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NOTES

REGIONAL SPILLOVERS IN SUB-SAHARAN AFRICA

Exploring Different Channels

Francisco Arizala, Matthieu Bellon, Margaux MacDonald,
Montfort Mlachila, and Mustafa Yenice

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Montfort Mlachila, and Mustafa Yenice**

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CONTENTS

Abstract	1
Introduction and Summary	1
Regional Trade Links Gaining Strength	4
Intraregional Trade Links are Growing	4
Global Comparisons	5
Banking Interdependence Becoming More Subregional	16
Presence of Foreign Banks Headquartered in Sub-Saharan Africa	16
African Bank Behavior and Trends in Correspondent Banking Relationships	20
The Dominant Role of South Africa Sovereign Spread Spillovers	21
Cross-Country Co-movement and Its Drivers	21
Estimating the Impact of South Africa	22
The Changing Pattern of Remittance Flows	22
The Foreign Direct Investment Channel—South Africa Rules the Roost	29
The Fiscal Channel—The Role of Unintended Consequences	34
Importance of Customs Unions	34
Unintended Spillovers from Nigeria's Fuel Pricing Policies to Its Neighbors	36
The Rising Socioeconomic Impact of Forced Migration	38
Concluding Remarks	40
Appendix	41
References	43
Boxes	
Box 1. Gravity Equation Estimation for 2010–16 Trade Flows	10
Box 2. GDP Growth Elasticities to the Growth of Trading Partners	13
Box 3. Sovereign Yield Spread Spillovers	23
Box 4. Gravity Equation Estimation for 2010–15 Remittance Flows	27
Box 5. Spillover Effects from Countries Sending Remittances	31
Box 6. South African Investment in Sub-Saharan Africa	33
Box 7. SACU Revenue-Sharing Formula	35
Figures	
Figure 1. Sub-Saharan Africa: Trade, Banking, and Remittance Channels	2
Figure 2. Sub-Saharan Africa: Intraregional Trade, 1980–2016	4
Figure 3. Sub-Saharan Africa: Intraregional Trade, Percent of GDP, 1980–2016	4

Figure 4. Intraregional Exports by Region, 2016	5
Figure 5. Sub-Saharan Africa: Intraregional Exports, 2016	6
Figure 6. Sub-Saharan Africa: Intraregional Imports, 2016	6
Figure 7. Sub-Saharan Africa: Share of Intraregional Imports, 2016	7
Figure 8. Major Intraregional Trade Links	7
Figure 9. Countries with Substantial Trading Relationships from the Perspective of the Exporter	8
Figure 10. Major Intraregional Trade Relationships	8
Figure 11. Sub-Saharan Africa: Subregional Trade, 2016	9
Figure 12. Sub-Saharan Africa: Intraregional Trade by Subregions, 2016	9
Figure 13. Sub-Saharan Africa: Intraregional Exports, by Country Groups	12
Figure 14. Sub-Saharan Africa: Exports to the Rest of the World, by Country Groups	12
Figure 15. PAB and Subregional Bank Presence in SSA, 2007–16	16
Figure 16. Sub-Saharan African PABs and Subregional Banks: Home and Host Countries	17
Figure 17. Systemic Foreign Owned PAB and Subregional Banks, 2007–16	18
Figure 18. Sub-Saharan Africa: Real, Financial, and Cross-Border Links	19
Figure 19. Bank Deposits in PABs and Subregional Banks, 2007–16	19
Figure 20. Sub-Saharan Africa: Sovereign Spread Correlations, 2012–16	21
Figure 21. Sub-Saharan Africa: External Flows and Remittances	25
Figure 22. Remittance Inflows in Emerging and Developing Countries 2010–15	25
Figure 23. Sub-Saharan Africa: Remittance Outflows and Inflows, 2010–15	26
Figure 24. Sub-Saharan Africa: Major Remittance Corridors, 2010–15	27
Figure 25. Percentage Cost of Sending US\$200 across Region and over Time	29
Figure 26. Total Average Cost by Remittance Sending Provider	30
Figure 27. Selected Sub-Saharan African Countries: Intraregional Foreign Direct Investment Stock Positions	30
Figure 28. SACU Revenues and Selected Macroeconomic Indicators	36
Figure 29. Differentials between Nigerian Gasoline Prices and Those of Benin and Togo	37
Figure 30. Sub-Saharan Africa: Within Migration, Refugees	38
Figure 31. Sub-Saharan Africa and Selected Countries: Internally Displaced Persons	38
Figure 32. Selected Sub-Saharan African Countries: Civil Unrest and Terroris	39
Box Figure 3.1. South African News and Sovereign Spreads	24
Box Figure 6.1. South Africa: Outward FDI in Sub-Saharan Africa	34

Tables

Table 1. Loan-to-Deposit Ratios, Largest Sub-Saharan African Countries, 2015	20
Table 2. Fuel Prices Correlation in Togo, Benin and Nigeria, 2008–17	37
Table 1.1. Determinants of Trade Flows	11
Table 2.1. GDP Growth Elasticities to the Growth of Trading Partners	14
Table 2.2. Sub-Saharan Africa and Other Developing Countries: GDP Growth Elasticities to the Growth of Trading Partners	15
Table 3.1. Impact of Global, Regional, and Domestic Factors on Sovereign Spreads, 2012–16	24
Table 4.1. Determinants of Average Remittances Flows	28
Table 5.1. Spillover Effects from Countries Sending Remittances	32
Table 6.1. South Africa: Major Multinationals	34
Appendix Table 1. Sub-Saharan Africa: List of Country Abbreviations	41
Appendix Table 2. Sub-Saharan Africa: Member Countries of Groupings	41
Appendix Table 3. Sub-Saharan Africa: Member Countries of Regional Groupings	42

REGIONAL SPILLOVERS IN SUB-SAHARAN AFRICA: EXPLORING DIFFERENT CHANNELS

Abstract

After close to two decades of strong economic activity, overall growth in sub-Saharan Africa decelerated markedly in 2015–16 as the largest economies experienced negative or flat growth. Regional growth started recovering in 2017, but the question remains of how trends in the economies stuck in low gear will spill over to the countries that have maintained robust growth. This note illuminates the discussion by identifying growth spillover channels. The focus is on trade, banking, financial, remittance, investment, fiscal, and security channels, which are the most prominent and most likely to transmit growth trends across borders. In addition to bringing together findings from a broad array of existing research, the note identifies countries that are the most likely sources of regional spillovers and those that are most likely to be impacted, and provides estimates for the size of these channels. It finds that intraregional trade and remittance flows are an important channel for growth spillovers, while banking channels are less important but will remain a risk going forward. Finally, the note documents other important spillover channels through financial markets contagion, revenue-sharing arrangements in fiscal unions, commodity-pricing policies, corporate investment, and forced migration. The main takeaway is that the level of interdependence among sub-Saharan countries is higher than is generally assumed. Consequently, there is a need for additional emphasis on regional surveillance and spillover analysis, along with traditional bilateral surveillance.

Introduction and Summary

After close to two decades of strong economic activity, overall growth in sub-Saharan Africa decelerated markedly in 2015–16, to its lowest level in more than 20 years at 1.4 percent. However, this average masked substantial heterogeneity across the region. While the largest economies (Nigeria and South Africa) experienced negative or flat growth, a third of the countries in the region continued to grow at 5 percent or more during the period. As growth has begun to recover since 2017 on the back of a more favorable external environment, the question remains: to what extent do growth trends in the largest economies spill over to the rest of sub-Saharan Africa? In particular, will trends in the economies stuck in low gear spill over to countries that have maintained robust growth?

This note focuses on identifying the channels and impacts of intraregional spillovers in sub-Saharan Africa. The note goes beyond existing studies that rely on aggregate growth data and that have typically

failed to show large spillovers across the region. It also assesses a variety of spillover channels, whose importance varies across countries, reflecting the heterogeneity of economic structures in sub-Saharan Africa.

The note covers well-known channels as well as those that have received less attention in the literature. It does this by using several methodologies and drawing on studies that have identified transmission channels and mechanisms, and by breaking new ground empirically in areas in which the existing literature is silent. In all cases, the note systematically updates previously known stylized facts and empirical estimates. It identifies countries that are likely to be the origin of economic spillovers and countries more likely to be at the receiving end, provides new empirical estimates of the size of various spillover channels, and documents new channels of transmission not previously identified in the literature (Figure 1).

Regional trade links are steadily gaining strength. Countries that absorb most intraregional exports and hence have the highest potential to generate regional spillovers are identified, as well as countries that are more exposed to spillovers from other countries in the region. The note also discusses the following findings:

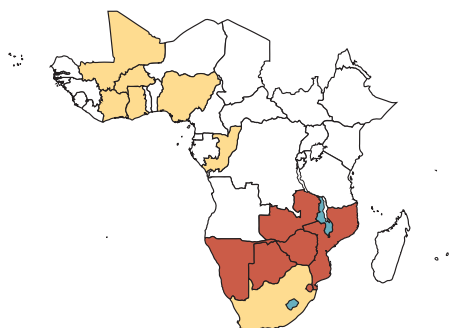
- Intraregional trade has steadily increased in intensity over time. It represented 6 percent of total exports

The authors would like to thank Anne-Marie Gulde-Wolf for her overall guidance of the project, as well as the Spillover Task Force, Céline Allard, Jesus Gonzalez-Garcia, Miguel Pereira Mendes, and several IMF colleagues for very helpful comments and suggestions. Natasha Mingos provided excellent editorial assistance, Joe Procopio edited the manuscript, and Heidi Grauel provided layout.

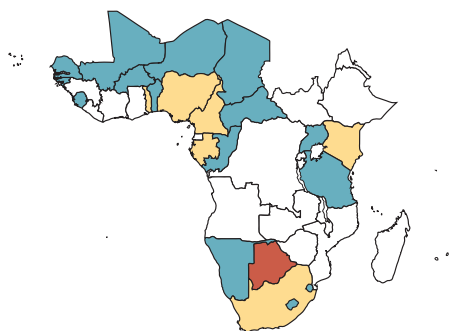
Figure 1. Sub-Saharan Africa: Trade, Banking, and Remittance Channels

- More likely to generate spillovers
- More likely to suffer from spillovers
- More likely to generate spillovers and suffer from spillovers

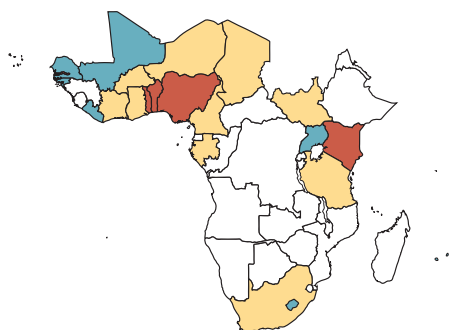
1. Trade Channel



2. Banking Channel



3. Remittances Channel



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

(1 percent of GDP) in 1980 before taking off in the early 1990s and eventually reaching 20 percent (4 percent of GDP) in 2016.

- The key players in the total demand for intra-regional exports (that is, the countries with the potential to generate the largest regional spillovers) are highly concentrated. Ten countries account for 65 percent of total regional demand.

- Some countries are highly exposed to intraregional demand. Exports to the top 10 destinations represent between 5 percent and 10 percent of source-country GDP.
- Subregional trade accounts for most of sub-Saharan African regional trade. Southern Africa Customs Union (SACU) subregional trade alone represents half of total sub-Saharan Africa intraregional trade. Moreover, in the cases of the Southern Africa Development Community (SADC) and the SACU, subregional trade represents more than 80 percent of their member countries' intraregional trade.
- Econometric analysis shows that bilateral trade is more likely to be hindered by distance and socio-cultural differences in sub-Saharan Africa than in the rest of the world, which explains why most regional trade occurs within subregions. Moreover, econometric estimates suggest that about half of the growth in regional trade over 1980–2016 stems from subregional trade integration, in particular within the East African Community (EAC) and the SADC.
- The growth of regional trading partners has a significant effect on individual countries' growth, even after controlling for variables capturing co-movement at the global and regional levels. Econometric estimates suggest that a 5 percentage point increase in the export-weighted growth rate of intraregional partners is associated with about a 0.5 percent increase in the average sub-Saharan African country's growth.

Beyond pan-African banks, subregional banks are emerging, and South Africa plays a significant role in determining sovereign debt spreads in sub-Saharan Africa frontier markets. The rising importance of subregional banks is highlighted, and countries with the highest exposure to pan-African banks (PABs) and subregional banks are identified. The note also finds:

- Strong intraregional banking links represent a growing channel of potential spillovers. In terms of market participation, the share of PABs and subregional banking groups in sub-Saharan African financial system is increasing, following a global trend of banking regionalization.
- A few sub-Saharan African countries are identified as being the primary countries of origin of banking spillovers. While there is considerable overlap among the countries that are home to PABs and subregional

banks, the spillover recipient countries are more widely dispersed.

- Growth in countries that are home to PABs and subregional banks is associated with private sector credit growth in the countries in which they operate, which itself has reinforcing effects on growth in those countries.
- There are links from changes in the spread on South African sovereign debt to other sub-Saharan African frontier markets. The global and emerging market financial cycles have a major impact on all issuing sub-Saharan countries, including South Africa, but there is also evidence of specific spillovers from South Africa.

Remittances from within sub-Saharan Africa are becoming relatively more important. The key players in terms of regional remittance outflows (with the potential to generate the largest regional spillovers) are identified, as well as the countries most exposed to remittance spillovers. In further analysis, the note also finds:

- Growth in regional remittances has outpaced the growth of other external sources of financing such as aid, foreign direct investment (FDI), and remittances from the rest of the world.
- Remittance flows are rather concentrated in a few corridors, and in some countries regional remittance inflows represent a substantial share of income. In particular, Côte d'Ivoire and Ghana are important sources for West Africa, and South Africa is an important source for Southern and East Africa.
- Recent reductions in the cost to send money across borders are associated with the development of mobile money and explain part of the observed increase in regional remittances. The cost of sending remittances in sub-Saharan Africa are the highest in the world, implying that there is room for further cost reductions and increases in regional remittances.
- Growth in countries that send remittances is found to be significantly associated with growth in receiving countries. A 5 percent increase in the growth of remittance partners is estimated to raise growth by 0.5 percent, although this is partially outweighed by trading partners' growth spillovers.

South Africa is the dominant source of regional FDI. This note analyzes the corporate sector and discusses the following:

- Firms from South Africa that are searching for diversification opportunities in relatively faster growing regional African markets dominate the landscape.
- The lion's share of investment is in services, trade, and the financial sector.

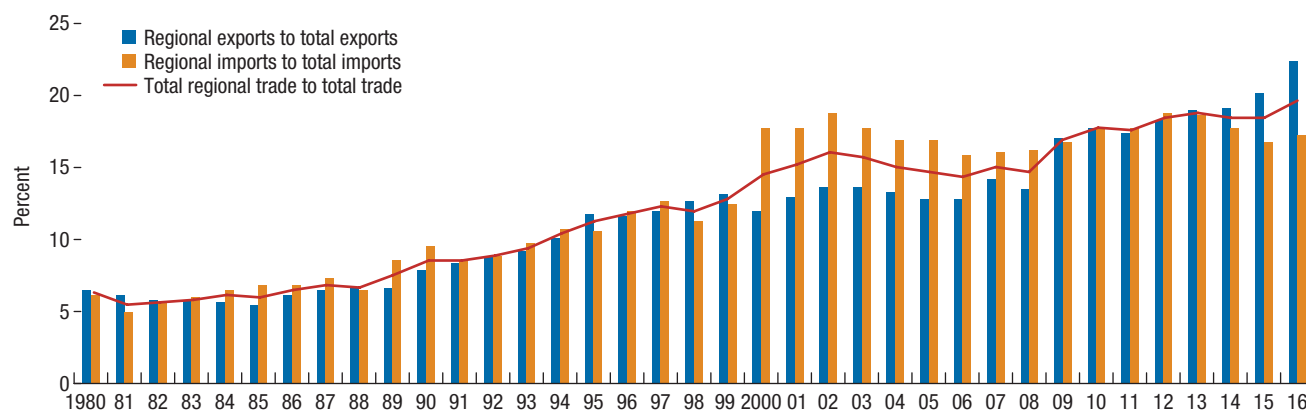
Significant unintended spillovers exist from fiscal policies in the largest countries. The note covers how these fiscal channels develop via large fluctuations of tax receipts in customs unions and via negative externalities arising from different fuel pricing policies in neighboring countries.

- The SACU revenue-sharing formula ties member countries' fiscal revenues to economic developments in South Africa. While providing certainty for current revenue, the formula leads to high levels of volatility over the medium term. As a result, it complicates fiscal management in the smallest countries (Lesotho and Swaziland).
- Subsidized fuel in Nigeria leads to widespread smuggling and to the erosion of the tax base in Benin and Togo. For instance, for Benin, only about 15 percent of the fuel consumed is purchased on the formal (taxed) market.

The socioeconomic costs of forced migration are rising. The note analyzes the socioeconomic impact of forced migration owing to conflict and security concerns.

- The share of forced migration across countries in sub-Saharan Africa declined significantly through most of the 1990s and 2000s, but the pace of decline has slowed or partially reversed.
- Terrorism and civil conflict in the Sahel, the Lake Chad area, the eastern Democratic Republic of the Congo, Somalia, and South Sudan have been the main drivers of involuntary migration.
- The main negative spillovers of forced migration studied here are reduced economic activity, humanitarian damage, and the fiscal costs of hosting displaced persons and fighting terrorism.

The key takeaways from this note are that regional integration in its various forms is more extensive than generally assumed and that subregional integration is moving faster than overall integration. Spillover channels for the largest economies are diverse. For South Africa, spillovers are via trade, banking, and remittance channels, while Nigerian spillovers are mainly through banking, fuel pricing policy, and trade (in the case of

Figure 2. Sub-Saharan Africa: Intra-regional Trade, 1980–2016

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

Note: Calculation based on weighted averages.

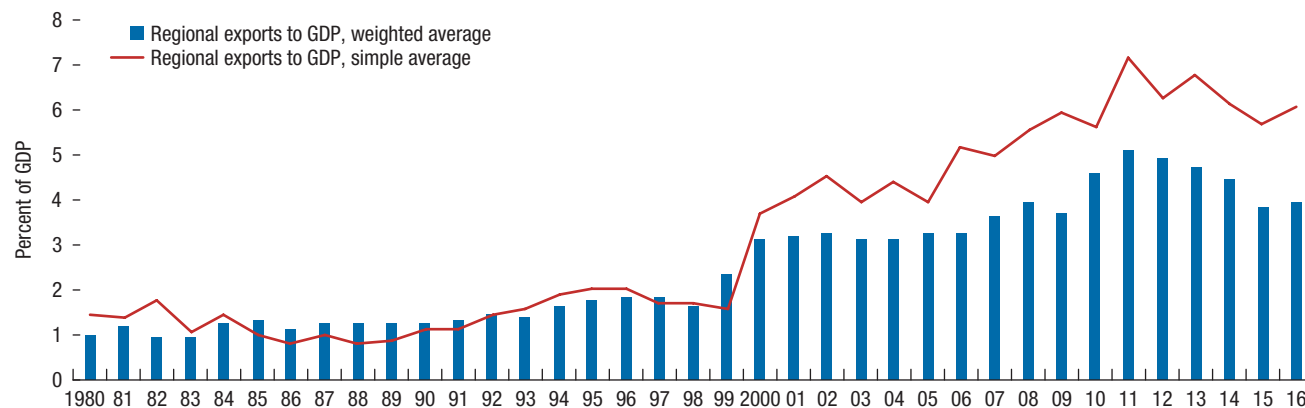
its neighboring countries). Overall, the potential for spillovers—both positive and negative—is higher than previously found in the literature.

Regional Trade Links Gaining Strength

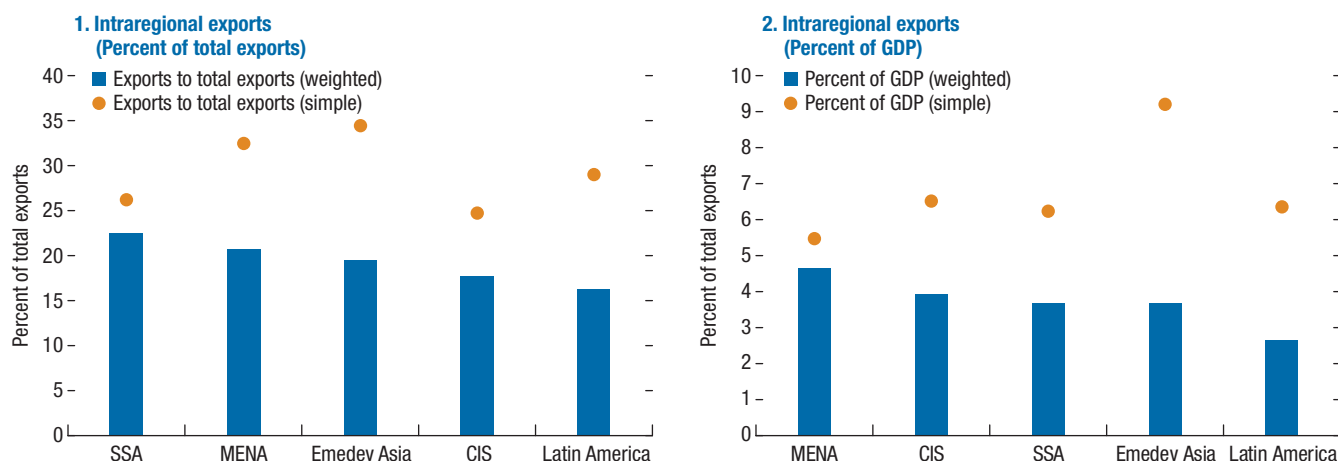
Sub-Saharan African economies have become more open to and integrated with global and intra-regional trade. This trend has been marked by an increase in regional trade as a share of total trade, which has amplified the potential for regional spillovers. Fluctuations in the economic activity of intra-regional trading partners affect the growth of individual countries in the region.

Intra-regional Trade Links Are Growing

The increase in intra-regional trade integration in sub-Saharan Africa over the past 35 years has amplified the potential for intra-regional spillovers. Sub-Saharan African economies have become more open to and integrated with global and intra-regional trade, a trend that is marked by the increase in regional trade as a share of total trade. Regional trade represented 6 percent of total exports in 1980 before taking off in the early 1990s and eventually reaching 20 percent in 2016 (Figure 2). These increases in regional trade have been significant relative to the size of sub-Saharan African economies; they have been faster for small countries in the region, as reflected by the faster growth in the simple average level of trade integration (Figure 3).

Figure 3. Sub-Saharan Africa: Intra-regional Trade, Percent of GDP, 1980–2016

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

Figure 4. Intraregional Exports by Region, 2016

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

Note: CIS = Commonwealth of Independent States; EMEDEV = Emerging and Developing economies; MENA = Middle East and North Africa. SSA = sub-Saharan Africa.

The increase in global and regional trade integration is the result of global developments but also of a strengthening of institutional and macroeconomic conditions in the region. Part of the increase in global trade can be explained by the twofold increase in the relative price of commodity exports over the period 1995–2013. Another part is explained by volumes of exported commodities, which increased by two and a half times over the same period (Allard and others 2016). In addition to these supporting conditions, the sub-Saharan Africa region has experienced a substantial strengthening of macroeconomic policies and political and economic institutions over the past 20 years, along with an abatement of internal and external conflicts and, in some cases, countries exiting fragility. These elements all contributed to improving the business environment and supported the deepening of regional trade (IMF 2015a). Furthermore, the establishment of regional trade agreements in various subregions has contributed to regional and bilateral reductions in tariffs, which have further supported trade integration (ODI 2010). Compared with advanced economies, intraregional trade remains low and the business environment remains challenging, but the direction has been favorable over time.

Global Comparisons

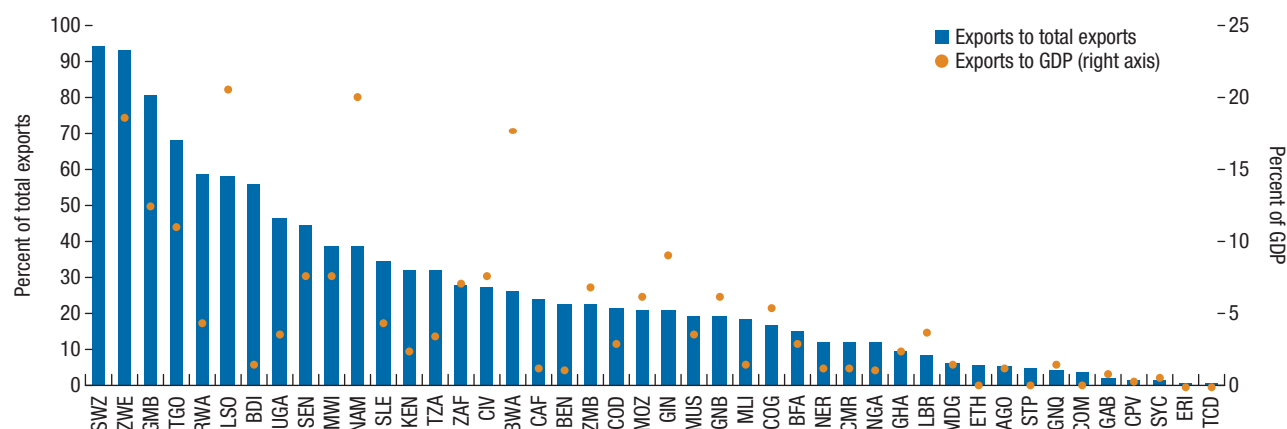
The average level of regional trade integration in sub-Saharan Africa—and thus the potential for

regional spillovers—is broadly in line with levels in other regions (Figure 4.1 and 4.2). Measured as a share of total exports, sub-Saharan Africa exhibits the highest share of intraregional trade integration among emerging and developing regions, followed by the Middle East and North Africa and emerging and developing Asia. Relative to the size of the economy, sub-Saharan Africa is in the middle of the pack.

Countries Most Exposed to Regional Trade Spillovers

Although significant heterogeneity exists among sub-Saharan African countries in terms of intraregional trade integration, many of them are highly connected to other countries in the region (Figures 5 and 6). This is particularly the case within subregions. For example, in several countries in the SACU (such as Swaziland and Lesotho) and in other small and very open economies (such as Togo and The Gambia) intraregional exports represent more than 65 percent of total exports (IMF 2012).¹ Also, export shares can be large relative to the size of the economy. This is the case for Zimbabwe and certain SACU members (Botswana, Lesotho, Namibia), where intraregional exports represent about 20 percent of GDP, and some Western Africa Economic and Monetary Union (WAEMU) countries (Côte d'Ivoire, Guinea, Senegal), where they constitute close to 10 percent of GDP.

¹The SACU comprises Botswana, Lesotho, Namibia, South Africa, and Swaziland.

Figure 5. Sub-Saharan Africa: Intraregional Exports, 2016

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

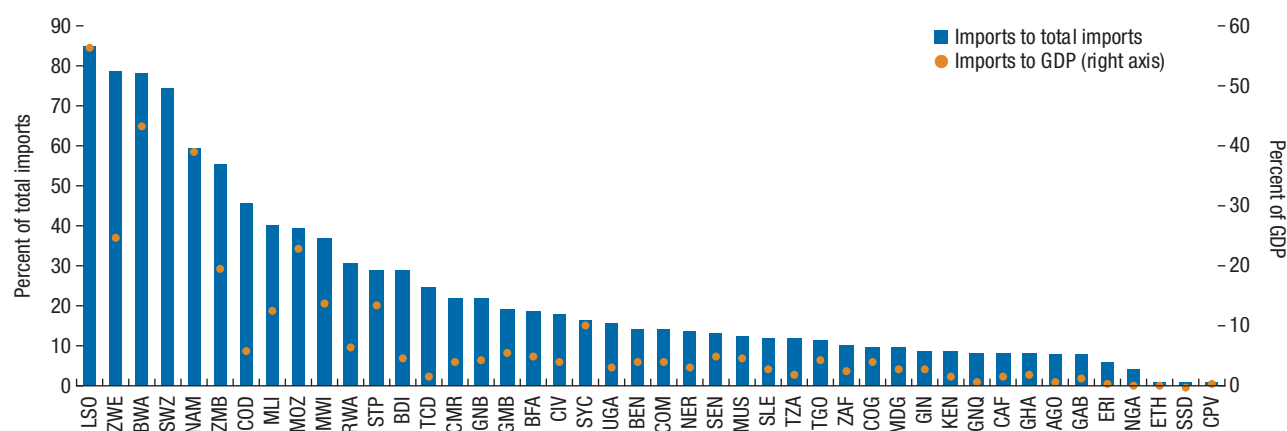
Note: Swaziland's exports-to-GDP ratio is not shown; it was equal to 62 percent in 2016. See page 41 for country abbreviations tables.

Countries More Likely to Generate Regional Trade Spillovers

Regional demand for intraregional exports is concentrated in a very few countries. Ten sub-Saharan countries represent 65 percent of total regional demand for intraregional exports, with South Africa, Botswana, and Namibia accounting for the largest shares of total regional demand, and South Africa alone importing 15 percent of total intraregional exports (Figure 7). These SACU member countries trade significantly among themselves, with exports concentrated mainly in manufactures, food, and machinery, often in the context of regional or global value

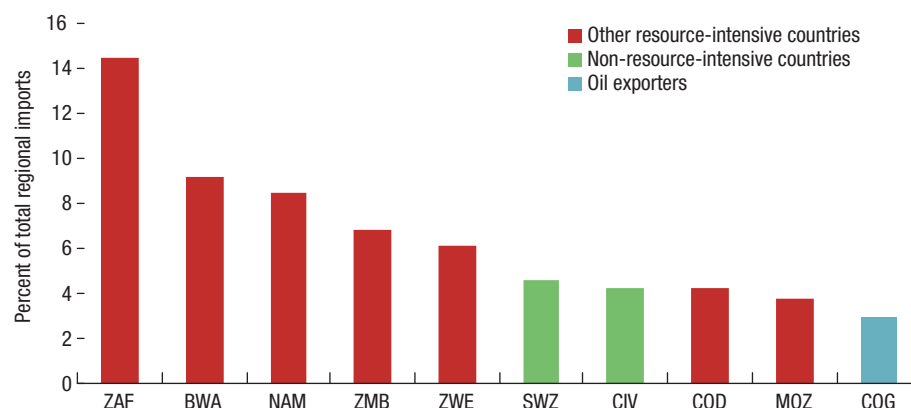
chains and re-exports. In most of the top 10 importing countries, intraregional imports primarily consist of manufactures, fuels, and food. An economic deceleration in any of these countries thus has the potential to weaken demand for intraregional exports and may be a source of wider negative spillovers.

Imports absorbed by the top 10 regional importers of sub-Saharan African intraregional trade represent significant shares of the economies of the exporting countries, setting the stage for potentially large spillovers. The strength of this channel is commensurate with the importance of the importer's demand relative to the size of the exporting country's economy. For

Figure 6. Sub-Saharan Africa: Intraregional Imports, 2016

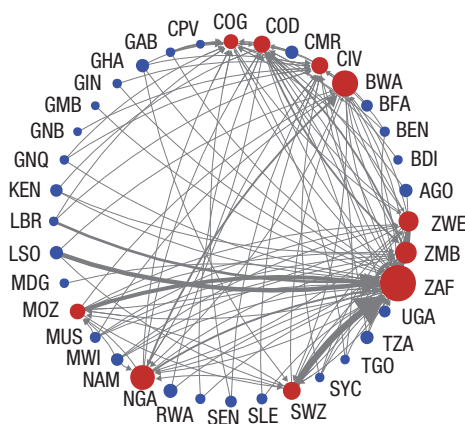
Sources: IMF, Direction of Trade Statistics database, World Economic Outlook database; and IMF staff calculations.

Note: Swaziland's imports-to-GDP ratio is not shown; it was equal to 81 percent in 2016. See page 41 for country abbreviations table.

Figure 7. Sub-Saharan Africa: Share of Intra-regional Imports, 2016

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

Note: See page 41 for country abbreviations table.

Figure 8. Major Intra-regional Trade Links (Major importers perspective)

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

Note: The thickness of the arrows refers to the size of bilateral exports in percent of GDP of the exporting country. The top 10 destinations are in red; the other countries in blue. See page 41 for country abbreviations table.

instance, South African imports from Swaziland, Lesotho, Zimbabwe, and Mozambique represent between 4 percent and 11 percent of these economies' GDP. Similarly, Zimbabwe's total demand for goods from Zambia, Malawi, and Botswana constitutes between 1 percent and 4 percent of these countries' GDP (Figure 8).

Other countries import non-negligible shares of their neighbors' GDP and can be a substantial source of spillovers at the subregional level. This is the case for Nigeria, Mali, Ghana, and Burkina Faso, which, even though they do not import substantial shares of total

sub-Saharan African intra-regional exports, import more than 1 percent of GDP of their subregional trading partners.² Indeed, for four countries in the region, their exports to Nigeria and Mali represent more than 1 percent of their economy, making them also potential sources of intra-regional spillovers (Figures 9 and 10).³

²Informal trade (not captured by official statistics) between Nigeria and its neighbors may be economically important for the smaller countries (Balami, Ogboru, and Talba 2011).

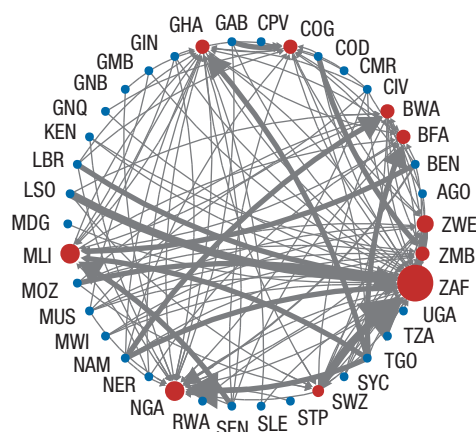
³Similarly, for 10 countries in the region, their exports to South Africa represent more than 1 percent of their GDP.

Figure 9. Countries with Substantial Trading Relationships from the Perspective of the Exporter

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

Note: In the above chart, number of countries for which the country is a destination market representing more than 1 percent of GDP of the sender's economy.

See page 41 for country abbreviations table.

Figure 10. Major Intra-regional Trade Relationships (Exporter's perspective)

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

Note: Blue and red dots indicate exporting and importing countries, respectively. The size of the red dots is proportional to the number of countries for which the country is a destination market representing more than 1 percent of GDP of the exporter's economy. The thickness of the arrows refers to the size of bilateral exports in percent of GDP of the exporting country. See page 41 for country abbreviations table.

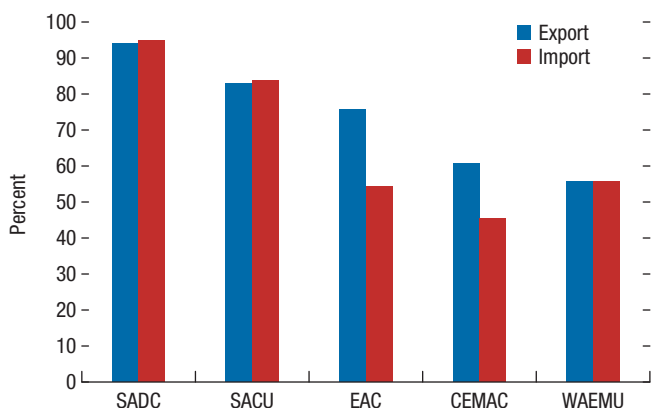
The Role of Subregional Trade Concentration

Trade spillovers are more likely to take place within subregions, as most regional trade is concentrated at the subregional level. In the SADC, the SACU, and the EAC, subregional trade accounts for more than 70 percent of their total trade with sub-Saharan Africa, reflecting the fact that member countries are mostly integrated within themselves rather than with the

rest of the region (Figure 11).⁴ In the Central African Economic and Monetary Community (CEMAC) and the WAEMU regions, the concentration is less pro-

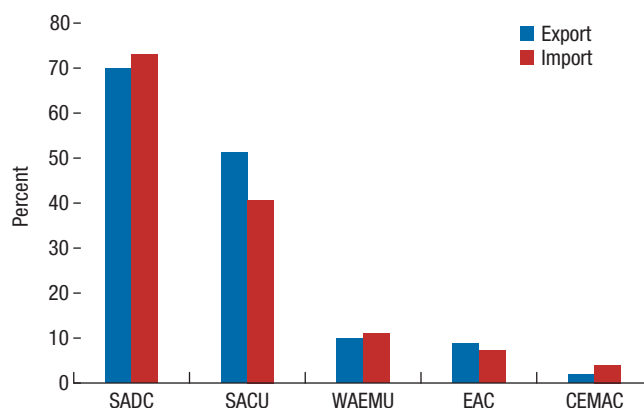
⁴The SADC comprises Angola, Botswana, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe. All SACU member countries are also part of the SADC. The EAC includes Burundi, Kenya, Uganda, Rwanda, South Sudan, and Tanzania.

Figure 11. Sub-Saharan Africa: Subregional Trade, 2016
(Percent of the subregional exports to sub-Saharan Africa)



Sources: IMF, Direction of Trade Statistics database; and IMF staff calculations.
Note: CEMAC = Central African Economic and Monetary Community; EAC = East African Community; SACU = Southern African Customs Union; SADC = Southern African Development Community; WAEMU = West African Economic and Monetary Union.

Figure 12. Sub-Saharan Africa: Intraregional Trade by Subregions, 2016
(Percent of total sub-Saharan Africa trade)



Sources: IMF, Direction of Trade Statistics database; and IMF staff calculations.
Note: CEMAC = Central African Economic and Monetary Community; EAC = East African Community; SACU = Southern African Customs Union; SADC = Southern African Development Community; WAEMU = West African Economic and Monetary Union.

nounced, but subregional trade nonetheless represents half of their intraregional trade. These significant shares of subregional trade point to the importance of considering subregions explicitly when assessing potential spillovers.

In absolute terms, a few subregions account for most of total sub-Saharan Africa intraregional trade. The SADC and the SACU account for more than 70 percent and 50 percent of total sub-Saharan Africa trade, respectively (Figure 12). Other subregions represent a smaller share of total sub-Saharan African intraregional trade, with the WAEMU, EAC, and CEMAC accounting for less than 10 percent each. The overall pattern of high subregional integration reflects not only geographic proximity but also infrastructure constraints and the impact of regional trade agreements and lower nontariff trade barriers within subregions.

Empirical estimates suggest that trade in the region is larger between countries that are culturally and geographically closer and that regional trade growth over the past four decades is mostly explained by subregional integration. A trade gravity equation estimation shows that bilateral trade in the region is greater among countries that are separated by a smaller distance and that share a common currency, language, ethnicity, and colonial heritage. Cross-region comparisons show that distance is a great barrier to trade in sub-Saharan Africa, possibly because of the well-known infrastructure gaps in the region (Allard and others

2016). The results also suggest that subregional trade agreements played a major role in strengthening bilateral trade in the region, in particular for countries in the SADC and the EAC (see Box 1).

The Role of the Economic Structure

Regional trade integration in sub-Saharan Africa and its potential to generate intraregional spillovers varies substantially depending on the natural resource endowment of a country. Non-resource-intensive countries are the most exposed to regional demand, with intraregional exports accounting for 7 percent of GDP and 30 percent of total exports, on average (Figure 13). They are followed closely by non-oil-resource-intensive countries (“other”). In terms of demand concentration, these other resource-intensive countries have the largest share of imports from the region, constituting 30 percent of total imports. Oil-producing countries have distinct trading relationships compared with the other groups and are notably more oriented toward the rest of the world. Exports from oil-producing countries to the rest of the world amount to 25 percent of GDP, while intraregional exports represent only 1.5 percent of GDP (Figures 13 and 14); thus, the latter group is relatively less likely to suffer from intraregional spillovers through the trade channel.

Box 1. Gravity Equation Estimation for 2010–16 Trade Flows

A gravity model of bilateral trade flows over the period 1980–2016 is estimated to study the determinants of regional trade integration. In all specifications, the sample includes annual data from the Direction of Trade Statistics (DOTS) database with all the country pairs in the world that exchanged goods at least once.

The first specification is as follows:

$$\log F_{ijt} = \alpha_i + \phi_j + \theta_t + \beta X_{ijt} + \beta_{xr} xr_{ijt} + \gamma Y_{it} + \delta Z_{jt} + \varepsilon_{ijt}, \quad (1)$$

where F_{ijt} is the logarithm of export values in dollars from country i to country j ; X_{ijt} corresponds to corridor-specific variables, including geographic distance and dummy variables indicating whether the countries share a common official language, share the same ethnic group, share the same colonial origin, share a common official religion, or share a currency; xr_{ijt} corresponds to bilateral exchange rates; and Y_{it} and Z_{jt} , respectively, refer to the logarithms of GDP per capita and population in the origin and destination countries. The specification includes country fixed effects, α_i and ϕ_j , to control for country time-invariant characteristics, as well as time effects, θ_t , to control for all annual shocks common to all countries.

The specification in Table 1.1, column 2 includes country-time fixed effects, γ_{it} and δ_{jt} , to control for all country variable characteristics. The corridor variables X_{ij} in equation (1) are kept but the country-level characteristics (population and GDP) are dropped, as these characteristics are absorbed by the country-time fixed effects. Hence, the results presented in column 2 refer to the specification:

$$\log F_{ijt} = \beta X_{ij} + \gamma_{it} + \delta_{jt} + \varepsilon_{ijt}. \quad (2)$$

Estimation results in the first two columns of Table 1.1 show that distance significantly hampers trade flows across countries. The first column additionally shows that exports increase significantly with both population and GDP per capita of both the origin and destination countries, and are also higher between partners that share a common language, ethnicity, and colonial heritage. Bilateral exchange rates do not have a significant effect on bilateral trade flows.

In Table 1.1, column 3, all countries in the world (including those not in sub-Saharan Africa) are included. The specification is also richer, as interaction variables between measures of distance and a dummy variable for either sub-Saharan Africa origin countries ($I_{i \in SSA} \cdot X_{ij}$) or sub-Saharan Africa destination countries ($I_{j \in SSA} \cdot X_{ij}$) are introduced:

$$\log F_{ijt} = \beta X_{ij} + \theta_o I_{i \in SSA} \cdot X_{ij} + \theta_d I_{j \in SSA} \cdot X_{ij} + \gamma_{it} + \delta_{jt} + \varepsilon_{ijt}. \quad (3)$$

This specification allows us to investigate whether distance plays a specific role for export flows within sub-Saharan Africa. Coefficient estimates θ_o and θ_d of these interaction variables, respectively, reflect the differential effects of distance for sub-Saharan Africa origin and destination countries. Table 1.1, column 3, is composed of three subcolumns; the coefficient estimates θ_o are reported in the second subcolumn while estimates θ_d are reported in the third. The results indicate that distance is a greater hindrance when exporting to sub-Saharan destinations and that having belonged to the same colony is a greater benefit in sub-Saharan Africa. Also, compared with other regions, sub-Saharan African exports are even larger between countries that share a language and a colonial background. Finally, the distance between two sub-Saharan countries deters trade significantly more than between other countries, as shown by a Wald test (p -value of 0.02).

Table 1.1, column 4, explores whether trade integration occurred faster as of 2016 between countries that belonged to the same economic union: the WAEMU, CEMAC, EAC, SADC and SACU (see main text for region definitions). The following specification is estimated:

$$\log F_{ijt} = \alpha_{ij} + \gamma_{it} + \delta_{jt} + \beta (X_{ij} \cdot t) + \phi_1 I_{waemu} \cdot t + \phi_2 I_{cemac} \cdot t + \phi_3 I_{eac} \cdot t + \phi_5 I_{eac} \cdot t + \phi_4 I_{sacu} \cdot t + \varepsilon_{ijt}, \quad (4)$$

where country-time, δ_{jt} and γ_{it} , and country-pair, α_{ij} , fixed effects are included; corridor fixed characteristics are interacted with a time trend, $(X_{ij} \cdot t)$; and memberships to a common subregion are respectively interacted with a time trend.

As shown in column 4, there is statistically significant evidence that integration among members of the EAC and the SADC was particularly successful in fostering trade. This relationship holds even after controlling for developments in individual countries when country-time effects are introduced. Quantitatively, trade among members of the EAC increased by an additional 4 percent per year on average while trade among members of the SADC increased by an additional 2 percent per year. Using these estimates to compute what trade would have been without subregional integration, we find that average annual growth in regional trade would have been about 9 percent instead of 11 percent, thereby translating

Box 1. Gravity Equation Estimation for 2010–16 Trade Flows (continued)

into trade levels that would be half as low as those observed in 2015. In addition, the coefficient on the interaction between distance and time suggests that in sub-Saharan Africa, distance has increasingly become a

barrier, meaning that the infrastructure facilitating trade among economic unions has lagged relative to the development of infrastructure within unions.

Table 1.1. Determinants of Trade Flows

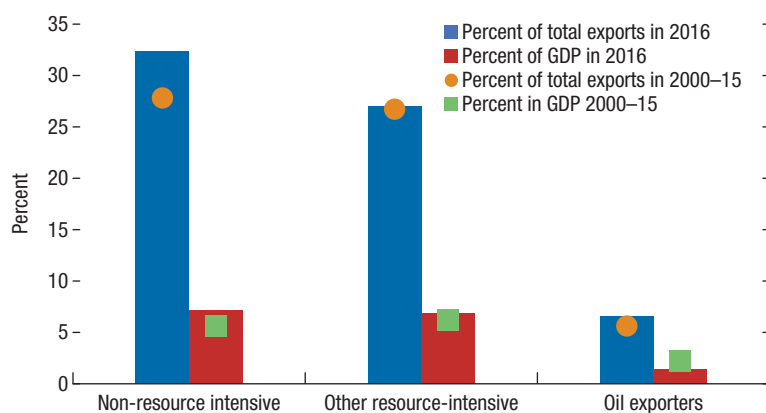
Dependent variable: logarithm of bilateral trade flows

	(1) Country controls	(2) Country FE	(3) Coefficient estimates for			(4) Time trends
			All countries	SSA origin	SSA destination	
Contiguous countries	1.57*** (0.21)	1.53*** (0.21)	0.48*** (0.11)			−0.00 (0.01)
Distance (in log)	−1.60*** (0.09)	−1.60*** (0.09)	−1.60*** (0.04)	0.18 (0.11)	−0.40*** (0.11)	−0.02*** (0.00)
Common language	0.46*** (0.15)	0.45*** (0.14)	0.54*** (0.10)	0.17 (0.14)	−0.11 (0.15)	0.01 (0.01)
Common ethnicity	0.24* (0.14)	0.30** (0.13)	0.21** (0.09)	−0.27** (0.14)	0.21* (0.12)	0.01 (0.01)
Belonged to common colony	1.44*** (0.13)	1.37*** (0.12)	0.81*** (0.11)	1.16*** (0.20)	0.74*** (0.19)	−0.00 (0.01)
Common religion	0.14 (0.14)	0.14 (0.13)	0.25*** (0.06)	−0.01 (0.16)	−0.04 (0.13)	0.00 (0.01)
Common currency	1.22*** (0.31)	1.28*** (0.31)	0.40 (0.29)	0.99** (0.39)		
Origin GDP p.c.	0.49*** (0.06)					
Destination GDP p.c.	0.48*** (0.13)					
Origin population	0.70** (0.30)					
Destination population	2.41*** (0.24)					
Origin/destination FX rate	0.00 (0.01)					
WAEMU trend						0.00 (0.01)
CEMAC trend						0.00 (0.01)
EAC trend						0.04* (0.02)
SADC trend						0.02** (0.01)
SACU trend						0.09 (0.07)
Observations	92,132	95,711		556,476		95,108
R-squared	0.52	0.57		0.73		0.77
Year FE	YES	NO		NO		NO
Country FE	YES	NO		NO		NO
Country-time FE	NO	YES		YES		YES
Country-pair FE	NO	NO		NO		YES

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

Note: In all specifications, the standard errors are clustered at the destination country level to control for possible unobserved correlation within importing countries. CEMAC = Central African Economic and Monetary Community; EAC = East African Community; SACU = Southern African Customs Union; SADC = Southern African Development Community; WAEMU = West African Economic and Monetary Union. Clustered standard errors in parentheses (Destination country) ***p < 0.01, **p < 0.05, *p < 0.1.

Figure 13. Sub-Saharan Africa: Intra-regional Exports, by Country Groups
(Simple average)



Sources: IMF, Direction of Trade Statistics database, World Economic Outlook database; and IMF staff calculations.
Note: See page 41 for country groupings table.

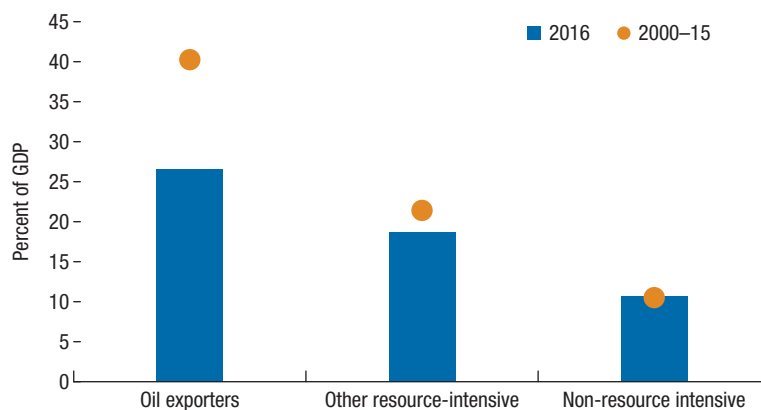
Intra-regional Trade and Growth

Sub-Saharan African countries' growth depends on fluctuations in the economic activity of regional trading partners and global developments. A panel regression model for all sub-Saharan African countries for the period 1980–2016 suggests that a 1 percent-age point increase in the export-weighted growth rate of intra-regional partners is associated with about a 0.11 percent increase in the average sub-Saharan African country's growth (Box 2). These results were obtained after accounting for extraregional factors such as terms of trade movements and demand from trading partners outside the region, including countries such as

China, whose increased market for sub-Saharan African exports has been shown to be an important driver of growth in the region (Chen and Nord 2017).

Consistent with having comparable shares of intra-regional trade, the trade channel spillovers seem to be similar in sub-Saharan Africa and in other emerging and developing economies. Panel regression estimates for countries in the Middle East and North Africa, Latin America, and emerging and developing Asia suggest that sub-Saharan African countries have a slightly lower intra-regional elasticity of growth compared with peers in Latin America and emerging and developing Asia, but a higher one than those estimated for countries in the Middle East and North Africa (Box 2).

Figure 14. Sub-Saharan Africa: Exports to the Rest of the World, by Country Groups
(Simple average)



Sources: IMF, Direction of Trade Statistics database, World Economic Outlook database; and IMF staff calculations.
Note: See page 41 for country groupings table.

Box 2. GDP Growth Elasticities to the Growth of Trading Partners

A panel fixed effect model is estimated to study the elasticity of GDP growth in sub-Saharan African countries to the growth of the trading partners inside and outside the region. The model is specified as follows:

$$\begin{aligned} \text{RealGDPgrowth}_{it} = & \alpha + \gamma_i + \beta_1 \\ & \text{RealGDPgrowth}_{t-1,i} + \beta_2 \text{RealGDPgrowth}_{t-2,i} \\ & + \beta_3 \text{SSAtradingpartnergrowth}_{t,i} + \beta_4 \text{Non-} \\ & \text{SSAtradingpartnergrowth}_{t,i} + \beta_5 X_{it} + e_{it} \end{aligned} \quad (1)$$

where the left-hand variable is the annual rate of growth of real GDP, sub-Saharan African trading partner growth refers to the weighted average rate of growth of the trading partners from sub-Saharan Africa for each country at time t . Non-sub-Saharan Africa trading partner growth corresponds to the weighted average rate of growth of the trading partners from outside the region for each country at time t (Arora and Vamvakidis 2005; Chen and Nord 2017). The weights used in averaging refer to export shares in the previous year. The vector X of controls includes variables capturing regional and global growth dynamics, as measured by the average rate of growth of the region and the world.

The model includes country-specific controls in X : lags of the dependent variable, the rate of investment to GDP, the inflation rate, and the level of trade openness. This allows the coefficient of interest to more clearly identify the effect of the regional trading partners' growth on individual countries, once the average growth co-movements in the continent and in the world are isolated. In addition, the model controls for the occurrence of conflict and war, as captured by the Uppsala Conflict Data Program. As part of the control vector X , variables capturing the external environment are also included: fluctuations in the terms of trade, and the degree of trade openness of the economy and the share of regional exports in total exports. Other controls include a measure of international liquidity as captured by the change in the Fed funds rate, a measure of the monetary policy stance in the United States, the country inflation rate, and the change in the bilateral exchange rate with respect to the US dollar.

As a robustness check, the 10 percent largest economies are excluded from the estimation sample: Angola, Ghana, Kenya, Nigeria, and South Africa (Table 2.1, column 6); an interaction term between countries' openness and their partners' average growth is added (Table 2.1, column 7); and a specification using five-year averages of the data is estimated (Table 2.1,

column 8), as is customary in the growth literature. The latter allows the model to minimize serial correlation, which is likely to be present in annual data. This specification includes the initial level of GDP per capita to capture growth convergence. Country fixed effects, γ_i , are included to control for time-invariant country-specific heterogeneity, and standard errors are clustered at the country level to control for possible unobserved correlation across countries.

The estimation includes all sub-Saharan African countries over the period 1980–2016. The lagged time-varying weights reflect the annual share of exports going to each specific partner as reported in the IMF Direction of Trade Statistics. The baseline specification suggests that a 1 percentage point increase in the export-weighted growth rate of intraregional partners is associated with about a 0.11 percent increase in the average sub-Saharan African country growth rate (Table 2.1, column 1). This estimate is robust across multiple specifications (Table 2.1, column 5). The baseline specification also finds that a 1 percentage point increase in the growth rate of the trading partners outside the region is associated with an increase of 0.34 percent in the growth rate of the average sub-Saharan African country. This coefficient seems to capture other external environment factors, such as the changes in the terms of trade and the degree of openness of the economy, as evidenced by the results in column 2.

These results are robust to the inclusion of other controls that capture structural factors such as investment-to-GDP and population growth, and other monetary controls such as global liquidity, inflation, and exchange rate movements. The regressions results are also robust to implementing a panel generalized method of moments (GMM) estimation to account for the endogeneity in a dynamic-panel context (Table 2.1, column 5). Results are robust to the exclusion of large economies (Table 2.1, column 6). Introducing interaction variables fails to capture heterogeneous effects, as the new variables are insignificant (Table 2.1, column 7). This means that more open economies are not significantly more exposed to spillovers, suggesting that the nature of trade in more open economies prevents them from being more exposed to variation in partners' demand. Using five-year averages to analyze the medium-term determinants of economic growth finds that the growth of the regional trading partners continues to play an important role in individual countries' rate of growth,

Box 2. GDP Growth Elasticities to the Growth of Trading Partners (continued)

Table 2.1. GDP Growth Elasticities to the Growth of Trading Partners
Dependent variable: real GDP growth

	(1) Baseline	(2) Openness controls	(3) Structural controls	(4) Monetary controls	(5) GMM estimation	(6) Excluding 10% largest	(7) Exposure heterogeneity	(8) GMM, 5-year averages
Real GDP growth (t-1)	0.318*** (0.0821)	0.299*** (0.0734)	0.292*** (0.0771)	0.284*** (0.0789)	0.264*** (0.0678)	0.255*** (0.0749)	0.264*** (0.0681)	0.410*** (0.0632)
Real GDP growth (t-2)	-0.0180 (0.0202)	-0.0374 (0.0247)	-0.0452* (0.0244)	-0.0551** (0.0260)	-0.0770* (0.0405)	-0.0736* (0.0413)	-0.0863* (0.0454)	
SSA trading partners' growth	0.113* (0.0636)	0.114* (0.0597)	0.111* (0.0573)	0.120* (0.0605)	0.133** (0.0610)	0.110* (0.0622)	0.184*** (0.0658)	0.0761** (0.0354)
Non-SSA trading partners' growth	0.348* (0.184)	0.265 (0.161)	0.251 (0.161)	0.252 (0.164)	0.334 (0.238)	0.306 (0.238)	-0.0842 (0.249)	0.0118 (0.0437)
SSA average growth	0.288** (0.115)	0.0870 (0.202)	0.124 (0.192)	0.0739 (0.214)	0.0526 (0.280)	0.0124 (0.260)	0.0265 (0.278)	-0.117 (0.268)
World average growth	-0.0391 (0.139)	0.210 (0.201)	0.198 (0.224)	0.221 (0.233)	0.108 (0.255)	0.107 (0.269)	0.0794 (0.235)	4.943*** (1.761)
Conflict year, Uppsala database	-4.548*** (0.900)	-3.722*** (1.047)	-3.527*** (1.029)	-3.810*** (1.081)	-3.913*** (1.287)	-3.119** (1.377)	-3.717*** (1.392)	-4.267 (2.871)
Terms of trade, percent change		0.138*** (0.0457)	0.153*** (0.0529)	0.0936* (0.0470)	0.0881* (0.0485)	0.0928 (0.0594)	0.110* (0.0662)	-0.0361 (0.374)
Trade openness (t-1)		0.0524* (0.0305)	0.0466* (0.0270)	0.0522* (0.0296)	0.0844 (0.0585)	0.0908 (0.0624)	0.0710 (0.0500)	0.0915 (0.0557)
Share of regional exports in total exports (t-1)		3.108* (1.604)	3.153* (1.750)	3.426* (1.961)	1.561 (2.888)	2.267 (2.801)	0.448 (1.876)	-0.311 (2.103)
Investment, percent of GDP (t-1)			0.0460 (0.0378)	0.0483 (0.0393)	0.0608 (0.0579)	0.0587 (0.0576)	0.0638 (0.0573)	0.0877** (0.0383)
Percent change in population			0.376 (0.391)	0.394 (0.443)	0.489 (0.341)	0.478 (0.355)	0.448 (0.349)	0.440*** (0.159)
Change in US Federal Funds rates (%)				-0.000131 (0.000555)	-0.000256 (0.000497)	-0.000285 (0.000539)	-0.000405 (0.000485)	
Inflation				-0.00362*** (0.00118)	-0.00311*** (0.00102)	-0.00198 (0.00306)	-0.00265** (0.00113)	
Inflation (t-1)				-0.00103 (0.000748)	-0.000293 (0.00154)	-0.00268 (0.00239)	-0.000313 (0.00154)	
Foreign exchange rate, % change				0.180*** (0.0584)	0.155*** (0.0484)	0.101 (0.145)	0.133** (0.0530)	
Foreign exchange rate, % change (t-1)				0.0619 (0.0373)	0.0226 (0.0783)	0.137 (0.119)	0.0251 (0.0772)	
SSA trading partners' growth interaction with the lag share of regional exports							-1.808 (2.277)	
Non-SSA trading partners' growth interaction with the lag share of extraregional exports							2.839 (1.919)	
Share of regional exports in GDP (t-1)							17.61 (11.56)	
Share of extraregional exports in GDP (t-1)							-7.143 (7.592)	
GDP per capita at the beginning of the 5y periods								-4.95e-06*** (5.07e-07)
Constant	0.758 (0.689)	-2.943 (2.660)	-4.541* (2.486)	-4.781* (2.513)	-6.869 (5.382)	-19.31** (8.033)	-19.31** (8.033)	-19.31** (8.033)
Observations	1,345	1,344	1,344	1,301	1,252	1,118	1,252	159
R-squared	0.159	0.180	0.188	0.187				
Number of countries	45	45	45	45	45	40	45	43

Source: IMF staff calculations.

Note: Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Box 2. GDP Growth Elasticities to the Growth of Trading Partners (continued)

although the estimated coefficient is smaller. Similarly, a statistically significant impact of the global economic environment continues, as captured by world average growth (Table 2.1, column 8).

Estimating the specification in equation (1) for countries in the Middle East and North Africa, Latin America, emerging and developing Asia, and emerging and developing Europe, shows that sub-Saharan African countries have a lower intraregional elasticity

of growth compared with peers in Latin America and emerging and developing Asia but a higher elasticity than the one estimated for countries in the Middle East and North Africa and in emerging and developing Europe, which is not statistically different from zero (Table 2.2). The results for the Middle East and North Africa countries can be explained by the importance of developments in oil markets.

Table 2.2. Sub-Saharan Africa and Other Developing Countries: GDP Growth Elasticities to the Growth of Trading Partners

Dependent variable: real GDP growth

	(1) SSA	(2) Latin America	(3) MENA	(4) Asia	(5) Europe and CIS
Real GDP growth (t-1)	0.264*** (0.0678)	0.197*** (0.0407)	-0.000418 (0.0351)	0.170** (0.0843)	0.325*** (0.103)
Real GDP growth (t-2)	-0.0770* (0.0405)	-0.00800 (0.0367)	-0.196** (0.0805)	-0.0487 (0.0329)	-0.0406 (0.0890)
SSA trading partners' growth	0.133** (0.0610)	0.157** (0.0693)	-0.00140 (0.0629)	0.157* (0.0921)	0.204 (0.163)
Non-SSA trading partners' growth	0.334	-0.0482	-0.107	0.492***	0.335**
SSA average growth	0.0526 (0.280)	0.254*** (0.0928)	0.476** (0.219)	0.322*** (0.117)	0.429** (0.184)
World average growth	0.108 (0.255)	0.394** (0.163)	0.192 (0.348)	-0.148 (0.173)	-0.0342 (0.201)
Conflict year, Uppsala database	-3.913*** (1.287)	-2.588 (1.734)	-4.737 (3.427)	-0.913* (0.477)	-0.674 (1.253)
Terms of trade, percent change	0.0881* (0.0485)	0.281*** (0.0537)	0.0319 (0.0420)	0.121 (0.0858)	0.0694 (0.0963)
Trade openness (t-1)	0.0844 (0.0585)	0.0188*** (0.00690)	0.0347* (0.0206)	0.00545 (0.0112)	0.0229 (0.0147)
Share of regional exports in total exports (t-1)	1.561 (2.888)	-2.190 (1.360)	2.662 (2.870)	-0.988 (1.881)	2.864 (3.652)
Investment share of GDP (t-1)	0.0608 (0.0579)	-0.161*** (0.0312)	0.239** (0.109)	0.0442 (0.0287)	-0.0103 (0.0861)
Percent change in population	0.489 (0.341)	0.223 (0.272)	-0.530 (0.372)	0.108 (0.534)	0.162 (0.566)
Percent change in US Federal Funds rates	-0.000256 (0.000497)	0.00117* (0.000672)	0.000884 (0.000958)	0.000218 (0.000631)	-0.00111 (0.000715)
Inflation	-0.00311*** (0.00102)	-0.00326* (0.00182)	-0.0669*** (0.0218)	-0.00808 (0.0130)	-0.00327 (0.00203)
Inflation (t-1)	-0.000293 (0.00154)	-7.14e-05 (0.000366)	0.0836** (0.0390)	-0.00229 (0.0140)	-6.71e-05 (0.00135)
Foreign exchange rate, percent change	0.155*** (0.0484)	0.314 (0.200)	-0.829 (0.508)	-1.672 (1.052)	-0.140 (0.107)
Foreign exchange rate, percent change (t-1)	0.0226 (0.0783)	-0.00983 (0.00869)	0.757 (0.770)	0.661 (0.477)	-0.00828 (0.121)
Constant	-6.869 (5.382)	2.959*** (0.937)	-3.668* (2.032)	-1.05 (2.777)	-2.297 (2.913)
Observations	1,252	941	560	494	420
Number of countries	45	30	20	18	18

Source: IMF staff calculations.

Note: CIS = Commonwealth of Independent States; MENA = Middle East and North Africa. SSA = sub-Saharan Africa. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Banking Interdependencies Becoming More Subregional

Banks headquartered in sub-Saharan Africa account for an increasingly large share of the regional financial system.⁵ Their headquarters are based in a small number of countries, and their subsidiaries and branches are hosted across a wide range of countries—a situation that creates important spillover channels. Additionally, as regional banks' activities have increased over time, so has financial sector depth, which itself has been associated with higher GDP growth in the region.

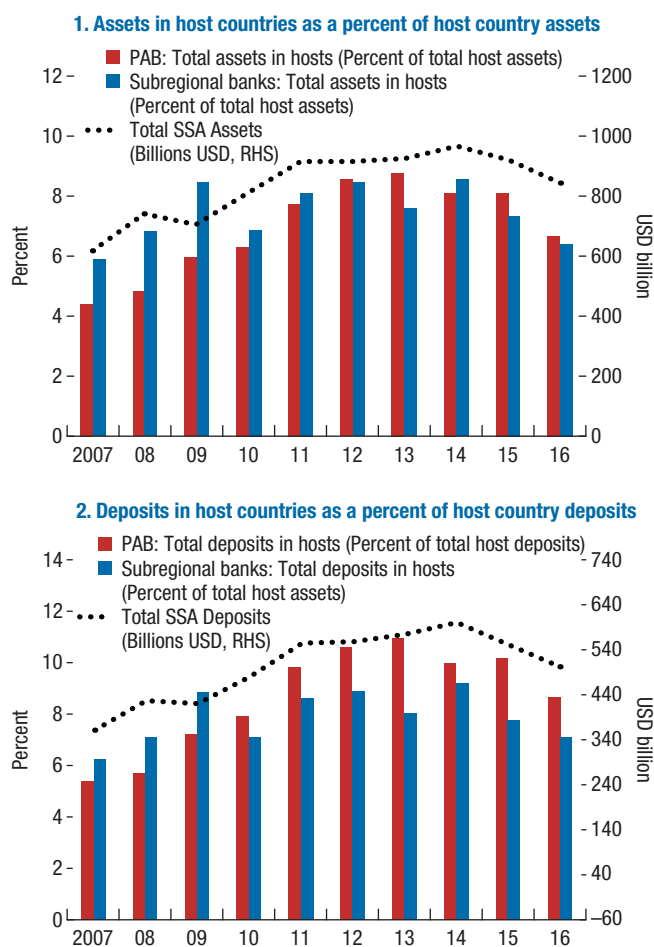
Presence of Foreign Banks Headquartered in Sub-Saharan Africa

The expansion of banks headquartered in sub-Saharan Africa has contributed to the deepening of financial systems across the region and represents an important vector for economic and financial spillovers. Banks headquartered in sub-Saharan Africa are generally well capitalized and have expanded throughout the region mainly via subsidiaries. The subsidiaries are funded primarily using local sources, which limits the risk of spillovers in the short term (IMF 2012, 2015c; Mecagni, Marchettini, and Maino 2015). However, as the financial sector continues to expand on the continent, sub-Saharan Africa-based banks constitute an increasingly important transmission channel for real economic activity in the medium term. This channel is particularly relevant today as vulnerabilities among sub-Saharan Africa-based banks have increased owing to their high exposure to sovereign debt and to the commodity export sector, more nonperforming loan levels in some cases, and the often limited capacity for governments to support or resolve troubled banks (Kinda, Mlachila, and Ouedraogo 2016; IMF 2017b).

Banks headquartered in sub-Saharan Africa expanded rapidly throughout sub-Saharan Africa following the global financial crisis. Pan-African Banks—defined here as sub-Saharan Africa-based banking groups that own subsidiaries or branches in 10 or more sub-Saharan African countries—expanded rapidly from 2007 through 2013 before expansion decelerated in recent years (Figure 15). Similarly, sub-Saharan

⁵This section focuses on banks that are both headquartered in sub-Saharan Africa (and thus subject to sub-Saharan African banking regulations) and majority owned by sub-Saharan African groups, because of the implications for the home countries in terms of regional spillovers.

Figure 15. PAB and Subregional Bank Presence in SSA, 2007–16



Sources: Fitch Connect; IMF, International Financial Statistics; and IMF staff calculations.

Note: PAB = pan-African banks; SSA = sub-Saharan Africa, RHS = right hand side.

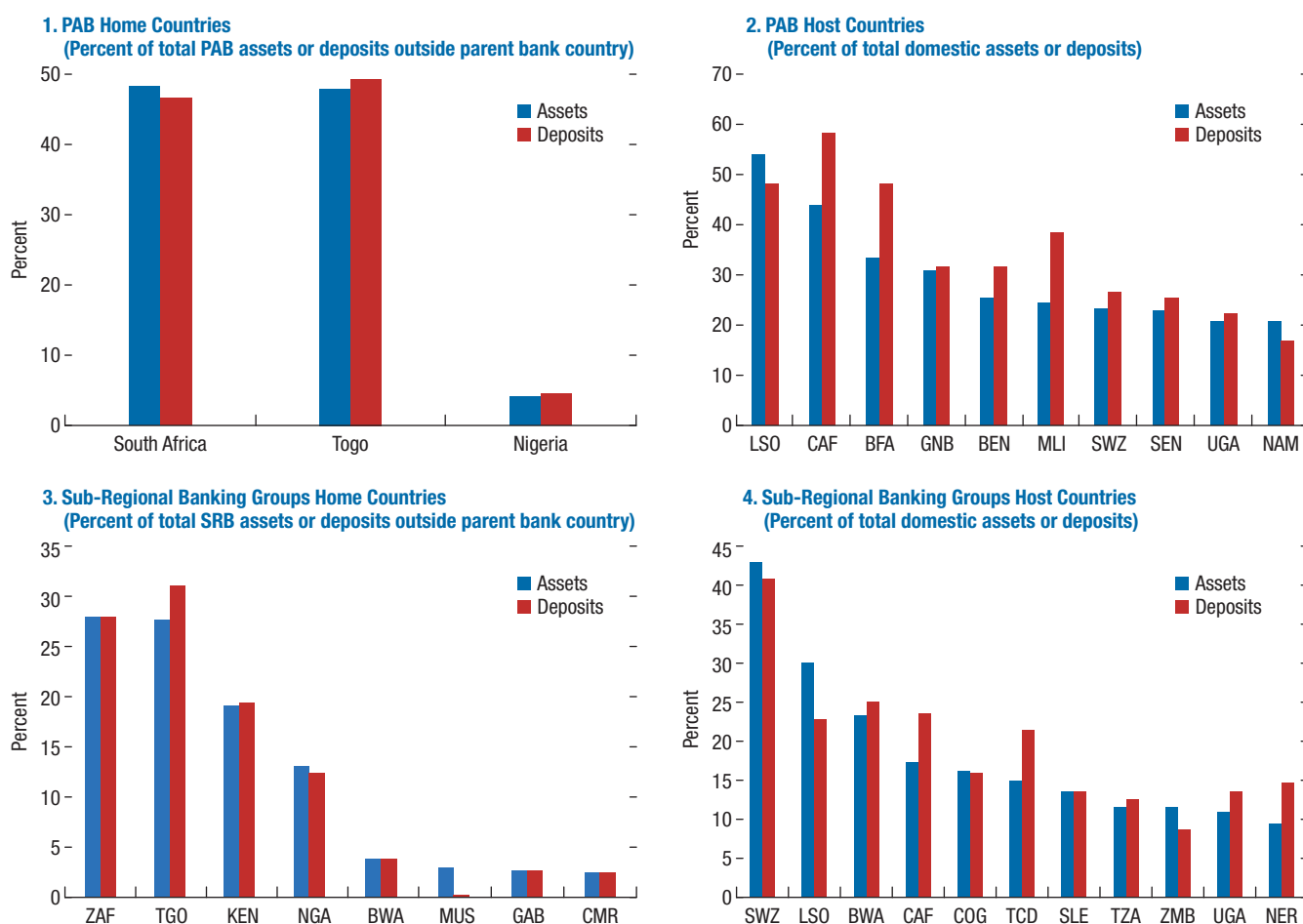
Africa-based banking groups that own subsidiaries or branches in three to nine sub-Saharan African countries (referred to as subregional banks) grew through the postcrisis period before growth slowed down more recently.

This growth coincided with the retrenchment of European and American banks on the continent. In terms of both asset and deposit shares, PABs and subregional banks control a roughly equal share of the foreign markets in which they are present (Figure 15).⁶ In terms of market participation, the share

⁶In the literature (notably IMF 2015c), subregional banks are defined as having a presence in five or more countries. The definition has been expanded in this note to capture important subregional

Figure 16. Sub-Saharan African PABs and Subregional Banks: Home and Host Countries

(PAB or subregional banking group foreign assets and deposits, measured as indicated)



Sources: Fitch Connect, IMF, International Financial Statistics; and IMF staff calculations.

Note: PAB = pan-African banks; SRB = sub-regional banks. See page 41 for country abbreviations table.

of PABs and subregional banking groups in the total sub-Saharan African financial system is increasing, following a global trend of banking regionalization (IMF 2015b). Nevertheless, assets and deposits have recently declined, consistent with the decline in regionwide assets that coincided with the economic deceleration in the region.

Country Exposure to Sub-Saharan African Banks

Both PABs and subregional banks are highly concentrated in terms of their home countries but have foreign entities that are widely dispersed across sub-Saharan Africa, thus representing a potentially important spillover channel. PAB parent banks are

concentrated in three countries, with South Africa and Togo each home to about 40 percent of all PABs, leveraging their roles as subregional hubs for financial services (Figure 16.1).⁷ In contrast, subregional parent banks are only about half as concentrated. PAB and subregional banking group parents are based in a similar set of countries (Figure 16.3), but they are hosted in different sets of countries. While the foreign subsidiaries of PABs are spread across the region (Figure 16.2), countries that host subregional banks are notably more concentrated (Figure 16.4). While the majority of South African subregional bank subsidiar-

⁷Ecobank in Togo is a special case. Only the holding company, Ecobank Transnational Incorporated, is headquartered in Togo, and it has the status and privileges of a nonresident supranational financial institution. The de facto economic headquarters of Ecobank is in Nigeria, where its largest subsidiary is located (IMF 2015c).

banks that have a presence in fewer countries, particularly those in East Africa.

ies are located in SADC countries, Kenyan subregional banks are mostly situated in EAC countries, Nigerian subregional banks are mainly in West African countries, and Gabonese and Cameroonian subregional banks are mostly in neighboring CEMAC countries. This means that developments in a few countries home to most PABs and subregional banks can have substantial economic spillovers in a variety of countries.

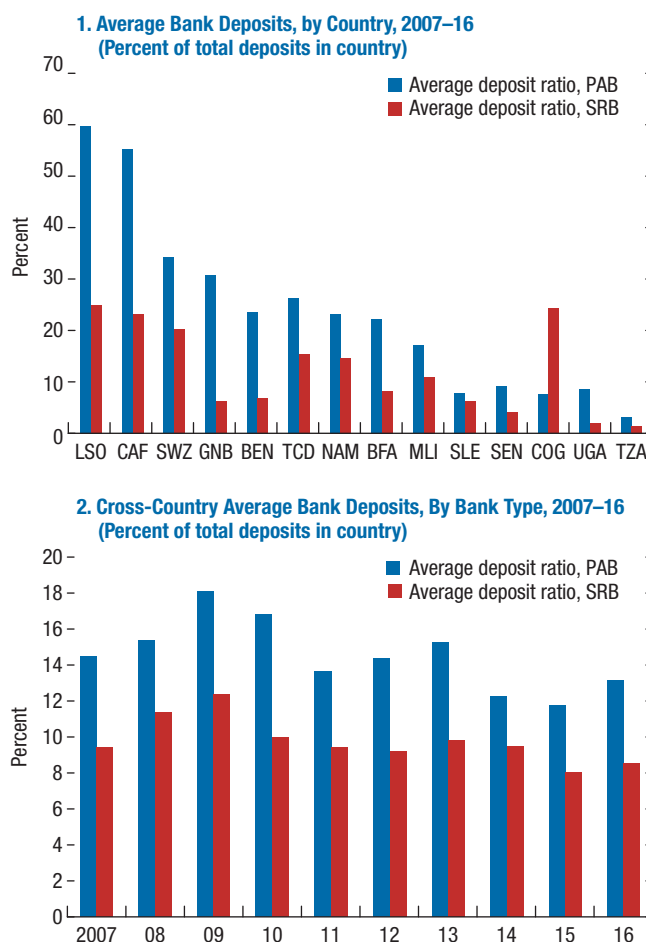
Spillover channels are potentially numerous and run in both directions between the parent bank and its subsidiaries, as well as across subsidiaries and branches of the same banking group (IMF 2015c). As described in IMF (2015c), subsidiaries and branches could be affected if they are connected to their parent through the placement of deposits and credit or via deficiencies in governance, perceptions of mismanagement, or other reputational concerns at the group level.

On the other hand, parent banks themselves may be exposed to risks in any of the countries hosting their foreign subsidiaries and branches, depending on the systemic importance of these entities to the local economy, the liquidity-sharing arrangements across the banking group, and the size of the foreign subsidiary or branch operation relative to the group. While the subsidiary model minimizes contagion risk, it does not eliminate it completely, as subsidiaries may still have exposure to their parent or other entities in the bank group (Mecagni, Marchettini, and Maino 2015). For example, there may be important risks stemming from syndicated loans between subsidiaries or branches.

Finally, host countries of systemic PABs and subregional bank subsidiaries and branches may face risks arising from unilateral or uncoordinated actions taken by the banks' home authorities or parent banks, which can have implications for financial stability in the host jurisdiction (Mecagni, Marchettini, and Maino 2015).

In many countries, banks headquartered in sub-Saharan Africa are systemically important, increasing the potential for cross-border spillovers. The ratio of total deposits in foreign African subsidiaries or branches of PABs or subregional banks to total deposits by country—a measure of systemic importance—is highest in small countries (Figure 17). Also, the degree of systemic importance is larger for PAB subsidiaries and branches than for subregional banks. In the past, spillovers from banking crises in African countries were limited, either because the subsidiaries in host countries were mainly funded by local deposits and therefore did not significantly depend on funding from their parent (for example, banks headquartered in

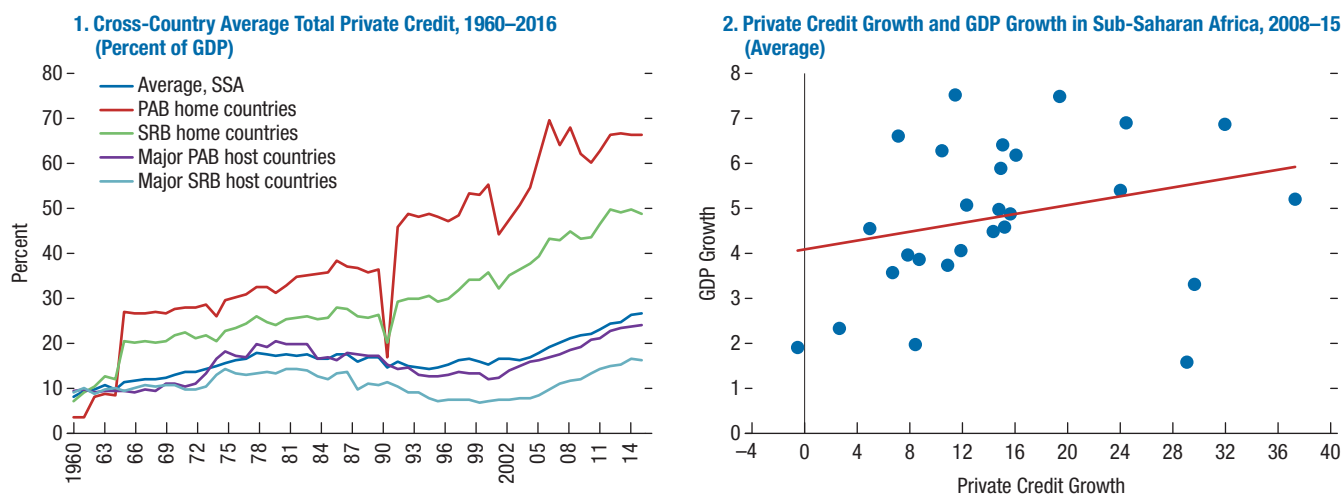
Figure 17. Systemic Foreign Owned PAB and Subregional Banks, 2007–16



Sources: Fitch Connect; IMF, International Financial Statistics; and IMF staff calculations.

Note: PAB = pan-African banks; SRB = sub-regional banks. See page 41 for country abbreviations table.

Nigeria and South Africa) or because the foreign entities were not systemic (IMF 2012, 2015c). In either case, a banking crisis in the headquarters country did not typically affect ratios at the macro level in host countries. However, this does not rule out the possibility that a PAB or subregional banking group parent bank could be hit by a shock that is transmitted across borders. If its foreign subsidiary or branch is systemically important, such a shock could have real effects on the host economy. This situation would be difficult for host country policymakers to foresee.

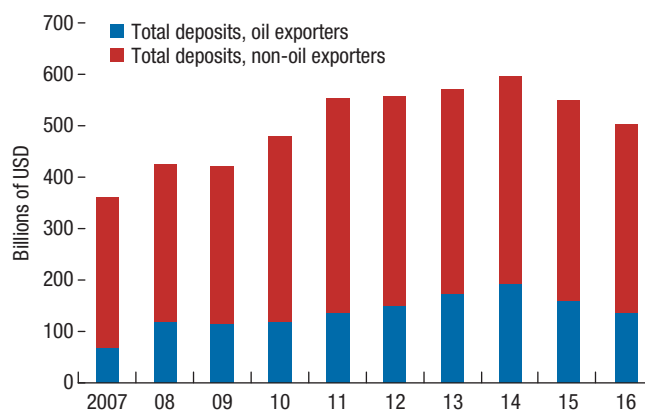
Figure 18. Sub-Saharan Africa: Real, Financial, and Cross-Border Links

Sources: Fitch Connect; IMF, International Financial Statistics; and IMF staff calculations.

Cross-border Banking and Growth

Financial markets have deepened in countries home to pan-African and subregional banks, and this deepening has been associated with higher real GDP growth. Over the long term, financial markets in sub-Saharan Africa have gradually deepened, as measured by credit to the private sector (Figure 18.1). This is especially true in countries that are home to PABs and subregional banks compared with those that are primarily hosts to these banking groups. At the same time, evidence has shown that financial development and deepening have supported growth and reduced growth volatility in sub-Saharan Africa (IMF 2016a), as can be seen from the strong positive association between GDP growth and private credit growth (Figure 18.2).

PABs and subregional banks could spur cross-border growth spillovers. Depending on the funding arrangements within these banking groups, lower growth in the parent banks' home countries could lower credit and deposit growth in their foreign African subsidiaries and branches, as it does at home (IMF 2012). This would be the case if the parent supplies a significant portion of liquidity to the subsidiary or branch, although evidence suggests that bank funding is mostly local in the largest countries (IMF 2012, 2015c). On the other hand, lower growth in host countries also limits the prospects for new cross-border expansion opportunities for the parent bank and constrains the ability of subsidiaries and branches to repatriate

Figure 19. Bank Deposits in PABs and Subregional Banks, 2007–16

Sources: IMF, International Financial Statistics; and IMF staff calculations.
Note: See page 41 for country groupings table.

excess liquidity to their parent, which may limit credit growth in the parent country.

The source of economic deceleration is important for the financial sector. Countries in the region that were hard hit by the commodity price decline have experienced credit growth deceleration and a decline in deposits (Figure 19) (Agrawal, Duttagupta, and Presbitero 2017). This is partly a result of the tendency of African banks to be highly exposed to the commodity sector (IMF 2017c). Reinforcing factors such as a slowdown in economic activity and a buildup in government arrears to contractors can further exacerbate

Table 1. Loan-to-Deposit Ratios, Largest Sub-Saharan African Countries, 2015
(Percent)

Countries	Foreign-owned pan-African banks	Foreign-owned subregional banks	All banks*
Kenya	61.3	77.1	88.9
Tanzania	57.4	79.1	73.6
Ghana	51.5	63.8	71.6
Côte d'Ivoire	58.2	63.3	80.9
Cameroon	57.3	79.6	90.6
Uganda	50.2	83.4	79.7
Zambia	48.8	59.7	69.9
Mali	41.1	57.3	95.0
Botswana	61.7	73.7	79.6
Mozambique	53.9	68.3	69.8
Burkina Faso	56.5	64.3	93.9

Sources: IMF, International Financial Statistics; and IMF staff calculations

Note: *Aggregate loan-to-deposit ratio measured using IFS bank credit-to-deposit ratio.

any rise in nonperforming loans, lower bank profits, or increased solvency risk (IMF 2017b). Depending on the structure of cross-border banking groups, these credit supply and solvency issues can have cross-border implications.

African Bank Behavior and Trends in Correspondent Banking Relationships

Both PABs and subregional banks are relatively less active lenders in the countries where they operate. In almost all countries that host PABs, the PAB subsidiaries and branches seem to be less aggressive in their lending practices on average compared with other banks. Across hosting countries, the average loan-to-deposit ratio for PABs is about 34 percent less than the country-level average (Table 1). Subregional banks are also more restricted in their lending, with average loan-to-deposit ratios about 22 percent less than country-level averages. These patterns reflect a combination of supervisory limits, preference to act as deposit-taking institutions with limited lending to the private sector, and greater exposure to sovereigns, as has been documented in East Africa (Cihak and Podpiera 2005) and across the continent (IMF 2015c).

PABs and subregional banks have become increasingly complex by integrating nonbank activities, increasing the potential for spillovers. This is particularly the case in the southern part of the continent, where these activities tend to have a regional scope, such as insurance and securities dealing (IMF 2015c). For instance, in Namibia, nonbank financial institutions (NBFIs) have gross assets four times those of traditional banks (equivalent to 330 percent of GDP),

and the shadow banking sector is about 40 percent of the entire financial sector (IMF 2016b). In South Africa, NBFIs hold about two-thirds of all financial assets, with pension funds holding assets equal to 110 percent of GDP (versus banking assets equal to 112 percent), and long-term insurers holding assets equal to 64 percent of GDP (IMF 2014). PABs generally have large shares of ownership in NBFIs, thereby increasing the risk of spillovers from developments in the real economies to the banking sectors. These risks are compounded by a lack of regulation in the nonbank financial sector and low levels of compliance in the banking sector.

The withdrawal of correspondent banking relationships (CBRs) in sub-Saharan Africa presents another potentially important channel for spillovers. After increasing between 2011 and 2014, CBRs have been under pressure in recent years. Since 2011, sub-Saharan Africa has seen a 4 percent decline in the number of active correspondent banks and a 9 percent decline in the number of counterparty countries (FSB 2017). The decline has been driven by a range of factors, including weaknesses in controls at respondent banks, inadequate supervision and regulation, country risk, and profitability. While much of the decline appears to be concentrated in small banks, some subregional banks have also lost their CBRs, and in some cases respondent banks have terminated CBRs with their own subsidiaries. The termination of a CBR affects a bank's ability to extend credit and transfer international payments, which has direct effects on growth, trade, and internal and external stability. If a CBR is terminated with a PAB or regional banking

Figure 20. Sub-Saharan Africa: Sovereign Spread Correlations, 2012–16

AGO	1														
CIV	0.85	1													
CMR	0.93	0.96	1												
ETH	0.92	0.89	0.92	1											
GAB	0.93	0.92	0.98	0.92	1										
GHA	0.90	0.95	0.98	0.88	0.96	1									
KEN	0.88	0.91	0.95	0.91	0.96	0.93	1								
MOZ	-0.02	-0.17	-0.21	0.03	-0.22	-0.28	-0.24	1							
NAM	0.88	0.96	0.98	0.88	0.95	0.95	0.92	-0.22	1						
NGA	0.89	0.88	0.93	0.85	0.95	0.93	0.90	-0.23	0.93	1					
SEN	0.87	0.95	0.98	0.90	0.97	0.96	0.96	-0.27	0.96	0.92	1				
TZA	0.70	0.80	0.82	0.65	0.79	0.80	0.73	-0.25	0.85	0.80	0.78	1			
ZAF	0.81	0.92	0.94	0.79	0.92	0.93	0.87	-0.29	0.95	0.93	0.93	0.90	1		
ZMB	0.91	0.96	0.99	0.91	0.98	0.99	0.96	-0.23	0.97	0.95	0.98	0.81	0.95	1	
	AGO	CIV	CMR	ETH	GAB	GHA	KEN	MOZ	NAM	NGA	SEN	TZA	ZAF	ZMB	

Sources: JP Morgan; and IMF staff calculations.

Note: See page 41 for country abbreviations table.

group parent, the impact can be felt across the entire group and multiple countries.

The Dominant Role of South Africa Sovereign Spread Spillovers

Though highly vulnerable to global trends, frontier markets in sub-Saharan Africa are driven in part by trends in South Africa. This is consistent with other emerging markets and low-income regions dominated by a single large and financially integrated economy.

Cross-Country Co-movement and Its Drivers

Evidence suggests that financial market co-movement in emerging and developing economies is driven by both global and regional factors. It is well established that open economies are exposed to a global financial cycle, and certainly sub-Saharan African countries are no exception (Rey 2015). However, national policies and fiscal fundamentals can also have an impact on regional treasury bill and bond markets. In sub-Saharan Africa, there is evidence of cross-country fiscal spillovers to sovereign spreads within regional economic areas (Hitaj and Onder 2013). Evidence also shows that if there is a single dominant economy in an emerging market region, it tends to influence asset prices in smaller countries within the region (see, for example, Mwase and others 2016). For sub-Saharan Africa, it is natural to ask whether South Africa, the largest sovereign debt emitter with the deepest and most liquid financial

markets and the country most highly integrated with global financial markets, may be driving movement in sovereign spreads of the region's frontier markets (IMF 2012, 2017b).

The substantial co-movement in sovereign spreads across sub-Saharan African frontier markets may be driven in part by conditions in South Africa. A simple correlation analysis of sovereign spreads indicates a high degree of co-movement across sub-Saharan African frontier markets (Figure 20).⁸ A principal component analysis on these spreads further shows that 85 percent of this co-movement is explained by their first common factor. This first common factor is then itself strongly correlated with economic indicators of a single country, South Africa, with a correlation coefficient of 0.93 against the implied volatility index of the Johannesburg stock exchange (SAVI) and of 0.94 against the South African sovereign spread. However, correlations alone cannot determine whether the South Africa factor is driving the co-movement or a confounding global factor is driving both the South African spread and co-movement with sub-Saharan African frontier markets.

Estimating the Impact of South Africa

The estimated impact of cross-border spillovers of movements in the South African spread to frontier markets of sub-Saharan Africa is considerable. The

⁸Mozambique is an outlier owing to public debt misreporting and subsequent default, which increased its spread significantly in recent years, making it substantially out of line with regional spreads.

South African spread explains about 6 percent more of the variation in frontier market spreads than domestic and global factors (as measured by the CBOE Volatility Index (VIX)) alone, while a 100 basis point change in the South African sovereign spread is estimated to be associated with a 20 basis point increase in the average frontier market spread (Box 3 and Table 3.1, columns 1 and 2). The fact that developments specific to South Africa act as drivers of regional spreads suggests that investors may have incomplete information on other regional developments (for instance, owing to data availability constraints) and may proxy their portfolio allocation for the region on the basis of perceptions of the South African economy. This has been shown to be the case in other regions in which a single country is the dominant economy (Furceri, Jalles, and Zdzienicka 2016).

Sub-Saharan African frontier market spreads are also influenced by emerging market trends. It is likely that the impact of the South African spread on other sub-Saharan frontier market spreads is driven by a confounding factor; namely, trends in emerging markets globally. However, in controlling for an index of emerging market bond spreads, the estimated impact of changes in South Africa's spread remains positive and significant (although, depending on the index, the impact may decrease in absolute value and be quantitatively less important than the emerging market trends), suggesting that movement in South African spreads explains a significant share of movement in sub-Saharan African frontier spreads.

The Changing Pattern of Remittance Flows

Regional remittances among sub-Saharan African countries are relatively large. They account for a third of total remittance inflows, and their share is growing in parallel with declining costs. Because of a high concentration of outflows from a few countries and the large exposure of some recipient countries, these remittances constitute an important spillover channel. In particular, Côte d'Ivoire and Ghana are important sources for West Africa, while South Africa is the main source for Southern and East Africa. Econometric estimates suggest that growth spillovers between remittance partners are important but may be outweighed by growth spillovers from trading partners, although trading and remittance partners often coincide.

The composition of remittances in sub-Saharan Africa is shifting toward intraregional flows. While total remittance inflows to sub-Saharan African countries have remained constant at slightly over 2 percent of GDP over the past 10 years, the composition has shifted: remittances among sub-Saharan African countries have grown faster than those from the rest of the world in the past five years.⁹ Meanwhile, total remittances are becoming relatively more important as other sources of external funding, such as aid and FDI, decline (Figure 21.1). Regional remittances accounted for about 35 percent of the region's total remittance inflows in 2015 (Figure 21.2).¹⁰

Measured as a share of GDP, total remittance inflows in sub-Saharan Africa are larger than those in other emerging and developing regions (Figure 22). The relative importance of intraregional inflows in sub-Saharan Africa is the third highest, after the Commonwealth of Independent States (CIS), and the Middle East and North Africa.

For some countries in sub-Saharan Africa, regional remittance inflows account for a large share of national income, setting the stage for a potentially high exposure to regional spillovers. In 27 of the 45 sub-Saharan African countries, regional remittance inflows exceed interregional remittances. At the high end, Lesotho, Liberia, and Togo receive more than 5 percent of GDP in remittances from other sub-Saharan African countries. Given that remittances have been shown to reduce macroeconomic fluctuations and poverty and foster financial development, regional remittance flows can help redistribute resources from fast-growing countries to slower-growing ones. This factor was particularly helpful, for instance, in the case of resource-intensive countries hit by the commodity price shock: Liberia, Mali, and Nigeria, with remittance inflows of 8, 4, and 2 percent of GDP, respectively (IMF 2016c; Gonzalez-Garcia and others 2016; Gupta, Patillo, and Wagh 2009).

Most remittance outflows from sub-Saharan African countries are sent to other countries in the region. Specifically, 31 out of 45 sub-Saharan countries send more remittances to the region than to the rest of the world, and three-quarters of total remittances from

⁹The estimates used in this section are from official sources, which are known to underestimate remittances.

¹⁰Remittance inflows from other sub-Saharan Africa countries increased from 0.6 percent of regional GDP in 2010 to 0.8 percent in 2015.

Box 3. Sovereign Yield Spread Spillovers

An examination of the movement in sovereign spreads of sub-Saharan frontier markets around major news events in South Africa shows noticeable responses to such events. This is first studied via an ad hoc event analysis during the month of December 2015, a time of high volatility in South African markets. Three major events occurred:

December 4 **Ratings downgrade by Standard & Poor's**

December 9 **Finance minister fired**

December 13¹¹ **New finance minister appointed**

These three major events are plotted in Figure 3.1, along with the sovereign spread of South African and sub-Saharan African frontier markets. All rates are normalized to zero on the date of the first event. The chart shows 10 days before and 15 days after the first event (and thus includes the December 9 and 14 events). It shows that there is a marked jump in South Africa's sovereign spread within 24 hours of each announcement, which continues for up to 72 hours. Movement in other countries' sovereign spreads tend to be heterogeneous in the days leading up to the announcements, but they move in concert with the South African spread immediately following the announcements. This suggests that South Africa has a degree of influence over its regional peers via sovereign financial markets.

A panel fixed effects model is estimated to study the drivers of sovereign yield spreads. The model is specified as follows:

$$\text{spread}_{it} = \alpha + \gamma_i + \beta_1 \text{spread}_{t-1,i} + \beta_2 \text{ZAF}_t + \beta_3 \text{Global}_t + \beta_4 X_{it} + e_{it} \quad (1)$$

where spread refers to the difference between a country's foreign denominated bond yields with respect to US Treasury bond yields and ZAF corresponds to South African factors, including either the SAVI or the sovereign spread. *Global* is global factors, including the VIX, oil prices, and—in columns 4 and 5 of Table 3.1—either the Morgan Stanley Capital International (MSCI) Emerging Markets index or a synthetic version of the Emerging Market Bond Index Global (EMBIG). The synthetic EMBIG spread is constructed with the same sample and weights as the actual EMBIG spread, excluding South Africa and those sub-Saharan African frontier markets that are

included in the original EMBIG index sample. X is country-specific controls, including inflation, the exchange rate relative to the US dollar, and an index of financial stress.

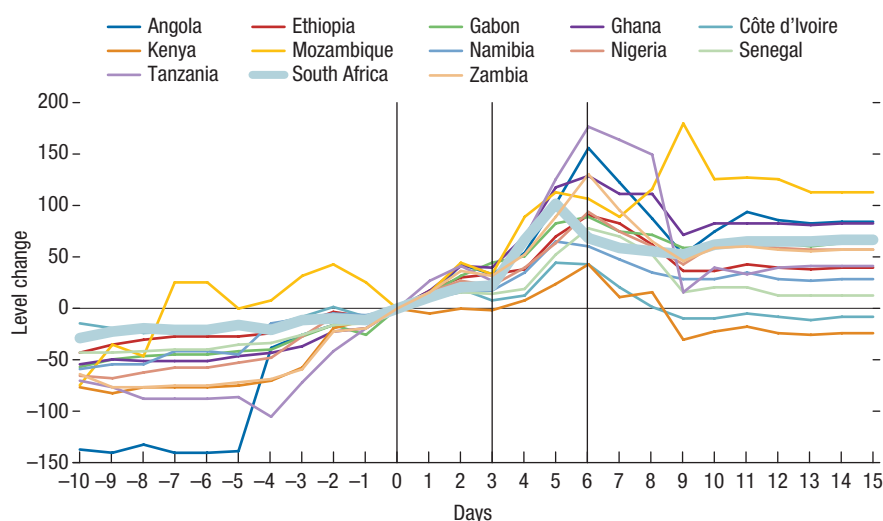
The model is estimated in first differences following standard tests that indicate the presence of a unit root in all the time series variables. Country fixed effects, γ_i , are included to control for time-invariant country-specific heterogeneity. Standard errors are clustered at the country level. The sample uses monthly data from January 2012 to August 2017, and includes all sub-Saharan African countries that have issued foreign-denominated debts on international financial markets since 2012 (frontier markets). These are Angola, Cameroon, Côte d'Ivoire, Ethiopia, Gabon, Ghana, Kenya, Mozambique, Namibia, Nigeria, Senegal, South Africa, Tanzania, and Zambia.

The analysis augments IMF (2016) by taking advantage of the panel dimension of the data. The estimation results for equation (1) are reported in Table 3.1, and show that movements in the sovereign spreads of sub-Saharan African frontier markets are associated with changes in the South African spread. This result is robust after controlling for additional global emerging market factors. Across columns 2–5, the South African spread coefficient is positive and highly significant, though its value halves and its level of significance falls when emerging market factors are controlled for via the synthetic EMBIG index, suggesting that both global and South African factors are important in explaining spreads across sub-Saharan Africa. Additionally, based on the adjusted R^2 , the South African factors combined explain 5 percent more of the variation in spreads (versus without them), while global emerging market factors explain only up to an additional 2 percent of the variation. The results are consistent with the correlation analysis and indicate the importance of both regional and global emerging market-specific factors in driving sub-Saharan African frontier market yields.

¹¹The announcement was made on Sunday, December 13, 2017. Since markets are closed on Sunday, the observed movement in spreads occurred on Monday December 14, 2017, which is when the indicator is identified in Figure 3.1.

Box 3. Sovereign Yield Spread Spillovers (continued)

Box Figure 3.1. South African News and Sovereign Spreads



Source: Bloomberg LP.

Table 3.1. Impact of Global, Regional, and Domestic Factors on Sovereign Spreads, 2012–16

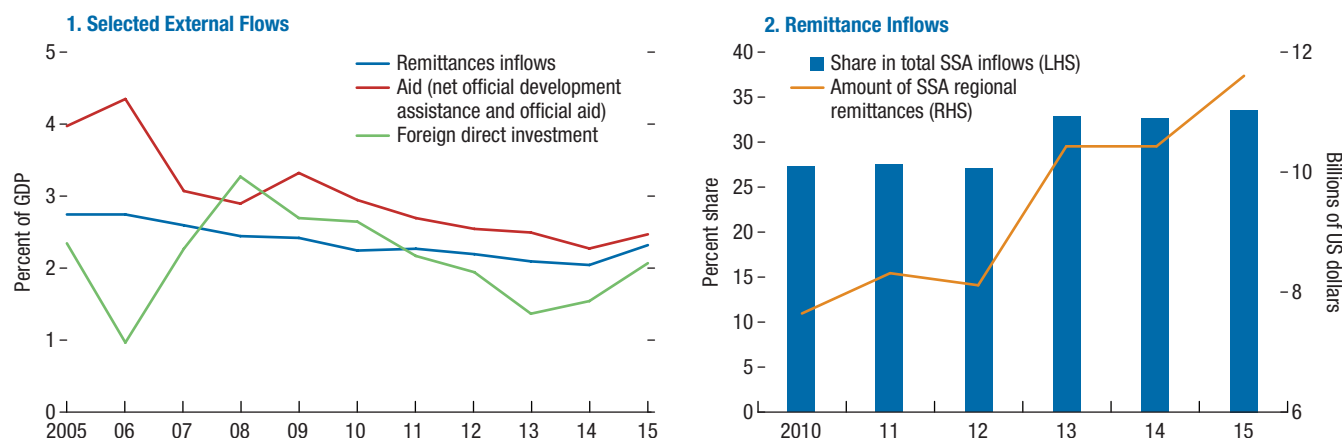
Dependent Variable: Country spread (t)

	(1)	(2)	(3)	(4)	(5)
Country spread (t-1)	-0.20* (0.10)	-0.24** (0.09)	-0.21* (0.10)	-0.24** (0.09)	-0.23** (0.09)
FSI	0.02 (0.01)	-0.03 (0.02)	0.00 (0.01)	-0.03 (0.02)	-0.03* (0.02)
Oil Price	-0.25*** (0.07)	-0.16* (0.08)	-0.19** (0.07)	-0.15* (0.08)	-0.03 (0.07)
VIX	0.12*** (0.03)	0.12*** (0.03)	0.12*** (0.03)	0.10*** (0.03)	0.10** (0.03)
Inflation	-0.07 (0.07)	-0.07 (0.07)	-0.06 (0.07)	-0.07 (0.07)	-0.04 (0.07)
Exchange Rate	0.51** (0.18)	0.45*** (0.14)	0.48** (0.20)	0.47*** (0.14)	0.17 (0.16)
South Africa Spread		0.20*** (0.04)		0.20*** (0.04)	0.10* (0.05)
SAVI			0.06*** (0.01)		
MSCI				0.03 (0.03)	
Synthetic EMBIG					0.16*** (0.03)
Constant	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.01* (0.00)
FE	Yes	Yes	Yes	Yes	Yes
N	641	641	641	641	626
R2 (adj)	0.25	0.31	0.26	0.30	0.32

Source: Bloomberg LP; Chicago Board Options Exchange; IMF, International Financial Statistics; and staff estimates, and calculations.

Note: All variables are standardized and estimated in first differences. Clustered standard errors in parentheses.

*p < 0.1, **p < 0.05, ***p < 0.01.

Figure 21. Sub-Saharan Africa: External Flows and Remittances

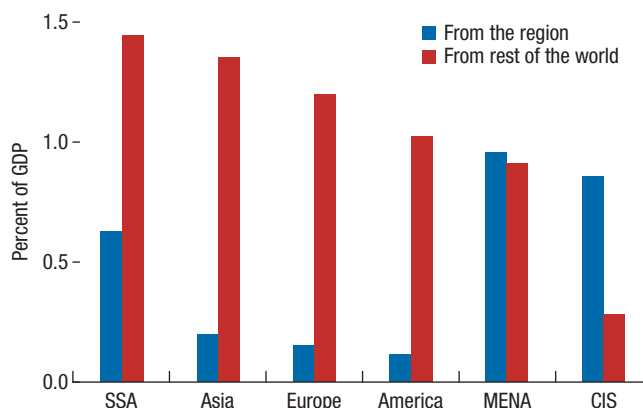
Sources: IMF, World Economic Outlook database; and World Bank, World Development Indicators, Migration and Remittances database.

Note: Remittances in the World Bank databases are measured as the sum of three items in the *IMF's Balance of Payments Statistics Year Book*: (1) personal transfers, (2) compensation of employees, and (3) migrants' transfers (that is, capital transfers between resident and nonresident households). LHS = left hand side; RHS = right hand side.

sub-Saharan African countries are sent to other countries in the region.¹²

Remittance outflows originate in a few countries. The four largest senders in 2015 accounted for 50 percent of total regional remittances. Remittances from Chad, Cameroon, Côte d'Ivoire, and Ghana to Nigeria alone account for 50 percent of received remittances in the region. Côte d'Ivoire and Ghana are also a large source of remittance flows to other West African countries (Figures 23 and 24). Their ongoing growth spell has translated into steady remittance flows to the region and has contributed to economic growth in the subregion. Remittance outflows from South Africa, the other large sender, are spread across the region, making the country of nationwide importance.

In general, remittances in sub-Saharan Africa are exchanged among the largest, wealthiest, and closest economies, but on a net basis, they flow toward poorer and more connected countries, making them more exposed to spillovers. A standard gravity equation on the 2010–15 average remittance flows shows that remittances are larger for geographically and culturally close countries (Box 4 and Table 4.1, columns 1 and 2). Compared with other regions in the world, geographical distance seems to be a greater barrier in sub-Saharan Africa because of higher travel and

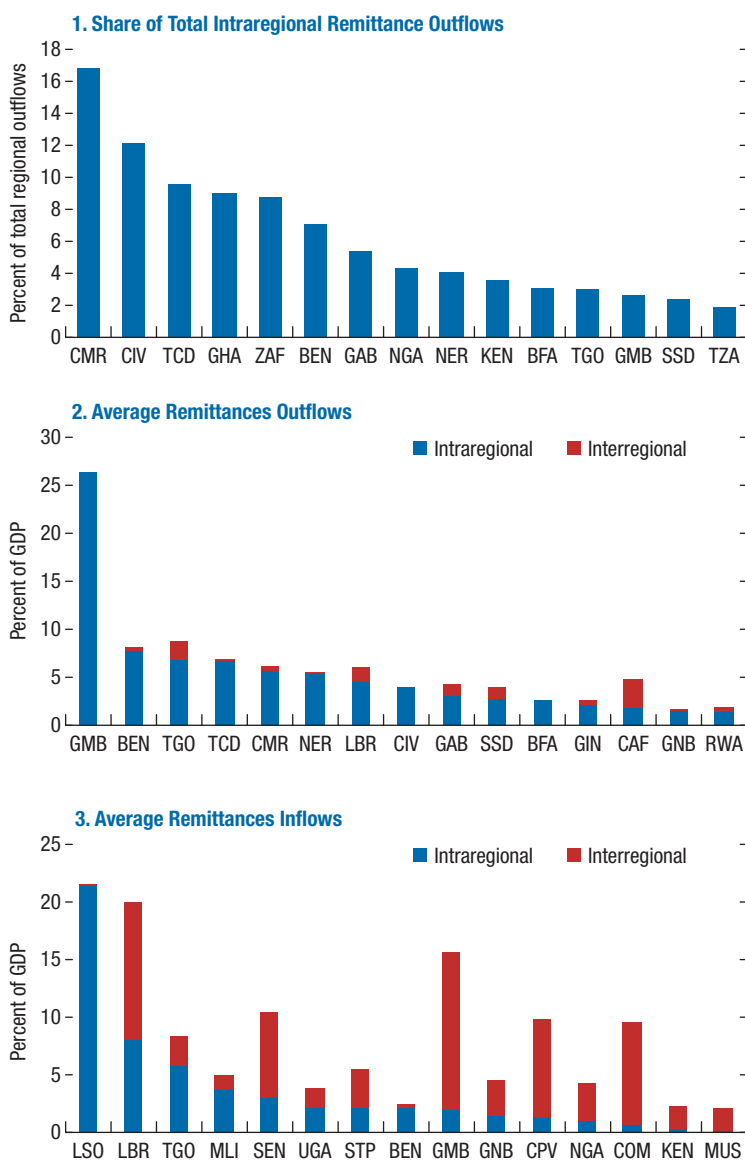
Figure 22. Remittance Inflows in Emerging and Developing Countries 2010–15

Sources: World Bank, Migration and Remittances database, World Development Indicators; and IMF staff calculations.

Note: CIS = Commonwealth of Independent States; MENA = Middle East and North Africa. SSA = sub-Saharan Africa.

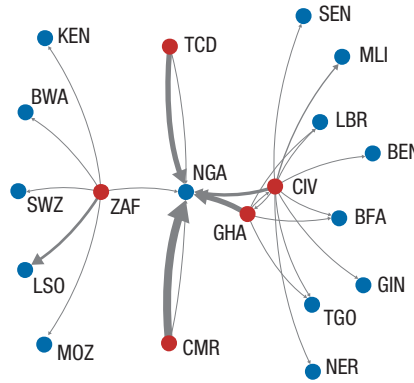
sending costs, especially relative to migrants' incomes. Regression results also show that higher sending costs are associated with lower remittance flows (Table 4.1, column 4), even after controlling for distance and by origin and destination fixed effects.

¹²Exceptions include East African countries whose remittance outflows are generally to India and China and certain francophone countries whose remittance outflows go to France.

Figure 23. Sub-Saharan Africa: Remittance Outflows and Inflows, 2010–15

Source: World Bank, Migration and Remittances database.

Note: The Gambia stands out as a country with large inflows and outflows of remittances. Large inflows from non-sub-Saharan African countries can be explained by the large diaspora (about 5 percent of the population lives abroad, and two out of three Gambians who graduate from foreign universities stay abroad). Large outflows are essentially directed to Senegal, which surrounds the country. Anecdotal evidence suggests that these outflows originate from the many Gambians who have family members in Senegal and those who seek better health care and transportation means in Senegal, given the superior quality of Senegalese infrastructure. See page 41 for country abbreviations table.

Figure 24. Sub-Saharan Africa: Major Remittance Corridors, 2010–15

Sources: World Bank, Migration and Remittances database, World Development Indicators.
 Note: Averages for top five remittance senders, 2010–15 (in red) (Chad, Cameroon, Ghana, Cote d'Ivoire, and South Africa). Thickness of the arrow represents the size of remittance flow in US dollars. Flows of less than US\$10 million were censored. Nigeria receives substantial remittances through the compensation of Nigerians working in neighboring countries. Only officially recorded remittances sent through formal channels are recorded, which explains why some countries known for receiving large remittance inflows—such as Zimbabwe and Chad—are not included in the graph. See page 41 for country abbreviations table.

Box 4. Gravity Equation Estimation for 2010–15 Remittance Flows

A gravity model of bilateral remittance flows over the period 2010–15 is estimated to study the determinants of remittances. In all specifications, the sample includes annual data over 2010–15 from the World Bank Migration and Remittances database with all the country pairs in the world that exchanged remittances at least once. All variables are simple averages over the six-year period. The standard errors are clustered at the destination country level to control for possible unobserved correlation within receiving countries.

The first specification is as follows:

$$\log \bar{F}_{ij} = \alpha_0 + \beta X_{ij} + \gamma \bar{Y}_i + \delta \bar{Z}_j + \varepsilon_{ij} \quad (1)$$

where \bar{F}_{ij} refers to the logarithm of the average remittance flow from country i to country j ; X_{ij} corresponds to corridor-specific independent variables, including geographic distance, the exchange rate between the currency of the origin and destination countries, and dummy variables indicating whether the countries share a common official language, share the same ethnic group, had the same colonial origin, or share a common official religion; and \bar{Y}_i and \bar{Z}_j which, respectively, refer to the logarithms of the average GDP per capita and the average population of the origin and destination countries.

The specification in column 2 includes country fixed effects, α_i and γ_j , to control for origin country i and destination country j time-invariant characteristics. The corridor variables X_{ij} in equation (1) are kept but the country-level characteristics (population and GDP)

are dropped, as these characteristics are absorbed by the country fixed effects. The new specification is as follows:

$$\log \bar{F}_{ij} = \alpha_i + \gamma_j + \beta X_{ij} + \varepsilon_{ij}. \quad (2)$$

Estimation results in the first two columns of Table 4.1 demonstrate that all distance measures significantly hamper remittance flows across countries. The first column additionally shows that remittance flows increase significantly with both population and the GDP per capita of both the origin and destination country. It does, however, increase more with the GDP per capita of the origin country, implying that net flows toward a poorer country are increasing with the difference in GDP per capita.

The specification in column 3 adds interaction variables between measures of distance and dummy variables. These variables are introduced for either sub-Saharan Africa origin countries ($I_{i \in SSA} X_{ij}$) or sub-Saharan Africa destination countries ($I_{j \in SSA} X_{ij}$):

$$\log \bar{F}_{ij} = \alpha_i + \gamma_j + \beta X_{ij} + \theta_o I_{i \in SSA} X_{ij} + \theta_d I_{j \in SSA} X_{ij} + \varepsilon_{ij}. \quad (3)$$

This specification is appropriate to investigate whether distance plays a specific role for remittance flows within sub-Saharan Africa. Coefficient estimates θ_o and θ_d of these interaction variables, respectively, reflect the differential effects of distance for sub-Saharan Africa origin and destination countries.

Box 4. Gravity Equation Estimation for 2010–15 Remittance Flows (continued)

Column 3 is composed of three subcolumns; the coefficient estimates θ_o are reported in the second sub-column, while estimates θ_d are reported in the third. The results indicate that distance is a greater hindrance for both origin and destination sub-Saharan countries, except for those that belonged to the same colony.

In column 4, the specification reverts to equation (2) but includes two supply-side variables to the set of independent variables: the median cost of sending US\$200 in percent of the US\$200 and the median

number of days it took for the money to be transferred. Only a small subset of remittance corridors is covered by the Remittance Price database, which explains the smaller sample size, the higher R^2 , and the weaker significance of the results. Despite these issues, the results indicate that costs significantly reduce bilateral flow.

Table 4.1. Determinants of Average Remittances Flows

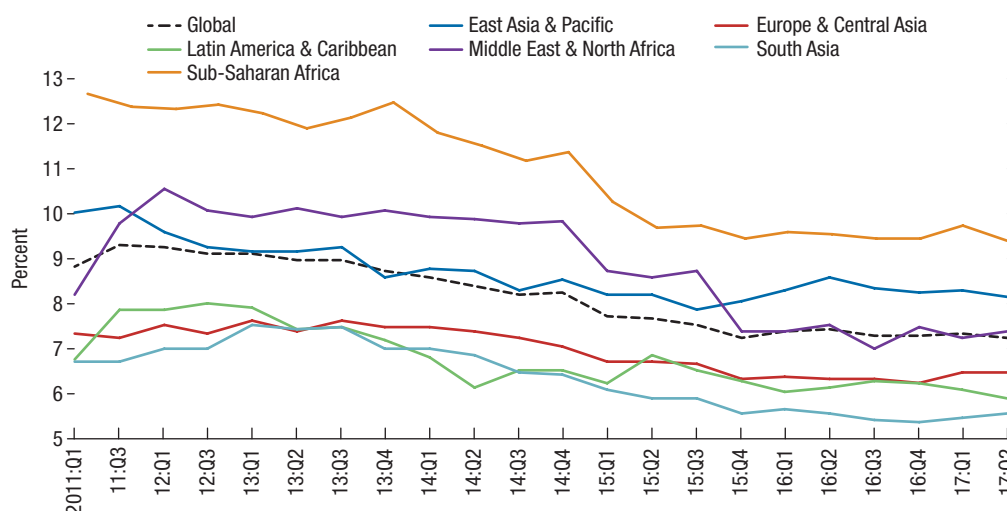
Dependent variable: the logarithm of the average bilateral remittance flow

	(1) Country controls	(2) Country FE	(3) Coefficient estimates for			(4) Costs
			All countries	SSA origin	SSA destination	
Contiguous countries	2.61*** (0.14)	2.40*** (0.16)	2.09*** (0.19)	0.56 (0.36)		0.94 (0.80)
Distance (1000 km)	−0.25*** (0.01)	−0.24*** (0.01)	−0.22*** (0.01)	−0.19*** (0.03)	−0.11*** (0.02)	−0.01 (0.05)
Common language	1.52*** (0.14)	1.07*** (0.17)	0.93*** (0.21)	−0.11 (0.33)	0.54** (0.24)	−0.05 (0.41)
Common ethnicity	0.64*** (0.14)	0.48*** (0.16)	0.65*** (0.19)	0.09 (0.34)	−0.45* (0.23)	0.53 (0.51)
Belonged to common colony	1.58*** (0.14)	1.50*** (0.22)	1.59*** (0.22)	−0.94*** (0.31)	0.57* (0.31)	1.22*** (0.39)
Common religion	0.11* (0.07)	0.61*** (0.10)	0.70*** (0.11)	−0.14 (0.34)	−0.11 (0.26)	−0.20 (0.48)
Origin GDP p.c.	1.04*** (0.02)					
Destination GDP p.c.	0.63*** (0.02)					
Origin population	0.67*** (0.01)					
Destination population	0.82*** (0.01)					
Origin/destination FX rate	−0.02** (0.01)					
Median costs (% of amount sent)						−0.10* (0.06)
Median completion time (days)						−0.15 (0.12)
Observations	10,704	10,814	10,814			220
R-squared	0.54	0.81	0.81			0.93
Country FE	NO	YES	YES			YES

Sources: French Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) database; IMF, World Economic Outlook database; World Bank, World Development Indicators; and remittances and migration database.

Note: Clustered standard errors in parentheses (Destination country). ***p < 0.01, **p < 0.05, *p < 0.1.

Figure 25. Percentage Cost of Sending US\$200 across Region and over Time
(Percentage of the amount sent)



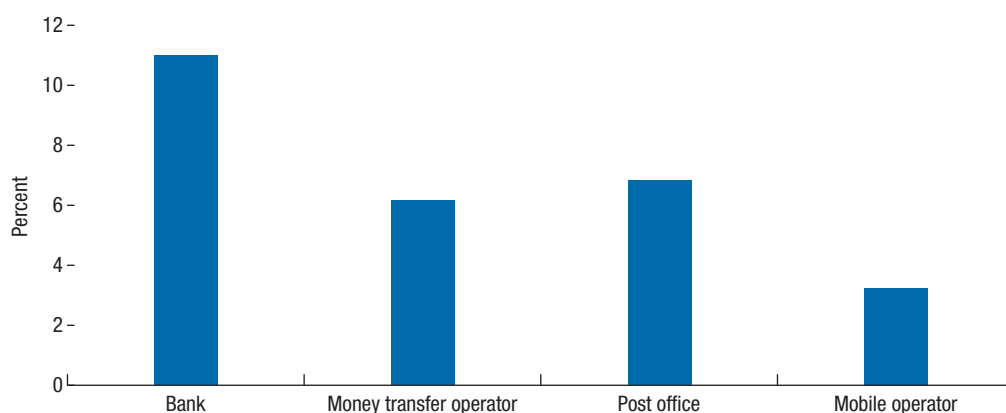
Source: World Bank, *Remittance Prices Worldwide*, Issue 22, June 2017.

Growth in countries sending remittances spills over to receiving countries. Regression results show that a 1 percent increase in GDP growth in origin countries is associated with a 0.1 percent increase in growth in a receiving country (Box 5). Interestingly, the result only holds for origin countries that belong to the same region, perhaps reflecting that inter-regional remittances are dominated by those sent from advanced economies and that their variations are too small to have an impact on the receiving countries through the remittance channel. For many countries, remittance and trade partners tend to be the same, and data limitations do not allow us to accurately distinguish spillovers occurring through one channel rather than the other.¹³ However, estimates suggest that both spillovers have a similar magnitude, each accounting for half of the total effect identified in the baseline estimation. Overall, regression estimates suggest that growth performance of large origin countries such as Côte d'Ivoire, Ghana, and South Africa can generate growth spillovers to the rest of the region.

Developments in financial technologies (fintech) have the potential to increase the magnitude of remittance flows within the region, strengthening them as a channel for regional spillovers. Sub-Saharan Africa is the most expensive destination to send money to (Remittance Price Database Report 2017) (Figures 25 and 26). Remittance costs in 2017 were about 25 percent higher there than in the rest of world. However, these costs have been decreasing for the past 10 years, partly because of the rise of mobile money technology. Mobile money transfers are two times less expensive than those at money transfer operators and post offices and almost three times less expensive than transfers through commercial banks. As mobile money technology continues to expand, and its coverage and usage continue to increase across sub-Saharan Africa, it is expected to contribute to an increase in remittance flows. On the basis of estimates presented in Box 4, and assuming there is no substitution across corridors, a decline in remittance costs to the world average (from 9.4 percent to 7.4 percent) could result in increases in bilateral flows of up to 20 percent.

¹³The correlation between the share of imports and the share of remittance flows across partner countries varies substantially. The median correlation is about 50 percent, but for some countries with correlations close to 1, like Swaziland and Lesotho, trade and remittance partners are almost the same (South Africa, in this case).

Figure 26. Total Average Cost by Remittance Sending Provider
(Percentage of the amount sent)



Source: World Bank, *Remittance Prices Worldwide*, Issue 22, June 2017.

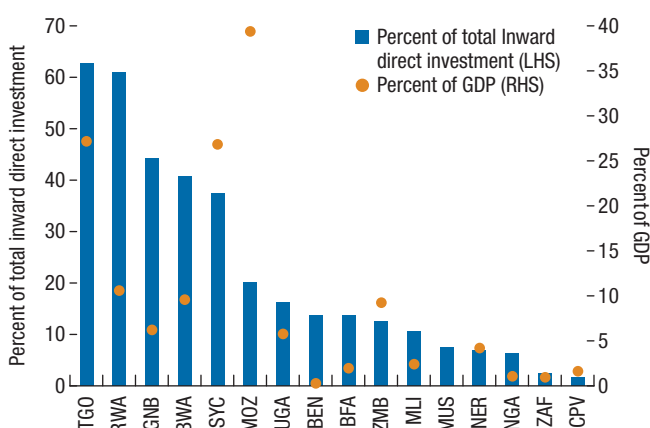
The Foreign Direct Investment Channel—South Africa Rules the Roost

Foreign direct investment constitutes an important channel of regional integration in sub-Saharan Africa. For some countries, inward FDI from sub-Saharan Africa constitutes the largest share of total inward FDI. This is the case in Togo, Rwanda, Guinea-Bissau, and Botswana, where the share of regional inward FDI positions is more than 40 percent of their total stock of FDI (Figure 27).

Firms from South Africa, Kenya, and Nigeria have the largest presence in other sub-Saharan markets. South African firms are the most visible, with more than 2,400 subsidiaries in other African countries (Box 6), but other hubs are growing fast, such as Kenya (with an important presence in East Africa) and Nigeria (in West Africa). Other subregions, such as central Africa, have limited cross-border corporate ownership (IMF 2017c).

Multinational firms on the continent can be important sources and transmitters of positive international spillovers. Firms' potential to affect both their host and headquarters economies increases with their size and interconnectedness. Regional integration at the corporate level allows firms to leverage knowledge transfer and country-level comparative advantages and achieve diversification, all while tapping into economies of scale. For instance, during the recent economic slowdown in Nigeria, the strong performance of foreign subsidiaries in high-growth countries (for example,

Figure 27. Selected Sub-Saharan African Countries: Intraregional Foreign Direct Investment Stock Positions



Source: IMF, Coordinated Direct Investment Survey database.
Note: See page 41 for country abbreviations table.

Kenya, Tanzania, and Rwanda) compensated for the weaker performance of the headquarters (IMF 2017b).

The risks of negative cross-border spillovers are equally important. Multinational firms can increase national exposure to negative shocks across borders. The risks are many and varied and include the following four examples: (1) If a firm is systemically important for an economy, performance of its headquarters or foreign subsidiaries could have macroeconomic implications for the host country; (2) A firm's ability to borrow can be affected by its exposure to sovereign risk, as surges in sovereign spreads often lead to

Box 5. Spillover Effects from Countries Sending Remittances

A panel fixed effects model is estimated to study the elasticity of GDP growth rates to the average growth among remittance partners inside and outside a region. The model is specified as follows:

$$\begin{aligned} RealGDPgrowth_{it} = & \alpha + \gamma_i + \beta_1 RealGDPgrowth_{t-1,i} + \\ & \beta_2 regionalremittancepartners' growth + \\ & \beta_3 extraregionalremittancepartners' growth + \\ & \beta_4 X_{it} + \beta_5 I_{i \in SSA} * regionalremittancepartners' growth + \\ & \beta_6 I_{i \in SSA} * extraregionalremittancepartners' growth + e_{it} \end{aligned} \quad (6)$$

where the dependent variable is the annual growth rate of real GDP in country i ; *regional remittance partners' growth* is the average growth rate of the remittance partners that are in the same region as country i ; *extraregional remittance partners' growth* corresponds to the average growth rate of the remittance partners that are outside the region; and $I_{i \in SSA}$ is a dummy variable for sub-Saharan African countries that is interacted with the last two variables. The growth averages are weighted using the share of lag remittance inflows. The sample includes 2010–15 annual data from the World Bank Migration and Remittances database for all countries in the world, as well as all the data included in Box 1.

All specifications include the same standard country-specific controls that are included in Table 1.1, column 5 when studying spillovers from the trade channel. Country fixed effects γ_i are also included to control for time-invariant country-specific heterogeneity. Coefficient estimates have the expected signs, but results are omitted from Table 5.1 for presentational purposes. The share of regional remittances in total remittance inflows and the share of remittance inflows in GDP are added as controls. Standard errors are robust, clustered at the country level to control for possible unobserved correlation within countries.

In contrast with the regression using trade data, remittance flow series are much shorter, spanning 2010 to 2015, which reduces efficiency in the estimation. Given the limited degrees of freedom, a lagged dependent variable is not included as a control. In addition, as opposed to the baseline specification in Box 1, all countries of the world are included in the regression to increase statistical power. Interaction

variables are then included to test whether sub-Saharan countries behave differently than other countries in the world.

Regression results are reported in Table 5.1. Starting from column 2, the specifications include controls for both the average growth of the sub-Saharan Africa region and for world growth, to ensure that coefficients are not capturing average co-movements in continent or world developments. In columns 3 and 4, the lag of the dependent variable is introduced to address serial correlation issues, and an Arellano-Bond estimation procedure is adopted to address the possible endogeneity of that variable. Results are robust to the exclusion of the 10 percent largest economies (in column 4) and to the introduction of interaction variables capturing heterogeneous effects (in column 5). In the latter specification, the share of remittances in GDP is interacted with the remittance partners' average growth to test whether more-exposed economies are more affected. These new variables are not significant. In column 6, the specification also includes the growth averages of the trade partners that are inside and outside the region of the country considered. The purpose of these controls is to distinguish between spillover effects that are channeled through trade and those channeled through remittance inflows.

The estimation results indicate that growth spillovers through the remittance channel are significant for all countries in the world and that these spillovers are not different in sub-Saharan Africa (columns 1–3). The results are robust to controlling for the average regional growth and serial correlation (columns 2–3).

Column 4 results suggest that some of the spillovers associated with the remittance channels may capture trade spillovers. The joint significance of the average growth of trade and remittance partners is confirmed by a Wald test with a p -value below 0.02. Despite the weaker significance of each estimate separately, estimated values suggest that both channels have equal importance and that half of the observed spillovers can be attributed to each channel. The lack of significance of the remittance channel in that last specification may be due to the small sample size and the imperfect measurement of remittance flows.

Box 5. Spillover Effects from Countries Sending Remittances (continued)

Table 5.1. Spillover Effects from Countries Sending Remittances

Dependent variable: Real GDP growth

	(1) Baseline	(2) World/regional shock controls	(3) GMM estimation	(4) Excluding 10% largest	(5) Exposure heterogeneity	(6) Trade channel controls
Real GDP growth (t-1)			0.166 (0.123)	0.170 (0.134)	0.168 (0.123)	0.174 (0.122)
Regional remittance partners' growth	0.0917** (0.0365)	0.0587 (0.0431)	0.0999** (0.0503)	0.0971* (0.0516)	0.109** (0.0450)	0.0588 (0.0692)
Extraregional remittance partners' growth	-0.129 (0.179)	0.101 (0.240)	-0.0114 (0.234)	-0.0907 (0.261)	-0.0378 (0.341)	-0.0976 (0.234)
Regional remittance partners' growth, SSA differential	-0.0849 (0.129)	-0.0700 (0.127)	-0.00218 (0.144)	0.0222 (0.146)	-0.0804 (0.194)	0.0239 (0.142)
Extraregional remittance partners' growth, SSA differential	-0.366 (0.376)	-0.651 (0.393)	-0.514 (0.414)	-0.430 (0.417)	-0.528 (0.542)	-0.366 (0.459)
Conflict year, Uppsala database	-4.980** (1.941)	-4.878** (1.899)	-5.081*** (1.283)	-5.327*** (1.104)	-5.276*** (1.323)	-5.032*** (1.250)
Share of regional remittances in total inflows (t-1)	-0.0356 (0.0257)	-0.0347 (0.0254)	-0.0523** (0.0256)	-0.0587** (0.0276)	-0.0536** (0.0270)	-0.0515** (0.0251)
Share of remittances inflows in GDP (t-1)	-0.0626 (0.0900)	-0.0250 (0.0958)	0.127 (0.118)	0.136 (0.123)	0.0728 (0.178)	0.128 (0.119)
Region average growth		0.424*** (0.138)	0.485*** (0.164)	0.501*** (0.165)	0.500*** (0.172)	0.474*** (0.162)
World average growth		-0.601 (0.971)	-0.490 (0.949)	-0.972 (1.061)	-0.510 (0.953)	-1.056 (1.006)
Share of regional imports in total inflows (t-1)	-0.633 (3.060)	-0.245 (3.140)	0.561 (3.203)	0.206 (3.110)	0.547 (3.127)	0.265 (2.994)
Trade openness (t-1)	0.0291 (0.0238)	0.0183 (0.0261)	0.0156 (0.0334)	0.0101 (0.0342)	0.0136 (0.0333)	0.00987 (0.0331)
Percent change in the terms of trade	0.0918 (0.0949)	0.0948 (0.0974)	0.196 (0.121)	0.237 (0.152)	0.208 (0.128)	0.205* (0.121)
Investment share of GDP (t-1)	0.0601 (0.0948)	0.0698 (0.0966)	0.0672 (0.0955)	0.0737 (0.0984)	0.0631 (0.0939)	0.0742 (0.0951)
Percent change in population	0.524* (0.286)	0.615** (0.297)	0.751** (0.323)	0.726** (0.350)	0.708** (0.324)	0.687** (0.306)
Percent change in US Federal Funds rates	0.0100** (0.00482)	0.00718 (0.00471)	0.00588 (0.00405)	0.00741 (0.00470)	0.00588 (0.00410)	0.00624 (0.00403)
Inflation	-0.152 (0.127)	-0.180 (0.125)	-0.225* (0.121)	-0.223* (0.135)	-0.224* (0.124)	-0.223* (0.121)
Inflation (t-1)	0.0507 (0.0757)	0.0290 (0.0732)	-0.0131 (0.0681)	-0.0299 (0.0763)	-0.0143 (0.0679)	-0.00990 (0.0680)
Percent change in the foreign exchange rate	1.141 (3.504)	2.383 (3.620)	2.371 (3.278)	4.949 (4.181)	2.144 (3.321)	2.233 (3.270)
Percent change in the foreign exchange rate (t-1)	-0.886 (2.628)	0.817 (2.442)	3.334 (2.450)	4.065 (2.765)	3.409 (2.472)	3.128 (2.454)
Regional remittance partners' growth interaction with the lag share of remittance inflows					-1.222 (0.943)	
Extraregional remittance partners' growth interaction with the lag share of remittance inflows					0.523 (4.190)	
Regional remittance partners' growth interaction with the lag share of remittance inflows, SSA differential					6.046 (6.585)	
Extraregional remittance partners' growth interaction with the lag share of remittance inflows, SSA differential					0.308 (9.081)	
Regional trading partners' growth						0.0497* (0.0302)
Extraregional trading partners' growth						0.480* (0.255)

Box 5. Spillover Effects from Countries Sending Remittances (continued)**Table 5.1. Spillover Effects from Countries Sending Remittances (continued)***Dependent variable: Real GDP growth*

	(1) Baseline	(2) World/regional shock controls	(3) GMM estimation	(4) Excluding 10% largest	(5) Exposure heterogeneity	(6) Trade channel controls
Regional trading partners' growth, SSA differential						−0.0152 (0.329)
Extraregional trading partners' growth, SSA differential						−0.470 (0.427)
Constant	1.582 (2.872)	1.888 (3.682)	0.659 (3.687)	2.520 (3.810)	1.374 (3.833)	1.861 (3.790)
Observations	565	565	448	393	448	448
R-squared	0.161	0.181				
Number of countries	117	117	117	103	117	117

Sources: French Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) database; IMF, World Economic Outlook database; World Bank, World Development Indicators; and remittances and migration database.

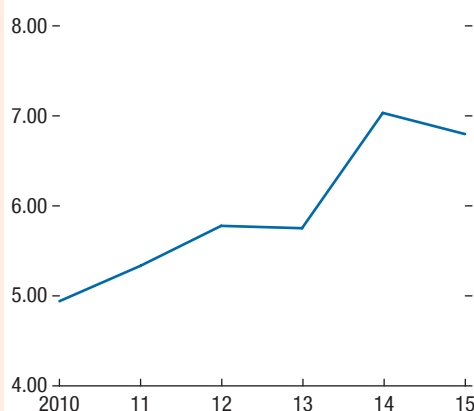
Note: Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Box 6. South African Investment in Sub-Saharan Africa

South African companies have become an increasingly important source of investment in sub-Saharan Africa since the mid-1990s, having expanded through joint ventures, greenfield investments, and mergers and acquisitions (Table 6.1) (IMF 2012; Games 2017). About 75 percent of investment from South Africa to the continent is in the services, trade, and financial sectors (IMF 2016c).

Outward foreign direct investment (FDI) from South Africa is increasing. The total stock of FDI from South Africa to sub-Saharan African countries was equivalent to 6.8 percent of South African GDP in 2015, up from 4.9 percent of GDP in 2010 (Figure 6.1). In receiving countries, South Africa's investments represented as much as 3.2 percent of GDP (in Mauritius), with an average of 0.4 percent across all sub-Saharan African countries in which it invested in 2015.

South African investment is highly regarded and an important driver of growth. Survey evidence suggests that about 80 percent of sub-Saharan Africans who interact with South African firms find them to have a better reputation than local firms in the same industry (DNA Economics 2013). Further empirical evidence shows that outward foreign investment from South Africa has significant impacts on local growth rates in the southern continent, in particular the rates of convergence to South African GDP per capita. Countries with a high stock of South African FDI converge more rapidly to South African per capita income levels, while countries with low bilateral FDI stocks vis-à-vis South Africa show no evidence of convergence (Dunne and Masiyandiam 2015). Thus the deceleration of the South African economy in recent years could spill over to other countries that have large stocks and flows of South African FDI and could manifest as both lower FDI and lower GDP growth in these countries.

Box 6. South African Investment in Sub-Saharan Africa (continued)**Box Figure 6.1. South Africa: Outward FDI in Sub-Saharan Africa**
(Percent of GDP)

Source: IMF, Coordinated Direct Investment Survey database.

Table 6.1. South Africa: Major Multinationals

Name	Sector	Sub-Saharan Africa Reach: (Number of countries with operations, excluding South Africa)	Global Reach (Total number of countries with operations)
Bidcorp	Food services	16	41
First Rand	Financial services	8	16*
MTN	Mobile phone operator	16	21
Naspers	Internet and media	37	130
Sanlam	Financial services	12	18
Sasol	Chemical	7	33
Shoprite	Groceries, furniture, restaurants, pharmaceutical, logistics, property, hospitality, ticketing, liquor, money markets	15	15
Standard Bank Group	Financial services	16	30

Note: *FirstRand has eight full service banking locations in Africa. It has one investment banking licence (Nigeria) and two representative offices (Angola and Kenya) on the continent, plus five branches and representative offices globally.

increases in corporate spreads; (3) Financial channel spillovers can manifest as counterparty spillovers, where the default of a firm causes financial distress for its foreign creditors, shareholders, or parent (Jorion and Zhang 2009); and (4) The imposition of restrictions, such as those on foreign exchange, can hurt local and foreign-owned firms by disrupting their production processes and revenue remittances. The subsequent negative performance of the local subsidiary could pose risks for the parent company (IMF 2017c), which

could reduce the attractiveness of such countries as an FDI destination.

The Fiscal Channel—The Role of Unintended Consequences

Spillovers can arise from large fluctuations in fiscal revenues in the context of customs unions and from commodity pricing policies in neighboring countries. These

Box 7. SACU Revenue-Sharing Formula

All customs and excise revenues collected in the Southern African Customs Union (SACU) countries are pooled and managed by the South African Revenue Fund, then distributed to member countries according to a revenue-sharing formula. The 2002 agreement describes how revenues are distributed:

- One hundred percent of customs revenue is distributed on the basis of intra-SACU imports.
- Eighty-five percent of excise revenue is distributed on the basis of members' GDP.
- Fifteen percent of excise revenue is distributed equally through a development component, with an adjustment inversely proportional to the member's GDP per capita.

As described in Basdevant (2012), the revenue (R) sharing formula is

$$R_i = a_i C + 0.85 y_i E + 0.15 \frac{1}{5} E \left(1 - \frac{h_i - 1}{10} \right)$$

where C refers to custom duties and E to excises. For each country i , a_i is the value at the border of

imports to the country from all other SACU members, less re-exports, divided by the value of imports less re-exports for all SACU countries; y_i is the share of GDP of the country in the SACU GDP; and h_i the level of GDP per capita in the country divided by the average across SACU members.

Given the structure of the formula, fluctuations in customs revenues have a larger impact on smaller countries but are partially compensated by transfers associated with the development component (Basdevant 2012).

Another source of volatility in the revenues stems from the forecasting and adjustment mechanism (Honda and others 2017). Transfers in any given year correspond to the forecasted value a year earlier, and any discrepancies between forecast and actuals are compensated the following year. Cuevas and others (2012) argue that this approach increases the predictability of the revenues in the short term but over the medium term increases the variance of SACU transfers beyond the variance of the underlying revenue pool.

developments have an impact on economic activity and fiscal sustainability.

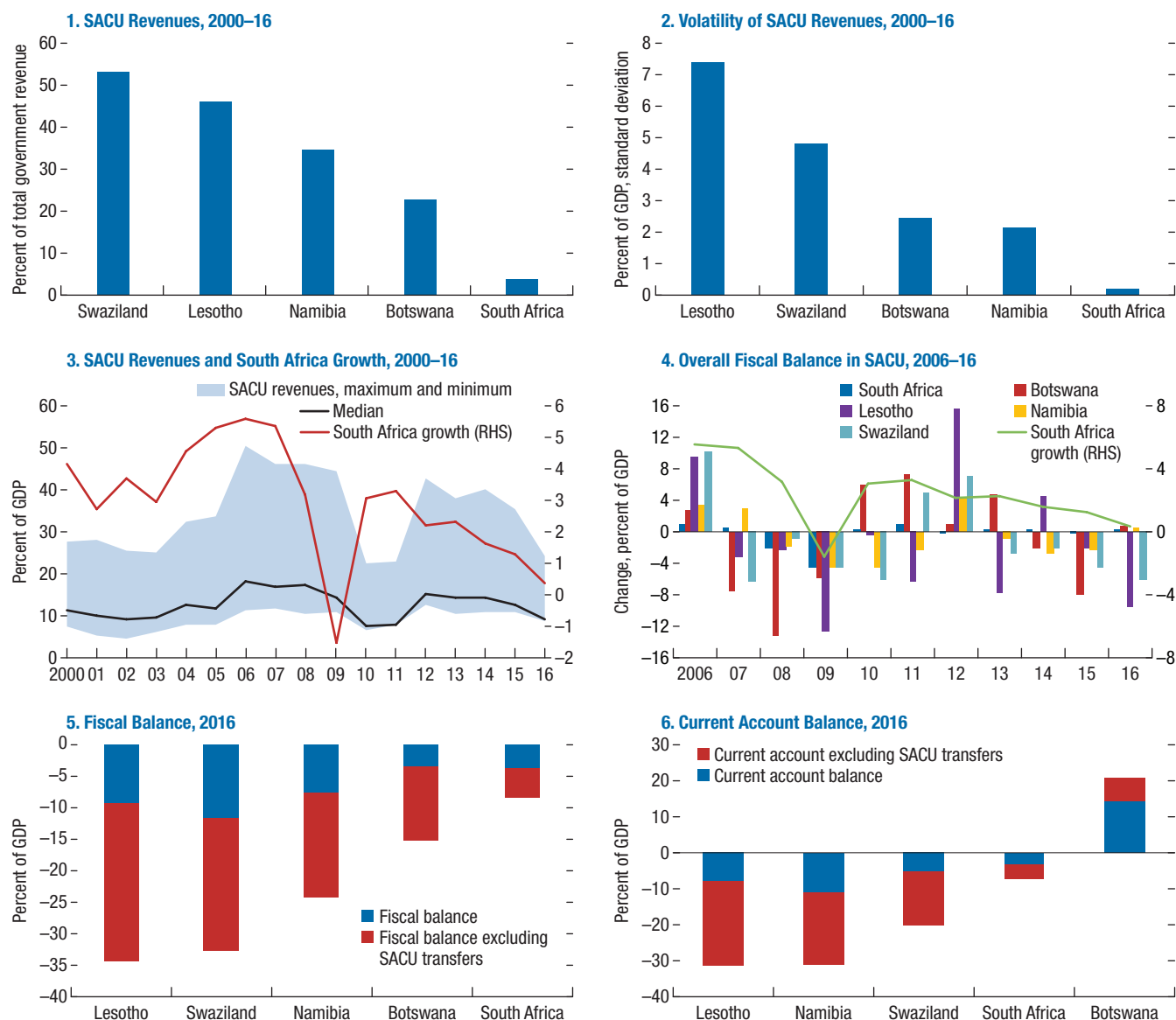
Importance of Customs Unions

For countries that share a customs union, fluctuations in trade revenues constitute an important spillover channel. In the case of the SACU, member countries pool their trade-related revenues and excises and distribute them following a proportionality rule (Box 7). Fluctuations in SACU revenues have a larger impact on the fiscal revenues of smaller member countries because they represent a relatively larger portion of their total public revenues. For example, in Swaziland and Lesotho, SACU revenues constitute more than 40 percent and 50 percent of total public revenues, respectively (Figure 28, panel 1) (IMF 2016c).

The volatility of customs duties and excises can have substantial economic and fiscal impacts. SACU receipts as a share of government revenues or GDP can be highly volatile in the case of the smallest SACU members. For instance, in Lesotho and Swaziland, the standard deviation of receipts as a share of GDP was between 5 percent and 7 percent for the period 2000–16 (Figure 28, panel 2). This volatility, together

with the procyclical structure of the sharing formula, creates strong economic links between SACU member countries and can complicate the conduct of fiscal policy and macroeconomic management (Basdevant 2012; Honda and others 2017).

Given the relative importance of the South African economy in the union, the state of its economic cycle is the main driver of the total amount of union receipts to be shared. Fluctuations in South Africa's consumption and imports have a large impact on total SACU trade-related and excise revenues. Indeed, South African imports alone generate more than 90 percent of the SACU revenue pool (Basdevant 2012; IMF 2012). During periods of economic expansion in South Africa, when both total demand and import demand increase, there is an increase in total union-wide SACU revenues. On the other hand, SACU revenues experience large declines when economic conditions deteriorate in South Africa, as was the case during the global financial crisis and more recently as growth slowed in South Africa (Figure 28, panel 3). Declines in SACU revenues have led to sharp deteriorations in the fiscal position of SACU member countries, with Lesotho and Swaziland most affected (Figure 28, panel 4). The deterioration was particularly

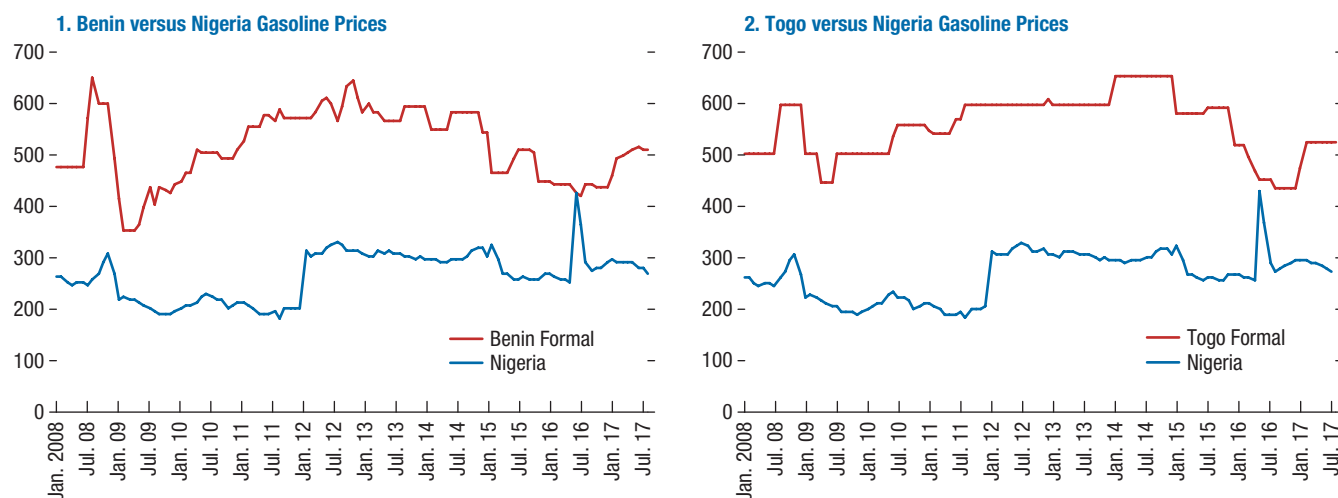
Figure 28. SACU Revenues and Selected Macroeconomic Indicators

Sources: IMF, country team databases, *World Economic Outlook*.

pronounced in 2016, when the overall fiscal balance in Lesotho and Swaziland worsened by 9.5 percent and 6 percent of GDP, respectively.

Given the contribution of SACU revenues to fiscal and external deficits, spillovers originating from revenue fluctuations can have considerable implications for fiscal and external sustainability. For instance, in Lesotho, SACU revenues are critical to fiscal sustainability—in 2016 the fiscal deficit excluding regional revenues was 34 percent of GDP (Figure 28, panel 5). In addition to the fiscal implications, SACU

revenues constitute an important source of foreign exchange inflows and contribute to the stock of international reserves (Honda and others 2017). For example, in Namibia, these transfers are an important source of foreign income, with the current account (excluding SACU transfers) at 31 percent of GDP (Figure 28, panel 6). In the context of the Common Monetary Area—in which Lesotho, Namibia, and Swaziland have pegged their currency to the South African rand—fiscal sustainability has direct implications for external stability and the sustainability of the

Figure 29. Differentials between Nigerian Gasoline Prices and Those of Benin and Togo

Sources: Country authorities; and IMF staff calculations.

Table 2. Fuel Prices Correlation in Togo, Benin and Nigeria, 2008–17

	International oil prices	Nigeria's domestic prices	Price differential with Nigeria
Benin			
Official prices	0.72	0.34	
Informal market prices	0.3	0.63	
Togo			
Formal prices	0.49	0.31	
Informal market prices	0.2	0.72	
Domestic consumption	-0.03	0.43	-0.85
Nigeria			
Official prices	0.01		

Sources: Country authorities; and IMF staff calculations.

monetary arrangement (Basdevant 2012; Honda and others 2017).

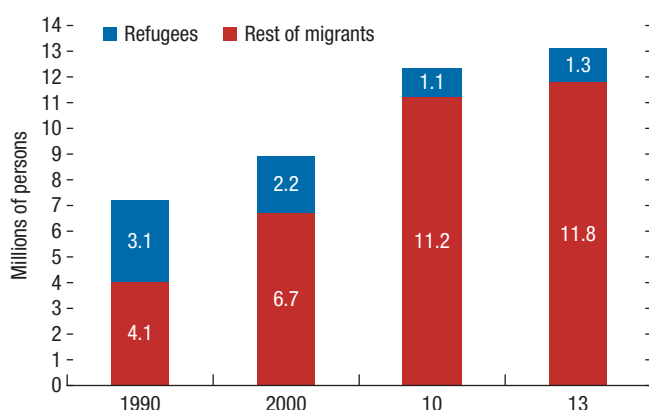
Unintended Spillovers from Nigeria's Fuel Pricing Policies to Its Neighbors

Fuel subsidies in sub-Saharan African countries have large fiscal costs and may have considerable negative spillovers to neighboring countries. Subsidies that lower fuel consumption costs in one country below those in border countries tend to have the unintended consequence of cross-border fuel smuggling (IMF 2012). The negative externalities of smuggling are particularly acute if the receiving country has an automatic fuel price adjustment mechanism that prevents authorities from lowering fuel prices in line with smuggled prices. Given that fuel subsidies are expensive (on

average 2 percent of GDP per year), policies that do not reduce them are problematic.

Nigeria's fuel subsidies are a quintessential example of negative fuel pricing spillovers, which had serious fiscal impacts on Benin and Togo.¹⁴ Benin and Togo set about reforming their fuel pricing policies from 2008 through 2012, while Nigeria continued to provide subsidies. Inevitably, a significant price differential arose between official fuel prices in these countries and those in Nigeria, leading to increased operating margins for smugglers and more fuel smuggling (Figure 29). The level of fuel sold on the formal (taxed) market declined precipitously in Benin to only 15 percent of total consumption and was much less than it should have been in Togo. This led to a smaller fuel tax

¹⁴Inflation correlations between Nigeria and its neighboring countries are also strong, especially in food prices (IMF 2012).

Figure 30. Sub-Saharan Africa: Within Migration, Refugees

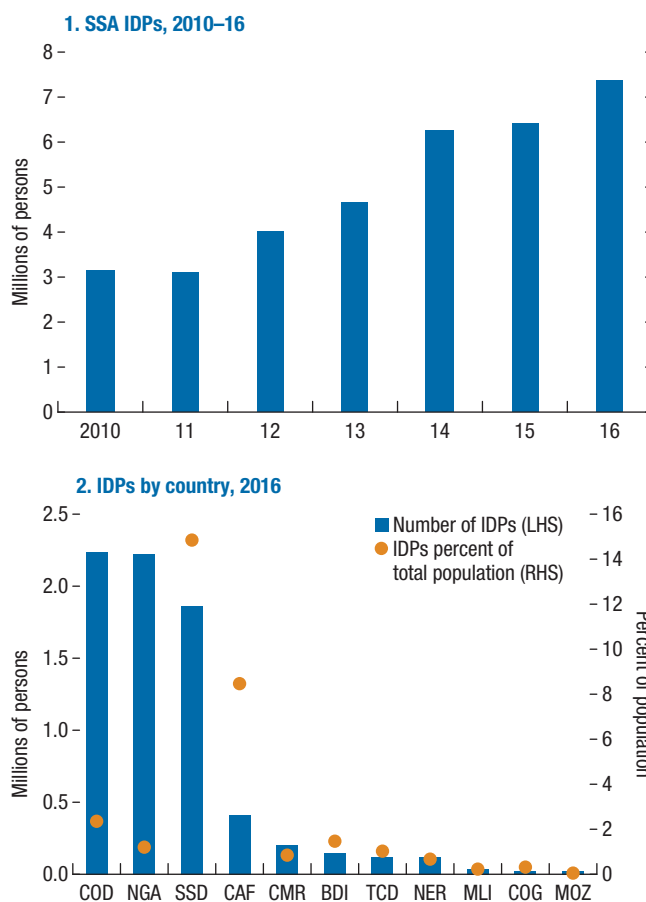
Sources: United Nations High Commissioner for Refugees database; and World Bank, Migration and Remittances database.

base for legally consumed fuel in these two countries (Mlachila, Ruggiero, and Corvino 2015).

Nigeria's price level had a large positive and statistically significant impact on foreign formal fuel consumption. In Togo, the correlation between formal market consumption and the price differential vis-à-vis Nigeria is -0.85 (Table 2). In 2011 this implied an implicit subsidy of about 3 percent GDP to Togo, three-quarters of which was captured by smugglers and one-quarter by Togolese consumers, as their welfare increased with the purchase of fuel at lower informal prices.

In countries that provide subsidies, such as Nigeria, the first best approach is to follow international fuel prices more closely by instituting an automatic fuel pricing mechanism (see IMF 2013). In addition to reducing fiscal costs, this would reduce negative spillovers to the country's neighbors. A second-best approach is more cooperation among countries to control borders to reduce smuggling and further harmonization of tax policies to avoid generating negative regional spillovers.

However, if there is large-scale smuggling, the first best solution may not work effectively. In the presence of a porous border and large price differentials, automatic price adjustment—if it increases the price differential—can lead to tax base erosion. In this case, the best strategy may be to lower the tax rate, which is tantamount to lowering the domestic price (Mlachila, Ruggiero, and Corvino 2015). However, this approach may have substantial fiscal costs compared with a situation of no smuggling.

Figure 31. Sub-Saharan Africa and Selected Countries: Internally Displaced Persons

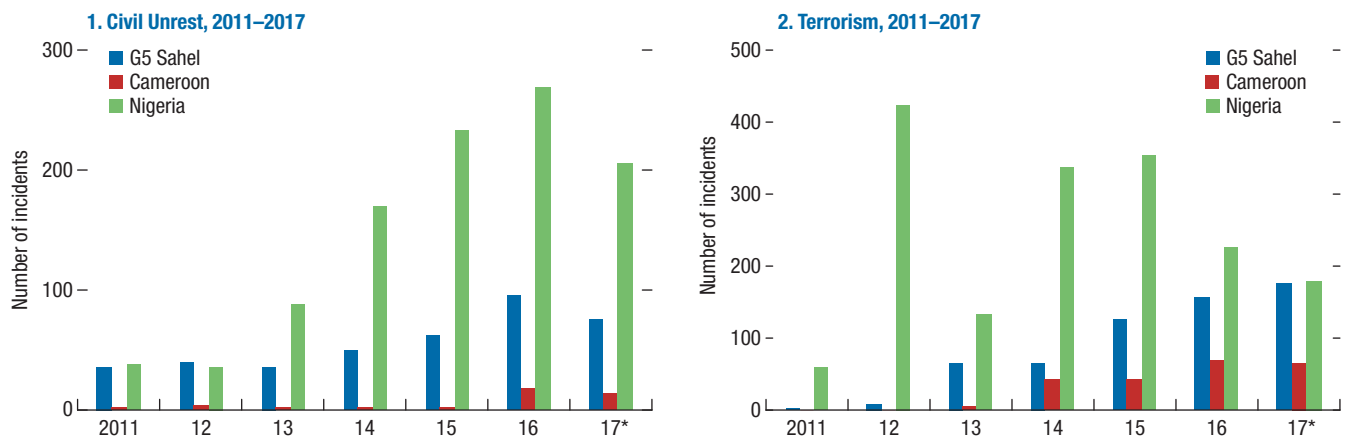
Sources: United Nations High Commissioner for Refugees database; and World Bank, Migration and Remittances database.

Note: See page 42 for country abbreviations table. LHS = left hand side; RHS = right hand side.

The Rising Socioeconomic Impact of Forced Migration

The number of internally displaced persons has risen significantly as a result of conflicts and violence, primarily the rise of religious extremism affecting the Sahel region and northeastern Nigeria. These developments hurt economic activity and weigh on public expenditures.

While available statistics show evidence of a significant decline in the share of forced migration across countries in sub-Saharan Africa through most of the 1990s and 2000s, there are some indications that the pace of the decline has slowed or partially reversed. The latest available migration data show that the ratio of refugees to the total migrant population declined from over 40 percent in 1990 to 10 percent

Figure 32. Selected Sub-Saharan African Countries: Civil Unrest and Terrorism

Sources: IMF, Corporate Services and Facilities Security Services database; and IMF staff calculations.
Note: * = August 2017.

in 2013 (Figure 30). This was a result of the decline in large-scale conflicts in Southern and West Africa and the end of the Rwandan genocide (Gonzalez-Garcia and others 2016). Since then, while the number of intraregional sub-Saharan African refugees has declined, the number of internally displaced persons has risen significantly (Figure 31, panel 1). The Sahel countries, Nigeria, Democratic Republic of the Congo, South Sudan, and Central African Republic, are among the countries most affected by internal displacement triggered by conflicts and violence (Figure 31, panel 2).¹⁵ Furthermore, while the number of refugees has been falling, the absolute number of migrants has risen considerably and is currently at record levels. The increase in the number of migrants within sub-Saharan Africa is likely driven by individuals seeking greater economic opportunity and reflects reduced barriers to the movement of people.¹⁶

There are many reasons for the increased number of displaced persons. Across the Sahel countries, Nigeria, and Cameroon, terrorism-related events and civil conflicts have more than doubled since 2011 (Figure 32). The collapse of the government in Libya, combined with the rise of religious extremism, has undoubtedly been the leading cause for civil conflict in the Sahel. The direct impact has been increased availability of

arms and the resultant elevated frequency of terrorist attacks in the Sahel, especially in Burkina Faso and Mali. Boko Haram attacks have been the leading cause of displacement of people in Niger, northeastern Nigeria, Chad, and northern Cameroon. In the other countries, domestic and neighboring political turmoil has been the driving factor of forced migration. For instance, Uganda currently hosts more than 1.2 million refugees and asylum seekers, the highest number in sub-Saharan Africa and the third largest in the world; they are mainly from South Sudan and Democratic Republic of the Congo (UNDP 2017).

Forced migration reduces economic activity and has considerable humanitarian and fiscal costs stemming from both fighting terrorism and hosting displaced persons (IMF 2016b). This is the case in the Lake Chad area, where tourism has completely shut down. While some economic activities may not be currently affected (for example, mining in remote regions), domestic and foreign investment is likely to be held back by the insecurity and the higher cost of doing business. The United Nations Office for the Coordination of Humanitarian Affairs estimates that the security situation will result in nearly 30 million people suffering food insecurity, with almost 12 million of these at crisis or emergency levels. The office reports that the Sahel region contended with approximately 4.9 million refugees and internally displaced persons in 2017; it estimates the region's humanitarian and financial needs at US\$2.7 billion for that year. The fiscal costs of hosting displaced populations vary; they are estimated

¹⁵See the Internal Displacement Monitoring Centre website at <http://www.internal-displacement.org/sub-saharan-africa/summary/>.

¹⁶For a detailed discussion of the economic determinants of migration in sub-Saharan Africa, see Gonzalez-Garcia and others (2016).

to range between 1 percent and 5 percent of GDP, depending on the number of displaced persons.¹⁷ Indeed, Sub-Saharan Africa hosts some of the biggest refugee camps in the world (Gonzalez-Garcia and others 2016).

Concluding Remarks

Over the past few decades, sub-Saharan Africa has been undergoing a process of regional integration that has materialized through many dimensions, including trade, banking, financial markets, financial innovation, and customs and monetary unions—these changes have likely increased the potential for regional spillovers. What does this imply for the economic recovery of the region now that the largest economies are experiencing a tepid pick-up in growth after an extended period of slow growth? As this note shows, the answer depends on the dynamism of growth in countries with the highest potential to generate regional spillovers.

In the context of the trade links, countries that have been identified as the main destination for regional imports play a significant role in the growth of their trading partners. Some of these countries, like South Africa, are facing persistently sluggish economic activity, but others, such as Côte d'Ivoire, have maintained fast growth for a decade. In terms of banking channels, PABs and subregional banks have contributed to the deepening of banking systems in the region, a development that has been associated with higher medium-term growth. In the context of remittance channels, the increase of intraregional remittance flows in origin countries has an impact on the economic activity of countries that receive remittances from the region. The largest countries in the region have important fiscal policy spillovers, which can either boost or derail growth in neighboring countries, depending on the state of their economies.

As the sub-Saharan African economy has grown, regional demand for intraregional exports has become an important market for goods produced in the region, regional banks have created new business opportunities and activity in the region, and remittance flows have contributed to economic activity in recipient countries. Further enhancing regional integration

can have positive effects for medium-term growth in sub-Saharan Africa.

The analysis presented here suggests that the level of integration in sub-Saharan Africa is higher than commonly assumed, and it has the potential to deepen on many levels, supported by appropriate policies:

- Trade integration is now at comparable levels with that in other developing regions. Regional integration policies—such as reduction of tariff and nontariff barriers—and improvements in transport infrastructure can facilitate intraregional trade. Structural transformation strategies that promote diversification could minimize spillover risks associated with overreliance on too few products and partners.
- While greater integration and sophistication in the regional financial systems are welcome, they pose new risks, as they increase the interdependence of financial markets and the potential for contagion. Policies should address these risks by enforcing existing banking regulatory frameworks, strengthening cooperation among supervisors, and developing cross-border bank resolution frameworks, which are currently lacking.
- Ongoing financial and technological developments have translated into lower costs for sending remittances throughout the region and have contributed to rising regional remittance flows. It is essential to provide a regulatory environment for these new technologies that is both enabling and risk mitigating (IMF 2017a).
- As economic integration deepens, public policies need to be mindful of fiscal spillovers to mitigate associated fiscal risks. This calls for greater harmonization of fiscal policies.
- A recent resurgence in population displacement highlights the need for policies to address the main causes of forced migration, such as increased economic and physical insecurity, and put in place a system that accommodates and integrates forced migrants in host countries in a sustainable way. Increased international aid would greatly facilitate the process.

This note stresses the growing need for policymakers to factor in spillovers from within the region when planning for the medium term and to design policies that address increasing transmission risks.

¹⁷For instance, the United Nations Development Programme estimates the cost of hosting refugees and asylum seekers in Uganda at about US\$320 million, or about 1.3 percent of GDP.

Appendix

Appendix Table 1. Sub-Saharan Africa: List of Country Abbreviations

AGO	Angola	ERI	Eritrea	MLI	Mali	SWZ	Swaziland
BDI	Burundi	ETH	Ethiopia	MOZ	Mozambique	SYC	Seychelles
BEN	Benin	GAB	Gabon	MUS	Mauritius	TCD	Chad
BFA	Burkina Faso	GHA	Ghana	MWI	Malawi	TGO	Togo
BWA	Botswana	GIN	Guinea	NAM	Namibia	TZA	Tanzania
CAF	Central African Republic	GMB	Gambia, The	NER	Niger	UGA	Uganda
CIV	Côte d'Ivoire	GNB	Guinea-Bissau	NGA	Nigeria	ZAF	South Africa
CMR	Cameroon	GNQ	Equatorial Guinea	RWA	Rwanda	ZMB	Zambia
COD	Congo, Dem. Rep. of	KEN	Kenya	SEN	Senegal	ZWE	Zimbabwe
COG	Congo, Rep. of	LBR	Liberia	SLE	Sierra Leone		
COM	Comoros	LSO	Lesotho	SSD	South Sudan		
CPV	Cabo Verde	MGD	Madagascar	STP	São Tomé & Príncipe		

Appendix Table 2. Sub-Saharan Africa: Member Countries of Groupings

Oil exporters	Other resource-intensive countries	Non-resource-intensive countries
Angola	Botswana	Benin
Cameroon	Burkina Faso	Burundi
Chad	Central African Republic	Cabo Verde
Congo, Rep. of	Congo, Dem. Rep. of	Comoros
Equatorial Guinea	Ghana	Côte d'Ivoire
Gabon	Guinea	Eritrea
Nigeria	Liberia	Ethiopia
South Sudan	Mali	Gambia, The
	Namibia	Guinea-Bissau
	Niger	Kenya
	Sierra Leone	Lesotho
	South Africa	Madagascar
	Tanzania	Malawi
	Zambia	Mauritius
	Zimbabwe	Mozambique
		Rwanda
		São Tomé and Príncipe
		Senegal
		Seychelles
		Swaziland
		Togo
		Uganda

Appendix Table 3. Sub-Saharan Africa: Member Countries of Regional Groupings

The West African Economic and Monetary Union (WAEMU)	Economic and Monetary Community of Central African States (CEMAC)	Common Market for Eastern and Southern Africa (COMESA)	East Africa Community (EAC-5)	Southern African Development Community (SADC)	Southern Africa Customs Union (SACU)	Economic Community of West African States (ECOWAS)
Benin	Cameroon	Burundi	Burundi	Angola	Botswana	Benin
Burkina Faso	Central African Republic	Comoros	Kenya	Botswana	Lesotho	Burkina Faso
Côte d'Ivoire	Chad	Congo, Dem. Rep. of	Rwanda	Congo, Dem. Rep. of	Namibia	Cabo Verde
Guinea-Bissau	Congo, Rep. of	Eritrea	Tanzania	Lesotho	South Africa	Côte d'Ivoire
Mali	Equatorial Guinea	Ethiopia	Uganda	Madagascar	Swaziland	Gambia, The
Niger	Gabon	Kenya		Malawi		Ghana
Senegal		Madagascar		Mauritius		Guinea
Togo		Malawi		Mozambique		Guinea-Bissau
		Mauritius		Namibia		Liberia
		Rwanda		Seychelles		Mali
		Seychelles		South Africa		Niger
		Swaziland		Swaziland		Nigeria
		Uganda		Tanzania		Senegal
		Zambia		Zambia		Sierra Leone
		Zimbabwe		Zimbabwe		Togo

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