including remittances, into productive private investment. Such measures are likely to be most effective when combined with a strengthened institutional environment.

- *Lower trade and payroll taxes*. Lowering trade taxes could encourage productivity gains associated with exports and more productive intermediate imports (Goldberg et al. 2010; Halpern, Koren, and Szeidl 2015; Topalova and Khandelwal 2011). This is especially important in South Asia, where economies are among the least open to global trade and governments raise an above-average share of revenues from trade taxes. In addition, the negative association between heavy remittances inflows and non-agricultural employment in part reflects disincentives to labor force participation. Higher remittances raise reservation wages and, hence, discourage employment, especially in the non-farm sector. A revenue-neutral shift in taxation

away from trade and payroll taxes could help counteract these pressures (Bussolo and Medvedev 2008). That said, such changes in tax structure need to be embedded in broader fiscal policy to ensure that the most vulnerable groups are protected from the effects of higher consumption taxes.

- *Improve the business climate.* To offset some of the loss of competitiveness from real exchange rate appreciation and lower labor force participation, governments can take measures to cut other costs faced by firms and encourage productivity improvements (World Bank 2024b). These include, in particular, reducing the cost of regulatory compliance by streamlining regulations, digitizing compliance, and controlling corruption. They also include lowering the cost of accessing markets and inputs but providing reliable infrastructure and expanding access to finance, skilled labor, and other inputs. And they include measures to foster competition by accelerating dispute resolution and leveling the playing field with large state-owned enterprises or incumbents. Some findings in the literature suggest that, by facilitating entrepreneurial activity, improvements in the business climate can also entice households to invest a greater fraction of their remittance in business ventures or human capital improvements.

- *Strengthen resilience to loss of remittances.* In countries where remittances are a critical source of household income, sudden losses of remittances could trigger economic downturns. Political changes, natural disasters, or economic downturns abroad could be sources of shocks to remittance flows. Social security systems can be put in place to protect the most vulnerable households in the event of remittance losses.

Annex SL2.1 Literature review: Economic impact of remittances

A vast literature has examined the economic impacts of remittances, using both microeconomic and macroeconomic data. This annex summarizes the main themes.

Microeconomic studies

A literature review of microeconomic studies through 2009 documented that remittances raise household income, improve household health, and reduce household labor supply (Adams 2011). Effects on education and investment were mixed. Since then, studies based on micro data have increasingly found significant effects of remittances on education and on housing investment but mixed effects on other types of household investment. The World Bank's World Development Report on migration also notes that remittances reduce poverty, raise consumption and foster entrepreneurship (World Bank 2023a).

Consumption. If remittance inflows are considered permanent, they would be expected to be spent more on consumption than on investment. Indeed, remittances were associated with greater non-housing consumption in China (Zhu et al. 2014), greater luxury consumption in Jamaica (Stephenson and Wilsker 2016), and greater household consumption in Bangladesh (Lee et al. 2021) and Nepal (Mishra, Kondratjeva, and Shively 2022).

Investment in human capital. A meta-regression analysis of estimates from 73 studies showed that remittances raise school enrolment (Askarov and Doucouliagos 2020). Remittances increase household spending on education in Ghana (Adams and Cuecuecha 2013; Gyimah-Brempong and Asiedu 2015), El Salvador (Ambler, Aycinena, and Yang 2015); Nepal (Acharya and Leon-Gonzalez 2014; Mishra, Kondratjeva, and Shively 2022; Raut and Tanaka 2018), the Philippines (Quisumbing and McNiven 2010; Yang 2008), Bangladesh (Ahmed, Dzator, and Zhang 2021), Colombia (Medina and Cardona 2010) and Kenya (Hines and Simpson 2019). Remittances also raise household spending on health in Peru (Berloffa and Giunti 2019), Bangladesh (Ahmed, Dzator, and Zhang 2021), Jamaica (Beuermann, Ruprah, and Sierra 2016), but not in Cambodia (Treleaven 2019). Similar to health expenditure, most studies find a positive impact of remittances on health outcomes (Beuermann, Ruprah, and Sierra 2016). Remittances also improved school attendance in El Salvador (Acosta 2011). Finally, remittances to recipient households may generate

spillovers to other households by stimulating job creation and raising the rate of return to education and, hence, encouraging investment in human capital (Kugler and Lotti 2007).

Housing investment. Remittances lead to higher household housing investment in Peru (Berloffa and Giunti 2019), Nigeria (Osili 2004), the Philippines (Quisumbing and McNiven 2010), Jamaica (Stephenson and Wilsker 2016), and Fiji (Kakhkharov et al. 2022). They raise household spending on housing and improve the affordability of housing, but not its quality, in Sri Lanka (Jayaweera and Verma 2023).

Other investment. Remittances increase investment in irrigation infrastructure in Moldova (Pilarova, Kandakov, and Bavorova 2022) and Pakistan (Adams 1998), in automobiles and machinery in Mexico (Woodruff and Zenteno 2007), in farming or business in Kenya (Jena 2018), in urban business development in Moldova (Manic 2017), in households in Mexico (Zarate-Hoyos 2004), and in consumer durables in the Philippines (Quisumbing and McNiven 2010) and Albania (Castaldo and Reilly 2007). In contrast, in the Dominican Republic, households with remittance incomes are not more likely to own a business (Amuedo-Dorantes and Pozo 2004) and, in Pakistan, households that received remittances have lower farm output (Mughal et al. 2023).

Labor supply. Remittances are reported to lower labor force participation in Haiti, Mexico, and Tajikistan (Bansak and Chezum 2009; Jadotte and Ramos 2016; Vadean, Randazzo, and Piracha 2019), but not in Mexico (Alcaraz, Chiquiar, and Salcedo 2012) and El Salvador (Acosta 2020). Remittances reduce child wage labor in El Salvador (Acosta 2011); conversely, a loss of remittances increases child labor in Mexico (Alcaraz, Chiquiar, and Salcedo 2012).

Macroeconomic studies

Many macroeconomic studies have documented that remittances help smooth consumption during shocks and support foreign exchange reserves during economic downturns (World Bank 2023a). They are also often associated with reduced competitiveness (reflected in higher imports and lower exports), higher consumption, and higher investment, while the impacts on aggregate GDP are modest at best.

Output. A large body of literature has examined the relationship between remittances and output growth. A recent meta-analysis shows that the effect of remittances on growth is positive but economically small (Cazachevici, Havranek, and Horvath 2020). Some studies have found that this effect is more pronounced in less financially developed countries (Giuliano and Ruiz-Arranz 2012; Sobiech 2019), where remittances can be a substitute for lending from financial institutions.

Consumption. The macroeconomic literature has focused on the consumption smoothing properties of remittances (Balli and Balli 2011; Combes and Ebeke 2011; Kimberly, Serhan, and Reza 2018; Mondal and Khanam 2018; Shapiro and Mandelman 2016). Very few studies examine the link between remittance inflows and consumption levels. A few studies find that higher remittances are associated with higher consumption in large cross-country samples (Qamruzzaman and Jianguo 2020) or in Latin America and the Caribbean (Ramcharran 2020) whereas a study of three South Asian countries finds no significant effect (Lim and Basnet 2017).

Investment. Remittance inflows have been correlated with higher aggregate investment-to-GDP ratios in large cross-country samples (Dash 2023; Gheeraert, Mata, and Traca 2010; Giuliano and Ruiz-Arranz 2009); in Sub-Saharan Africa (Balde 2011; Issifu 2018; Lartey 2013); and in South Asia (Dash 2020). In many cases, the effect on investment-to-GDP ratios is stronger in countries with more developed financial systems (Dash 2023; Gheeraert, Mata, and Traca 2010; Lartey 2013) or better institutions (Issifu 2018; Su et al. 2021). Deeper financial systems and better institutions may improve the allocation of capital into productive investment in these countries. There have been some exceptions where remittances were associated with weaker private investment and higher household consumption, such as in India (Mallick 2012), East Asian countries (Tung 2018), and in the seven largest emerging markets (Su et al. 2021). Piras (2023)

reports that the impact of remittances on the creation of new firms is inversely mediated by economic complexity. As economic complexity is positively correlated with economic development, remittances are more likely to facilitate the establishment of new firms in less developed economies rather than in more advanced ones.

Housing investment. Remittances have increased household housing investment in Ghana (Adams and Cuecuecha 2013) and Jordan (Hamouri 2020).

Trade. Remittances have been associated with larger imports in Nigeria (Olubiyi 2014), Nepal (Bhatta 2013), and countries in the Middle East and North Africa (Farzanegan and Hassan 2020). In South Asia and in Moldova, remittances were also associated with lower exports (Ito 2017; Jena and Sethi 2019). Remittances also appear to be associated with greater export complexity and value added (Saadi 2020).

Manufacturing or activity in other tradable sectors. Manufacturing of goods tends to be more capital intensive than non-manufacturing activities such as services (Chen 2020). Hence, manufacturing should benefit from large capital inflows, including remittances, provided they fund investment. Some studies have shown weaker manufacturing activity in countries with higher remittances, such as in African countries (Efobi et al. 2019), although this effect may reflect lack of financial development (Lartey and Nigatu 2021), and Bangladesh (Taguchi and Shammi 2018). However, this was not the case in more diverse samples of EMDEs (Daway-Ducanes 2019; Dzansi 2013). Several studies have shown that tradables activity falls relative to non-tradables activity (Acosta, Lartey, and Mandelman 2009; Lartey, Mandelman, and Acosta 2012).

Non-tradable sector activity. A modeling exercise shows the channels through which remittances can tilt consumption toward non-tradables (Acosta, Lartey, and Mandelman 2009).

Labor supply. Several macroeconomic modelling exercises show that the channels through which remittances reduce labor supply include higher reservation wages and increased leisure (Acosta,

Lartey, and Mandelman 2009; Bussolo and Medvedev 2008; Lim, Morshed, and Turnovsky 2023; Shapiro and Mandelman 2016).

Financial development. Remittances have been associated with increased financial development in cross-country studies (Azizi 2020; Efobi et al. 2019; Gheeraert, Mata, and Traca 2010; Ojapinwa and Nwokoma 2018), including in South Asia (Shahzad et al. 2014) and especially over the long run (Fromentin 2017). However, Doucouliagos, de Haan and Sturm (2022) conclude in their meta-regression analysis that the literature has not yet robustly established that remittances matter for financial development.

Prices

The literature has documented real appreciation and higher house prices associated with remittances, with limited research on real wages and none on relative real investment deflators.

Real exchange rate. Real exchange rate appreciations caused by remittances have been shown in Latin America and the Caribbean (Amuedo-Dorantes and Pozo 2004; Vargas-Silva 2009); in Asia (Hien et al. 2020); in Sub-Saharan Africa (Owusu-Sekyere, van Eyden, and Kemegue 2014); in large cross-country samples (Azizi 2021; Polat and Andres 2019; Zhang et al. 2021); in countries that are large sources of migrants (Ratha and Moghaddam 2020); and in individual countries (Al-Assaf and Al-Tarawneh 2016; Eltalla 2019; Ito 2017).[3] For South Asia, too, cross-country studies (mainly covering Bangladesh, India, Nepal, Pakistan, and Sri Lanka) have found that remittances lead to real exchange rate appreciation (Basnet, Donou-Adonsou, and Upadhyaya 2019; Roy and Dixon 2016; Uddin and Murshed 2017). Similar results have been found in individual-country studies for Bangladesh (Basu and Datta 2007; Chowdhury and Rabbi 2014), India (Dutta and Sengupta 2018), Nepal (Essayyad, Palamuleni,

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[3] In contrast, a widely cited study by Rajan and Subramanian (2005), based on data from the 1980s and 1990s, does not find evidence of real exchange rate appreciation due to remittance inflows. The result might differ from more recent papers because remittances have increased significantly since 2000.

and Satyal 2018), Pakistan (Ahmed 2009; Makhlouf and Mughal 2013), and Sri Lanka (White and Wignaraja 1992). The real appreciation caused by remittances appears to be particularly large in fixed exchange rate regimes (Lartey, Mandelman, and Acosta 2012).

House and other non-tradable consumer prices. Remittances have raised house prices in Bangladesh (Mottaleb, Sene, and Mishra 2016), Ghana (Jack, Okyere, and Amoah 2019), Kenya (Chege, Gholipour, and Yam 2023), and Mexico (Nath and Vargas-Silva 2012).

Real wages. A modeling exercise for Jamaica show how remittances can drive up real wages by raising reservation wages (Bussolo and Medvedev 2008).

Annex SL2.2 Methodology: Convergence clubs

A two-step procedure is conducted to create convergence clubs and to estimate differences in foreign exchange inflows between them. In the first step, the Phillips and Sul (2007; 2009) approach is used to identify convergence clubs for several macroeconomic aggregates. In a second step, each convergence club is tested for significant differences in inflows of remittances, FDI, portfolio, and ODA flows, as well as resource exports.

Step 1: Identifying convergence clubs

A commonly used methodology to identify convergence clubs among countries with similar characteristics was developed by Phillips and Sul (2007, 2009). In the initial stages, countries within the same convergence club will exhibit different distances from the common "attraction point"—the point to which economies in a club converge. To form a convergence club, the deviations of a group of economies from the common attraction point should diminish over time.

The methodology uses factor decompositions, a log regression test, and sorting algorithms to evaluate all possible combinations of economies for common convergence trends. It starts by decomposing (multiplicatively) the data series of interest into time-varying *common* and components. The time-varying common

component represents the common steady-state path, while the time-varying idiosyncratic component represents each economy's transition toward the common steady-state path. The idiosyncratic components are rescaled relative to the cross-country average of idiosyncratic components (called the relative transition parameter). For each point in time, the cross-country variance of these rescaled idiosyncratic components is calculated.

Phillips and Sul (2007, 2009) then test for the presence of a convergence club in a log regression of the changes in this cross-country variance over time. A convergence club is present if the coefficient on time indicates a significantly diminishing variance over time (Apergis et al. 2018). An iterative sorting algorithm reconfigures the country groups until there are no countries left that converge toward any club. This means that convergence clubs are groups of countries whose cross-country variance diminishes over time (sigma-convergence; Tomal 2024).

This approach reduces estimation bias from omitted variables, reduces the need for specific assumptions, and allows for heterogeneity across countries and years. As a result, it is robust to structural breaks (Du 2017; Gao et al. 2021; Tomal 2024). Further refinements to the approach of Philip and Sul (2007, 2009) have been proposed for the log time regression and the sorting algorithm, but some have argued that the resulting differences in findings from these refinements are often negligible (Tomal 2024).

The resulting transition paths for each convergence club are shown in figure SL2.3, are relative to the panel average. The procedure is conducted separately for each of the macroeconomic aggregates listed in annex table SL2.A1. FDI and portfolio inflows are gross inflows; commodity exports are defined as the sum of agricultural raw materials exports, food exports, fuel exports, and ores and metals exports.[4]

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[4] Agricultural raw materials comprise SITC section 2 (crude materials except fuels) excluding divisions 22, 27 (crude fertilizers and minerals excluding coal, petroleum, and precious stones), and 28 (metalliferous ores and scrap). Food comprises commodities in SITC sections 0 (food and live animals), 1 (beverages and tobacco), and 4

Step 2: Estimating the role of remittances

In the second step, convergence clubs are ranked by the average macroeconomic outcome at the end of the sample period, such that Club 1 always has higher outcomes than Club 2. In the baseline results, a t-test is conducted to test the differences in average remittances between the clubs with the highest and lowest outcomes for statistical significance.

The following foreign exchange inflows are considered: remittances, FDI, ODA, portfolio investment flows, and resource exports, all expressed in percent of GDP. Annex table SL2.A1 summarizes the differences in foreign exchange-generating inflows between the club with the highest macroeconomic outcome and the club with the lowest macroeconomic outcome. Annex table SL2.A2 documents average foreign exchange inflows by convergence club.

Robustness

Two robustness tests to the identification of convergence clubs are conducted: a sub-sample estimation and an algorithm that is more stringent in its club selection.

Sub-samples. The baseline results—higher remittances being associated with convergence clubs with higher exports, lower private investment, and lower non-agricultural employment ratios—are mostly confirmed in an exercise that compares convergence club membership during the first half of the sample period (1990–2005) and during the second half of the sample period (2006–2022). Several countries that were not in the highest convergence club during 1990–2005 moved to the highest club in the full sample. Annex table SL2.A3 compares the remittances-to-GDP ratio for the full sample between countries moving to the highest convergence club and those that did not move to the highest club. The result shows that countries that moved to the highest convergence club by

exports-to-GDP received fewer remittances than those that remained in their lower-export club. Countries that moved to the highest convergence club by private investment-to-GDP ratios had significantly lower remittances than those that remained in their clubs. For non-agricultural employment ratios, however, the results are not statistically significant. This may reflect the slow-moving nature of non-agricultural employment ratios: over the short, 15-year period of the subsample, there is insufficient variation to distinguish between convergence clubs.

More stringent club selection. Schnurbus, Haupt, and Meier (2017) amended the original algorithm of Phillips and Sul (2007, 2009) to merge clubs that are too similar. Despite the more stringent club selection algorithm, the number of clubs remains the same for all variables except aggregate investment in percent of GDP (where only a single club is identified) and the consumption-to-investment ratio (where the number of clubs falls by one). The pattern of remittances across the clubs matches the baseline results: countries with higher remittances (relative to GDP) have been in convergence clubs with lower private investment, lower non-agricultural employment, and lower exports (annex table SL2.A4). The baseline patterns for other types of foreign exchange inflows are also robust to this change (annex table SL2.A5).

Controlling for initial per capita GDP. As a robustness test, for each macroeconomic outcome, a panel random effects regression is estimated, regressing remittances in percent of GDP on dummy variables for convergence club membership, initial real GDP per capita, and year fixed effects (annex table SL2.A6). The coefficient estimates on the dummy variables for each club are tested for statistically significant differences. The sample includes up to 154 EMDEs, 1990–2022. Some of the baseline results, especially for exports, lose their statistical significance but continue to show the same signs.

(animal and vegetable oils and fats) and SITC division 22 (oil seeds, oil nuts, and oil kernels). Fuels comprise the commodities in SITC section 3 (mineral fuels, lubricants and related materials). Ores and metals comprise the commodities in SITC sections 27 (crude fertilizer, minerals not elsewhere specified); 28 (metalliferous ores, scrap); and 68 (non-ferrous metals).

Annex SL2.3 Methodology: Structural breaks in remittance inflows

For the case studies of Nepal and Pakistan, structural breaks in remittance-to-GDP ratios are estimated using the Bai-Perron test for a structural break with an unknown break date as identified in a linear regression. The linear regression allows breaks in the coefficient for a constant term to capture level shifts and a time trend to capture growth accelerations. This yields structural breaks in 2002 and 2017 for Nepal and in 1987 and 2002 for Pakistan. After 2017, Nepal's remittances-to-GDP ratio plateaus, whereas remittances-to-GDP ratios continue to rise rapidly after 2002 in Pakistan. Macroeconomic outcomes are compared for different sample periods. For Nepal, this corresponds to 1993–2001 (pre-acceleration) and 2017–23 (post-acceleration). For Pakistan, this corresponds to 1987–2001 (pre-acceleration) and 2002–23 (acceleration). Annex tables SL2.7A and B show the average macroeconomic outcomes in the two periods.

ANNEX TABLE SL2.A1 Summary of difference in foreign exchange-generating inflows between club with highest macroeconomic outcome and club with lowest outcome

Indicators	Remittances	ODA	Commodity	FDI	Portfolio
Exports (percent of GDP)	Lower	Lower	Higher	Higher	Higher
Imports (percent of GDP)	Higher	Higher	Higher	Higher	Higher
Total consumption (percent of GDP)	Higher	Higher	Lower	Lower	
Total investment (percent of GDP)	Lower	Higher	Higher	Higher	
Total consumption to investment	Higher	Higher	Lower		Higher
Private consumption (percent of GDP)	Higher	Higher	Lower	Lower	Lower
Private investment (percent of GDP)	Lower	Lower	Higher		
Private consumption to investment	Higher	Higher	Lower		Higher
Agricultural employment (percent of working-age population)	Higher	Higher	Lower	Lower	Lower
Non-agricultural employment (percent of working-age population)	Lower	Lower			Higher
Real GDP per capita (log)	Higher	Lower	Higher	Higher	Higher

Source: World Bank.
Note: "Higher" ("Lower") means that the convergence club with the highest macroeconomic outcome has significantly higher (lower) foreign exchange inflows than the convergence club with the lowest macroeconomic outcome, at the 90 percent confidence level. Missing entries indicate statistically insignificant differences.

ANNEX TABLE SL2.A2A Differences in remittances across first and last clubs defined by macroeconomic outcomes

Indicators	First Club	Last Club	Difference	Standard error	P-value
Exports (percent of GDP)	3.7	6.8	-3.1***	1.0	0.0023
Imports (percent of GDP)	4.5	2.5	1.9***	0.2	0.0000
Total consumption (percent of GDP)	4.6	1.6	3.1***	0.2	0.0000
Total investment (percent of GDP)	3.5	6.3	-2.8***	0.5	0.0000
Total consumption to investment	3.9	0.1	3.8***	0.1	0.0000
Private consumption (percent of GDP)	8.5	2.5	6.0***	0.5	0.0000
Private investment (percent of GDP)	2.9	5.9	-3.0***	0.5	0.0000
Private consumption to investment	3.5	2.6	0.9***	0.3	0.0003
Agricultural employment (percent of working-age population)	2.8	1.2	1.6***	0.3	0.0000
Non-agricultural employment (percent of working-age population)	3.7	6.7	-3.0***	0.4	0.0000
Real GDP per capita (log)	3.6	0.6	3.0***	0.2	0.0000

Source: World Bank.
Note: The table shows the differences in average remittance inflows between countries in the first and last convergence club for each indicator. The sample includes up to 154 EMDEs from 1990 to 2022. *** represents significant at the 1 percent significance level; ** represents significant at the 5 percent significance level; * represents significant at the 10 percent significance level. The first club is the convergence club with the strongest outcome for the variable listed in each row, while the last club is the one with the weakest outcome.

ANNEX TABLE SL2.A2B Differences in ODA across first and last clubs defined by macroeconomic outcomes

(Percent of GDP)

Indicators	First Club	Last Club	Difference	Standard error	P-value
Exports (percent of GDP)	4.9	10.5	-5.6***	1.0	0.0000
Imports (percent of GDP)	5.9	3.4	2.5***	0.3	0.0000
Total consumption (percent of GDP)	5.2	2.4	2.7***	0.2	0.0000
Total investment (percent of GDP)	5.1	2.9	2.2***	0.2	0.0000
Total consumption to investment	4.6	0.2	4.4***	0.1	0.0000
Private consumption (percent of GDP)	6.9	4.5	2.4***	0.3	0.0000
Private investment (percent of GDP)	4.6	6.2	-1.5*	0.8	0.0540
Private consumption to investment	5.3	3.9	1.4***	0.4	0.0002
Agricultural employment (percent of working-age population)	10.8	8.5	2.3**	1.1	0.0418
Non-agricultural employment (percent of working-age population)	4.7	7.0	-2.2***	0.3	0.0000
Real GDP per capita (log)	4.2	19.2	-15.0***	1.1	0.0000

Source: World Bank.
Note: The table shows the differences in average ODA between countries in the first and last convergence club for each indicator. The sample includes up to 154 EMDEs from 1990 to 2022. *** represents significant at the 1 percent significance level; ** represents significant at the 5 percent significance level; * represents significant at the 10 percent significance level. The first club is the convergence club with the strongest outcome for the variable listed in each row, while the last club is the one with the weakest outcome.

ANNEX TABLE SL2.A2C Differences in commodity exports across first and last clubs defined by macroeconomic outcomes

(Percent of GDP)

Indicators	First Club	Last Club	Difference	Standard error	P-value
Exports (percent of GDP)	14.8	5.2	9.6***	0.7	0.0000
Imports (percent of GDP)	13.8	12.4	1.3**	0.5	0.0131
Total consumption (percent of GDP)	10.9	17.5	-6.7***	0.6	0.0000
Total investment (percent of GDP)	13.6	8.8	4.9***	0.6	0.0000
Total consumption to investment	12.3	25.8	-13.4***	3.8	0.0008
Private consumption (percent of GDP)	9.4	16.8	-7.5***	0.5	0.0000
Private investment (percent of GDP)	12.1	7.3	4.8***	0.7	0.0000
Private consumption to investment	11.1	14.2	-3.1***	0.8	0.0002
Agricultural employment (percent of working-age population)	11.8	50.0	-38.2***	2.1	0.0000
Non-agricultural employment (percent of working-age population)	15.5	15.1	0.4	0.5	0.4644
Real GDP per capita (log)	15.8	4.5	11.3***	0.5	0.0000

Source: World Bank.
Note: The table shows the differences in average commodity exports between countries in the first and last convergence club for each indicator. The sample includes up to 154 EMDEs from 1990 to 2022. *** represents significant at the 1 percent significance level; ** represents significant at the 5 percent significance level; * represents significant at the 10 percent significance level. The first club is the convergence club with the strongest outcome for the variable listed in each row, while the last club is the one with the weakest outcome.

ANNEX TABLE SL2.A2D Differences in FDI across first and last clubs defined by macroeconomic outcomes

(Percent of GDP)

Indicators	First Club	Last Club	Difference	Standard error	P-value
Exports (percent of GDP)	3.6	1.2	2.4***	0.2	0.0000
Imports (percent of GDP)	3.5	2.0	1.5***	0.1	0.0000
Total consumption (percent of GDP)	2.9	3.5	-0.6***	0.2	0.0098
Total investment (percent of GDP)	3.2	2.6	0.5**	0.2	0.0295
Total consumption to investment	3.2	3.6	-0.4	0.4	0.3904
Private consumption (percent of GDP)	2.7	3.4	-0.7***	0.2	0.0000
Private investment (percent of GDP)	2.8	2.9	-0.1	0.3	0.7917
Private consumption to investment	2.8	2.7	0.2	0.3	0.5662
Agricultural employment (percent of working-age population)	3.3	5.0	-1.7***	0.6	0.0061
Non-agricultural employment (percent of working-age population)	3.8	3.9	-0.1	0.3	0.6854
Real GDP per capita (log)	4.5	0.7	3.8***	0.2	0.0000

Source: World Bank.
Note: The table shows the differences in average FDI between countries in the first and last convergence club for each indicator. The sample includes up to 154 EMDEs from 1990 to 2022. *** represents significant at the 1 percent significance level; ** represents significant at the 5 percent significance level; * represents significant at the 10 percent significance level. The first club is the convergence club with the strongest outcome for the variable listed in each row, while the last club is the one with the weakest outcome.

ANNEX TABLE SL2.A2E Differences in portfolio investment inflows across first and last clubs defined by macroeconomic outcomes

(Percent of GDP)

Indicators	First Club	Last Club	Difference	Standard error	P-value
Exports (percent of GDP)	0.8	0.0	0.7***	0.1	0.0000
Imports (percent of GDP)	0.8	0.5	0.3**	0.1	0.0130
Total consumption (percent of GDP)	0.8	0.6	0.2	0.1	0.2156
Total investment (percent of GDP)	0.7	0.4	0.3	0.2	0.1908
Total consumption to investment	0.7	0.4	0.3**	0.1	0.0273
Private consumption (percent of GDP)	0.5	0.9	-0.4***	0.1	0.0021
Private investment (percent of GDP)	1.1	0.5	0.5	0.3	0.1004
Private consumption to investment	1.1	0.4	0.8**	0.3	0.0236
Agricultural employment (percent of working-age population)	0.3	2.8	-2.6***	0.7	0.0004
Non-agricultural employment (percent of working-age population)	0.9	0.4	0.5***	0.1	0.0000
Real GDP per capita (log)	1.0	0.1	0.9***	0.1	0.0000

Source: World Bank.
Note: The table shows the differences between average portfolio inflows between countries in the first and last convergence club of each indicator. The sample includes up to 154 EMDEs, 1990-2022. *** represents significant at the 1 percent significance level; ** represents significant at the 5 percent significance level; * represents significant at the 10 percent significance level. First club is the convergence club with the strongest outcome for the variable listed in each row, last club is the one with weakest outcome.

ANNEX TABLE SL2.A3 Robustness test: Differences in average remittances-to-GDP ratio of countries moving convergence clubs between 1990–2005 and 2006–22

(Percent of GDP)

Indicators	Not moving to top club	Moving to top club	Difference	Standard error	P-value
Exports (% of GDP)	5.6	4.6	-0.9**	0.4	0.0170
Imports (% of GDP)	4.6	2.9	-1.7***	0.4	0.0000
Total consumption (percent of GDP)	2.8	6.2	3.4***	0.2	0.0000
Total investment (percent of GDP)	4.6	6.0	1.5***	0.3	0.0000
Total consumption to investment	5.1	5.7	0.6	0.4	0.1046
Private consumption (percent of GDP)	2.8	4.1	1.2***	0.3	0.0002
Private investment (percent of GDP)	5.9	3.8	-2.1***	0.3	0.0000
Private consumption to investment	4.4	7.1	2.7***	0.6	0.0000
Agricultural employment (percent of working-age population)	5.4	4.3	-1.1***	0.4	0.0089
Non-agricultural employment (percent of working-age population)	5.9	6.1	0.2	0.4	0.5603

Source: World Bank.
Note: This table compares the remittances-to-GDP ratio in 2005-2022 period between countries that move to the top convergence club in the second half of the sample period (1990-2022) relative to the first half of the sample period. Countries that remain in the first club in both sample period are excluded. The convergence club is identified using the Phillips and Sul (2009) methodology. Sample includes 154 EMDEs, from 1990 to 2022.

ANNEX TABLE SL2.A4 Robustness test: Differences in remittances across first and last clubs defined by macroeconomic outcomes (alternative identification of clubs)

(Percent of GDP)

Indicators	First Club	Last Club	Difference	Standard error	P-value
Exports (percent of GDP)	3.7	6.8	-3.1***	1.0	0.0023
Imports (percent of GDP)	4.5	2.2	2.3***	0.2	0.0000
Total consumption (percent of GDP)	4.6	1.6	3.1***	0.2	0.0000
Total consumption to investment	4.3	0.1	4.2***	0.1	0.0000
Private consumption (percent of GDP)	8.5	2.5	6.0***	0.5	0.0000
Private investment (percent of GDP)	2.9	5.9	-3.0***	0.5	0.0000
Private consumption to investment	3.4	1.1	2.4***	0.2	0.0000
Agricultural employment (percent of working-age population)	2.8	1.2	1.6***	0.3	0.0000
Non-agricultural employment (percent of working-age population)	3.7	6.7	-3.0***	0.4	0.0000
Real GDP per capita (log)	3.6	0.6	3.0***	0.2	0.0000

Source: World Bank.
Note: The table shows the differences between average remittance inflows between countries in the first and last convergence club for each indicator. The sample includes up to 154 EMDEs from 1990 to 2022. *** represents significant at the 1 percent significance level; ** represents significant at the 5 percent significance level; * represents significant at the 10 percent significance level. The result for total investment is not shown because it converges to one club only. The convergence club is based on the Philips and Sul (2009) approach using the modification suggested by Schnurbus, Haupt, and Meier (2017). The first club is the convergence club with the strongest outcome for the variable listed in each row, while the last club is the one with the weakest outcome.

ANNEX TABLE SL2.A5 Robustness test: Summary of difference in foreign exchange-generating inflows between club with highest macroeconomic outcome and club with lowest outcome (alternative identification of clubs)

Indicators	Remittances	ODA	Commodity	FDI	Portfolio
Exports (percent of GDP)	Lower	Lower	Higher	Higher	Higher
Imports (percent of GDP)	Higher	Higher	Higher	Higher	Higher
Total consumption (percent of GDP)	Higher	Higher	Lower	Lower	
Total consumption to investment	Higher	Higher	Lower		Higher
Private consumption (percent of GDP)	Higher	Higher	Lower	Lower	Lower
Private investment (percent of GDP)	Lower	Lower	Higher		
Private consumption to investment	Higher	Higher	Lower	Lower	
Agricultural employment (percent of working-age population)	Higher	Higher	Lower	Lower	Lower
Non-agricultural employment (percent of working-age population)	Lower	Lower			Higher
Real GDP per capita (log)	Higher	Lower	Higher	Higher	Higher

Source: World Bank.
Note: "Higher" ("Lower") means that the convergence club with the highest macroeconomic outcome has significantly higher (lower) foreign exchange inflows than the convergence club with the lowest macroeconomic outcome, at the 90 percent confidence level. Missing entries indicate statistically insignificant differences. The result for total investment is not shown because it converges to only one club. The convergence club is based on the Philips and Sul (2009) approach using the modification suggested by Schnurbus, Haupt, and Meier (2017). The underlying estimates are available from the authors upon request.

ANNEX TABLE SL2.A6 Robustness test: Summary of difference in foreign exchange-generating inflows between club with highest macroeconomic outcome and club with lowest outcome (controlling for per capita GDP)

Indicators	Remittances	ODA	Commodity	FDI	Portfolio
Exports (percent of GDP)			Higher	Higher	Higher
Imports (percent of GDP)	Higher	Higher		Higher	
Total consumption (percent of GDP)	Higher	Higher	Lower		
Total investment (percent of GDP)		Higher	Higher		
Total consumption to investment					
Private consumption (percent of GDP)	Higher	Higher	Lower	Lower	Lower
Private investment (percent of GDP)					
Private consumption to investment					Higher
Agricultural employment (percent of working-age population)			Lower	Lower	
Non-agricultural employment (percent of working-age population)	Lower	Lower			Higher
Real GDP per capita (log)	Higher	Lower	Higher	Higher	Higher

Source: World Bank.
Note: "Higher" ("Lower") means that the convergence club with the highest macroeconomic outcome has significantly higher (lower) foreign exchange inflows than the convergence club with the lowest macroeconomic outcome, at the 90 percent confidence level. Missing entries indicate statistically insignificant differences. The comparisons are based on the test for statistically significant differences between the coefficient estimates on dummy variables for each convergence club, from a random effects panel regression of remittances in percent of GDP on dummies for each club, year fixed effects, and initial per capita GDP. The underlying estimates are available from the authors upon request.

ANNEX TABLE SL2.A7A Nepal: Comparison of structural indicators between pre-acceleration (1993–2001) and post-acceleration (2017–23) period

Indicators	Mean (Pre-accel.)	Mean (Post-accel.)	T-statistics	P-value
Exports (percent of GDP)	16.2	7.0	4.1	0.0003
Imports (percent of GDP)	26.0	38.3	-4.8	0.0000
Total consumption (percent of GDP)	79.6	82.0	-1.8	0.0781
Total investment (percent of GDP)	19.3	30.1	-11.3	0.0000
Total consumption to investment	4.2	2.8	6.3	0.0000
Agricultural employment (percent of working-age population)	63.6	45.9	14.5	0.0000
Non-agricultural employment (percent of working-age population)	20.2	30.0	-12.6	0.0000

Source: World Bank.
Note: The table shows the mean of structural indicators before and after the acceleration. The null hypothesis is that the difference between the periods before and after the acceleration is zero. Data for private investment are only available from 2011 and therefore excluded from this table.

ANNEX TABLE SL2.A7B **Pakistan: Comparison of structural indicators between pre-acceleration (1987–2001) and acceleration (2002–23) periods**

Indicators	Mean (Pre-accel.)	Mean (Acc.)	T-statistics	P-value
Exports (percent of GDP)	15.0	11.0	6.4	0.0000
Imports (percent of GDP)	18.7	18.1	0.7	0.5172
Total consumption (percent of GDP)	72.7	80.8	-9.5	0.0000
Total investment (percent of GDP)	16.7	14.1	5.6	0.0000
Total consumption to investment	4.4	5.8	-7.3	0.0000
Private consumption (percent of GDP)	73.6	80.8	-8.9	0.0000
Private investment (percent of GDP)	12.1	11.0	2.5	0.0178
Private consumption to investment	6.1	7.6	-5.2	0.0000
Agricultural employment (percent of working-age population)	20.8	19.5	2.3	0.0288
Non-agricultural employment (percent of working-age population)	24.0	27.6	-7.5	0.0000

Source: World Bank.
Note: The table shows the mean of structural indicators before and during the acceleration. The null hypothesis is that the difference between the period before and during the acceleration is zero.

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