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# The Economic Engagement Footprint of Rising Powers in Sub-Saharan Africa: An Analysis of Trade, Foreign Direct Investment and Aid Flows

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November 2013

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# THE ECONOMIC ENGAGEMENT FOOTPRINT OF RISING POWERS IN SUB-SAHARAN AFRICA: AN ANALYSIS OF TRADE, FOREIGN DIRECT INVESTMENT AND AID FLOWS

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# 1 Introduction

Rising powers such as Brazil, China, India, South Africa, the Gulf states or Turkey have entered the development arena through their expanding relationships with low-income countries (LICs). A widespread perception is that these countries are establishing new forms of engagement, mainly under the South–South cooperation framework, which can be defined as: (i) two-way or equal partner relationships, as opposed to the engagement of traditional donors that is seen as relying on conditionality; and (ii) extending cooperation beyond aid flows to include trade, investment, finance and other flows. Other views, however, suggest that the importance of engagement from these countries is still small compared to traditional OECD donors, and highlight that established relationships can sometimes be more likely to satisfy the commercial and economic interests of these new donors.

One region where this engagement has been increasing more significantly is sub-Saharan Africa (SSA). Estimates suggest that over the last decade both trade and foreign direct investment (FDI) from emerging economies to Africa ballooned. Freemantle and Stevens (2012) report a trade increase from USD20 billion in 2001 to more than USD250 billion in 2011 between Africa and a group of ten emerging economies (EEs). These new economic relationships represent new economic opportunities for African countries, at the same time as challenging existing relationships with traditional OECD partners.

The objective of this report is to understand and measure the engagement of rising powers in SSA.[1] Specifically, the report attempts to clarify the importance and nature of their engagement and the distinctiveness of their economic relationships with SSA, among the rising powers themselves and also in relation to traditional OECD donors, and to start analysing their likely development footprint arising from their economic engagement.

In order to characterise their engagement and development impact, we adopt the South–South cooperation framework and go beyond the analysis of aid flows. Specifically, we take stock of all the data and information available, and establish some generalisations facts about the rising powers' economic engagement in SSA in relation to trade, FDI and aid flows.

The ultimate objective of this report is to provide information to help answer a number of important policy questions:

- How important is rising powers' engagement in SSA?
- What is the nature and what are the patterns of this engagement?
- To what extent are the rising powers similar to or different from each other with respect to the characteristics of these flows?
- To what extent are the footprints of the rising powers similar to or different from those of leading OECD countries?
- What do the current level, past growth and projected future trends tell us about the present and future significance of relationships between rising powers and SSA compared to those between established donors and SSA?

The analysis of these data sources is not new. The great economic and political interest in the rising powers has already generated many studies of their impact on developing countries. International organisations have produced a plethora of reports on the rising

[1] By rising powers in this report we refer to Brazil, China, India, South Africa, the Gulf states and Turkey. These are economies that have been significantly increasing their engagement and influence in SSA. Please note that in some of the statistical information provided below we refer to the Southern African Customs Union (SACU) rather than South Africa because trade data in COMTRADE was only available for SACU (with South Africa representing a very large percentage of trade in the region). For investment and aid South Africa is reported individually.

powers and on South–South economic relationships more generally, and there have been important country-level studies of economic relationships between the powers and LICs, such as the detailed studies of China in Africa by Broadman (2006) and Brautigam (2009). In addition, substantial new research is being produced with new emerging datasets, which allow comparisons between donor countries (see, for example, Timmons Roberts, Findlay and Hawkins 2011).

The distinctiveness of our approach lies in its ambition to bring together multiple sources of information on a broad range of economic relationships and to provide a comparative analysis of the footprints of rising powers in LICs, in terms of both how they differ from each other and the extent to which they are distinct from the OECD countries.

This paper is organised as follows. Section 2 gives some background information about the nature of rising powers' economic engagement, briefly summarises some of the related literature and puts forward some hypotheses. Section 3 describes the data used for the analysis. Section 4 analyses rising powers' engagement in SSA. Section 5 concludes, summarising the main generalisations about rising powers' engagement in SSA.

The economic engagement footprint is a first aggregated approximation to the development impact of rising powers' engagement in SSA. Understanding the broad development impact of this engagement requires more detailed micro-evaluations, which are beyond the scope of this report. The footprint will, however, help to identify 'hot spots' of interactions between rising power countries and SSA. This might be in terms of SSA countries that are particularly important economic partners for one or more of the rising powers, or where rising power countries have particularly salient footprints. It could also be used for analysis of thematic issues such as the role of the rising powers in particular sectors such as food or minerals.

Overall, the economic engagement footprint shows some important findings. Some rising powers, especially China and India, are becoming important economic partners to SSA countries. This importance is especially significant in trade and FDI flows, and also for China in aid flows. Despite the existence of common guiding principles for some rising powers in relation to the South–South cooperation framework, allocation and the nature of flows among these countries in SSA does not appear highly similar. For some flows, while there are highly similar allocations among some rising powers, there also tend to be important similarities with some OECD countries. This suggests that the South–South cooperation framework is not translated into similar sector or country allocations of economic flows that are distinctive of these countries. This is likely to be the result of differing national objectives and economic structures among the rising powers. On the other hand, some of the concerns about the primacy of economic interests or a disregard for governance suggested as an outcome of aid allocation from these countries do not seem to translate in practice to allocation patterns differentiated from those of some OECD countries.

Finally, in terms of potential development footprints two main issues emerge. Regarding trade, rising powers, especially China and Brazil, appear to exacerbate the pattern of primary commodity export existing with OECD countries, and concentrate on exports of even lower sophistication and technological content. This could reinforce the trend on negative structural change for SSA. Regarding FDI, however, investment from rising powers is quite diversified between different sectors, especially services, which could constitute a significant source of economic growth in the region.

The findings of this report rely on the quality of existing data. However, significant gaps in the data were identified, particularly regarding the reliability of FDI flows, the completeness of aid data for rising powers and the availability of data for bilateral development finance and other forms of non-OECD Development Assistance Committee (DAC) cooperation. Priority should be given to gathering data in these areas in order to have a full picture of rising powers' economic engagement.

# 2 Background: Why the footprint?

As rising powers have entered the development arena through their expanding relationships with low-income countries, three diffused arguments have been made about the distinctiveness of these countries' activities compared to those of the established donors. The first argument, advanced by the rising powers themselves, is that they are engaged in South–South cooperation, not the aid business. According to this view, cooperation implies a two-way relationship of equals, rather than the power imbalance implied by the donor–recipient relationship. Even if one party is much more economically and politically powerful than the other, and assistance flows in only one direction, the argument is made that without a history of imperialism and sharing a recent common background of underdevelopment the rising powers are different.

The second argument is that the scope of South–South cooperation extends beyond aid to include trade, investment and financial flows as well as development assistance. The argument here is that the positive developmental impacts of South–South cooperation extend beyond aid, and that the rising powers are promoting growth and prosperity through these broader relationships.

The third argument, less frequently advanced by the rising power countries themselves, is that a fundamental rebalancing of the global economy is taking place such that the rising powers are becoming much more significant economic partners for LICs, especially in SSA.

These three arguments can be summarised in four main hypotheses about rising powers' economic engagement with SSA countries:

1. The strength and importance of the rising powers' economic engagement with SSA is increasing and becoming more important over time, especially in relation to OECD engagement.
2. These countries engage with SSA in these areas (aid, trade and finance) in a different way from traditional OECD donors.
3. Rising power approaches are similar among themselves (South–South cooperation) and distinguishable from OECD donors.
4. This 'differentiated' approach embedded in South–South cooperation is translated into an additional development impact on SSA countries, especially compared to the impact of other OECD donors.

Analysing the existing literature suggests that while some of the overarching principles of development cooperation may be similar for some of the rising powers, there are significant differences in objectives, instruments or implementation. Table 2.1 summarises some of these principles and objectives suggested by the literature (see Rowlands 2008). Regarding objectives, there are significant differences across rising powers in terms of objectives in SSA, with some countries, such as South Africa, more interested in political influence and others, such as India, more based on economic interests. This is translated into cooperation in different sectors and different countries, and also into using different instruments. One important element in Table 2.1 is the fact that development cooperation agencies depend mainly on the Ministry of Foreign Affairs, with the exception of China where it depends on the Ministry of Commerce. In none of the countries do development cooperation implementing agencies have their own ministry.

## Table 2.1 Basic principles of development cooperation in rising powers

| | Objectives | Principles | Instruments | Sector | Ministry responsible |
|---|---|---|---|---|---|
| China | Political influence in Asia<br>Economic interest in Africa | Win-win cooperation<br>Non-interference | Tied aid | Infrastructure development<br>More recently capacity building and social development | Commerce |
| India | Geopolitical influence<br>Asia focus, political stability<br>Economic interest in Africa | Fair relationship | Tied aid<br>Technical assistance | Access to markets and energy<br>Health and education (secondary)<br>In Africa training and purchase of own products<br>Competing with China on natural resources | Foreign Affairs |
| Brazil | Latin America<br>Portuguese Africa<br>Political and economic interests | Horizontal cooperation | Technical assistance | Varied | Foreign Affairs |
| South Africa | Africa, mainly SADC<br>Political interest | African renaissance | | Defence, security and education | Foreign Affairs |
| Gulf states | Economic interest in Africa | OECD framework to show policy credibility to OECD | | | |

Source: Based mainly on Rowlands (2008) and other literature.

Finally, in terms of principles – with the exception of the Gulf states, which joined the OECD DAC group with the objective of signalling credibility in relation to OECD countries – these appear to be relatively similar to the South–South cooperation framework described above. For Brazil, the guiding principle is horizontal cooperation, emphasising engagement between equals. For China, the main principles are non-interference and win-win cooperation. South Africa emphasises the 'African renaissance' and political influence in the rest of Africa. In India, mutual benefit is emphasised, and also fairness, especially in SSA where India has tried to differentiate itself from China (Agrawal 2007). The common idea of these principles is one that claims engagement between 'equals' without conditionality, and this is what according to some commentators and policymakers justifies categorising these countries as a group regarding development cooperation.

Mwase and Yang (2012) differentiate development finance between the BRICS (Brazil, Russia, India and China) and OECD countries, arguing that in the former group development finance allocation is guided by mutual benefit while in the latter mainly by the objective of poverty reduction. However, while the guiding principle may be similar among rising powers, this has to be applied to very different objectives and to the use of different instruments, as suggested in Table 2.1. As a result, the question from a footprint perspective is whether the combination of this similar set of guiding principles under the South–South cooperation framework, with different objectives and instruments, is translated into similar country and sector allocations among the rising powers that could indicate the similarity of these countries as a group and a likely similar development impact.

There are a few studies analysing development cooperation by rising powers (see Rowlands 2008, for example). These papers tend to provide mainly qualitative reviews of development cooperation in these countries. One paper, however, that compares different donors, 'old'

(OECD) and ‘new’, using quantitative analysis is Dreher, Nunnenkamp and Thiele (2011). Interestingly, the authors find some differences between ‘new’ and ‘old’ donors in relation to aid allocation. Specifically, they find that although ‘new’ donors’ allocation is similar to that of ‘old’ donors, ‘new’ donors do not tend to consider corruption levels in their allocation rules. The authors also find that commercial interests are not important for either group. While their paper provides some interesting findings to understand the ‘differentiated’ impact of rising powers engagement, these findings are confined to aid flows and do not consider the importance of other types of engagement emphasised in the South–South cooperation framework.

In the rest of this paper we describe the economic engagement of rising powers in SSA and look at the hypothesis of ‘similarity’ and ‘differentiation’ among rising powers and with traditional OECD donors across three types of flows: trade, FDI and aid.

# 3 Data and methodology

In order to build a clear picture of the economic engagement of rising powers in SSA we look at three types of flow: trade (both exports and imports), FDI and aid flows. Other flows such as migration, technology, ideas and especially other types of finance are also likely to have a development impact in recipient countries. However, it is very difficult to find meaningful data on the size and allocation of these flows in SSA. As a result, we focus on these three types of flow, which are critical in terms of economic impacts and development footprint.

In relation to trade flows we use the BACI dataset by CEPII. This dataset is based on the UN Comtrade database, which collects all exports and imports for most countries in the world at Harmonized System HS-6 digits, which is the most disaggregated commodity classification available where product categories are comparable across countries. The advantage of the BACI dataset is that it corrects some missing export flows that are prevalent in developing countries by using mirror statistics. Specifically, we build a dataset of bilateral exports and imports from all SSA countries at the HS-6 level for the period 2000 to 2010 using the HS revision of 1992 to avoid changes in classification that may distort the data.

FDI data are more challenging to collect and less available than trade flows. While trade flows are captured mainly via customs controls, FDI data (especially data disaggregated bilaterally and by sector) are more difficult to find. One challenge presented by FDI data is that bilateral FDI flows between two countries may not physically flow from one country to the other. This is explained by the fact that companies, especially multinationals, have subsidiaries outside their country of origin, which may transfer the capital flows necessary for the investment. In these cases, FDI measured at origin by Central Bank authorities are likely to miss a significant number of investments. A second challenge is the lack of information on the sector composition of these investments.

In relation to FDI flows we started by using a dataset of bilateral FDI flows from the United Nations Conference on Trade and Development (UNCTAD). The dataset appears to be more complete for OECD countries than for rising powers. However, the amount of FDI flows for countries such as Brazil, China or India appears very low and does not match the evidence described in reports that look at investments in SSA. As a result, we use an FDI dataset compiled by the *Financial Times*. The advantage of this dataset is that it appears mainly to capture investments at destination, and, therefore, appears more reliable. The main shortcomings of the dataset, however, are that it does not disaggregate all flows bilaterally and it is not always clear whether investments announced have been disbursed. In our dataset, information is only available for all of SSA as a region and for Nigeria, Ghana, Mozambique, Tanzania and Zambia individually. Information on sector allocation is also described in terms of the number of projects and not in terms of values. Despite these shortcomings we primarily use the FT FDI dataset given the striking lack of FDI flows from rising powers to SSA in the UNCTAD dataset. The results corresponding to sector FDI allocation, however, need to be interpreted with caution since we do not have sector values.

Finally, in relation to aid flows we use the OECD DAC dataset that includes all bilateral aid flows by DAC-3 digits sector for the OECD DAC countries including, for 2009 and 2010, some Gulf states. For the remaining rising powers, mainly Brazil, India and South Africa, we use harmonised data from aiddata.org, which compiles all projects for these countries that can be classified as aid using the OECD DAC sector classification and facilitates the comparison of flows with OECD DAC donors. For China, however, aiddata.org data lack information on values for a very large number of projects and cannot be added to the dataset. In order to have some information on Chinese aid allocation, we use data on bilateral development cooperation flows provided by China's Ministry of Commerce (MOFCOM) for the period 2000–2009. Since these values correspond to a broader definition

of development cooperation that includes other financial flows not considered as aid by the OECD DAC, we adjust the flows based on Brautigam (2011) estimates of Chinese cooperation with SSA that are DAC equivalent for 2008 and 2009, which amount to around eight per cent of the MOFCOM flows. Unfortunately, although the dataset on aid flows is complete for OECD and most rising powers, with the exception of Turkey, for bilateral flows, China is excluded from the sector allocation of flows due to lack of information.

The final dataset includes information on origin, destination, product/sector and year, trade (both export and import) and aid flows, and one FDI dataset that includes the origin of investments for FDI in SSA and the number of project by sector. The period of analysis is from 2000 to 2010.

This dataset allows construction of a footprint of economic engagement of rising powers in SSA. The objective is to map whether South–South cooperation is translated into a differentiated economic engagement from the engagement of more traditional donors. We do so in stages. In the first stage we analyse the importance of these countries' engagement in SSA. As suggested earlier, different authors have provided specific accounts of the increasing importance of these flows but these tend to focus on specific sectors, countries or types of flow. We aim to provide a picture of the importance of these countries in SSA considering the three types of flow.

In the second stage we attempt to provide more detail on country allocation of flows in SSA. In doing so, we go beyond countries and sectors to also analyse the concentration of aid allocation across country characteristics in terms of income per capita, trade interests, levels of governance and natural resource exploitation.

To better capture and measure whether there is a 'differentiated' engagement by rising powers, in a third stage we look at similarities in countries and sector allocations within rising powers and between rising powers and OECD countries, both for each individual flow and for clustering across different types of flows. Similarity indexes using the Finger-Kreinin measures are computed and combined to identify donor pairs that are highly similar or highly different in their country and sector allocation.

Finally, in the fourth stage we start analysing the issue of development impact. Specifically we focus on the type of trade, investment and aid flows engagement from these countries and discuss what types of flow are more or less conducive to different development impacts.

# 4 Measuring the economic engagement of rising powers in SSA

## 4.1 Size and importance of flows

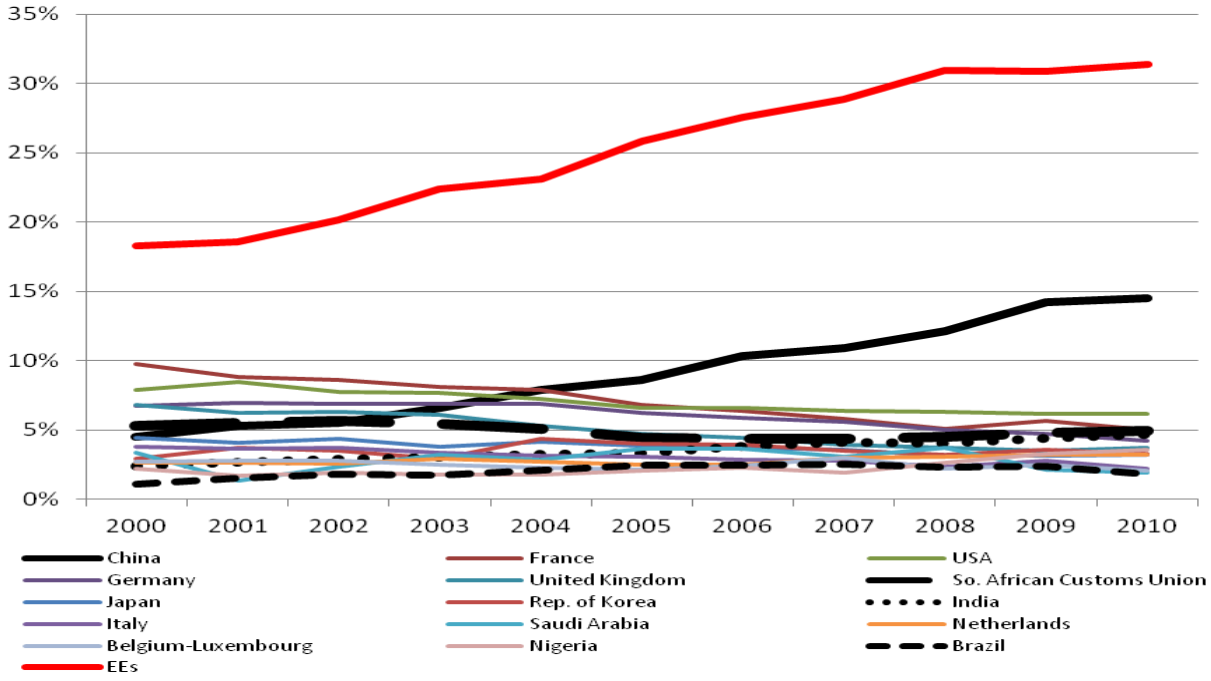
It is important to start the analysis by quantifying the size and importance of the flows to SSA.

### 4.1.1 Trade flows

A significant number of studies have suggested that BRICS countries are becoming important trading partners for SSA. In this section we document how important these countries are as trade partners, going beyond BRICS (excluding Russia) and including the other rising powers.

Figure 4.1 shows the evolution of import shares in SSA from 2000 to 2010. Two elements clearly emerge from the figure. The first is the phenomenal increase of China as the main exporter to SSA, increasing its share from around 4.5 per cent in 2000 to 14.5 per cent in 2010. Mainly driven by China, the share of rising powers increases to more than 30 per cent in 2010. The second element is a steady decline in imports originated in OECD countries.

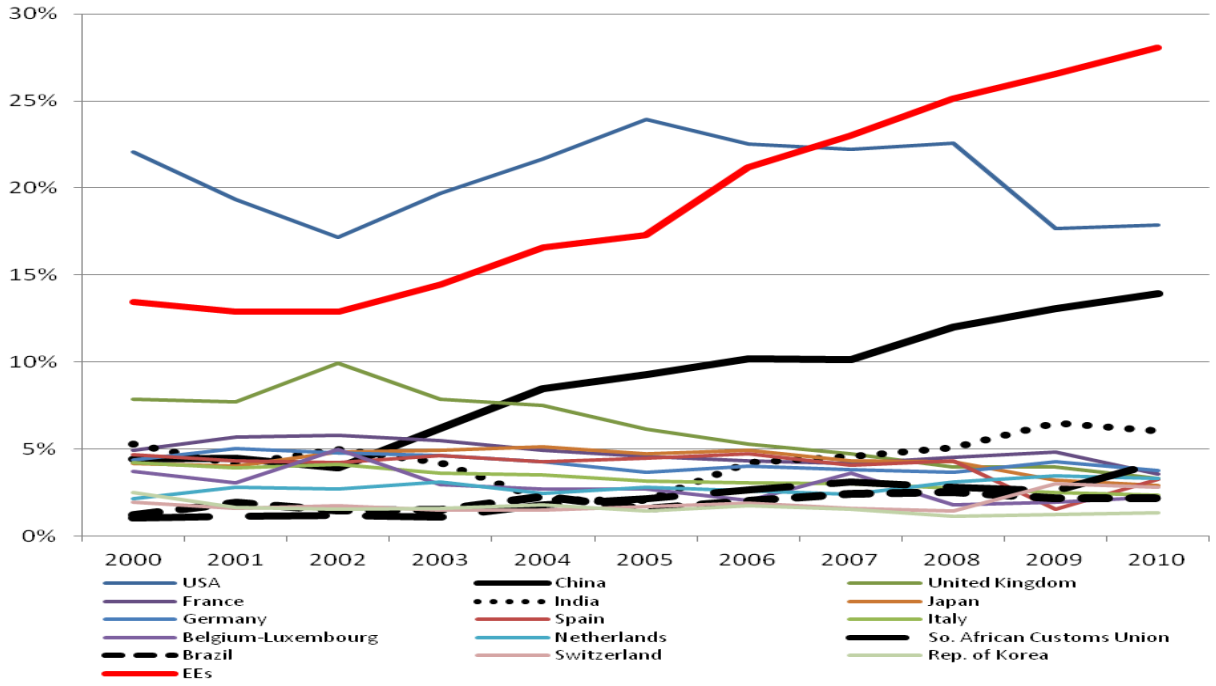
**Figure 4.1 Main sources of imports to SSA, 2000–2010**




Regarding the other rising powers, South Africa, an important trade partner given its location in the continent, experienced a mild decrease in its share during the period, from 5.3 per cent to 4.9 per cent. India, on the other hand, doubled its market share from 2.35 per cent to 4.7 per cent to become almost as important an import source as South Africa. Saudi Arabia is the fourth rising power in terms of import shares in SSA, but its importance is mainly explained by petroleum products and is decreasing over time. Brazil and UAE have also increased their market share during the period, but this was still low and below 2 per cent in 2010. The remaining rising powers' shares appear to be marginal.

Figure 4.2 shows the evolution of country shares for SSA exports. Exports are dominated by the large amount of petroleum exports to the USA. However, once we exclude exports to the USA, we observe a similar pattern to the one identified with imports flows, with rising powers becoming the destination for 28 per cent of exports in 2010. Exports to China tripled during the period. India is the second export destination, followed by South Africa. Brazil is an increasing export destination but still with a low share. The data also show declining shares for most OECD countries, and that the Gulf states and Turkey are still marginal export partners with shares around 0.5 per cent.

## Figure 4.2 Main export destinations from SSA, 2000–2010




Overall the results confirm an important reallocation of trade shares from OECD to rising power countries, mainly China and to a lesser extent India. Brazil is also becoming more important as a trade partner and South Africa is losing some importance as a source of imports but increasing its share as a destination for exports. In addition, the importance of these countries is increasing over time: in 2010 China, India and South Africa were among the first five import sources and export destinations for SSA. The role of the remaining rising powers is still marginal for SSA trade.

### 4.1.2 FDI flows

In order to determine the importance of FDI flows we use the FT dataset which shows aggregate FDI flows for all SSA by origin. Table 4.1 shows investment shares for the top 15 investors in SSA for the period 2003 to 2011. The USA, the UK and France have been the largest investors on average during the period. Of the rising powers, India is the largest investor in terms of flows, with 7.69 per cent of flows on average, followed by China with 6.33 per cent, South Africa with 5.12 per cent, United Arab Emirates with 2.77 per cent and Brazil 2.18 per cent.

Table 4.1 suggests that most rising powers, especially the BRICS countries, have been important investors in SSA in the last decade, mainly led by India and China. In 2011, FDI from rising powers represented 27.6 per cent of flows to SSA.

## Table 4.1 FDI shares in SSA, 2003–2011 (%)

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | Average |
|---|---|---|---|---|---|---|---|---|---|---|
| USA | 22.67 | 36.43 | 24.94 | 17.03 | 7.51 | 18.37 | 10.90 | 6.72 | 9.03 | 17.07 |
| UK | 15.23 | 2.36 | 7.88 | 7.06 | 8.39 | 13.14 | 10.26 | 13.94 | 16.25 | 10.50 |
| France | 12.44 | 13.23 | 7.19 | 8.57 | 3.00 | 4.68 | 10.95 | 9.52 | 1.49 | 7.90 |
| India | 0.38 | 11.20 | 1.08 | 19.58 | 1.07 | 6.83 | 6.65 | 6.97 | 15.47 | 7.69 |
| Canada | 9.64 | 6.70 | 16.37 | 4.77 | 2.21 | 14.88 | 1.31 | 1.79 | 3.96 | 6.85 |
| China | 6.75 | 1.18 | 1.14 | 7.16 | 9.80 | 12.52 | 6.10 | 10.17 | 2.15 | 6.33 |
| Australia | 10.34 | 3.03 | 9.95 | 3.38 | 8.38 | 5.11 | 2.44 | 4.61 | 4.09 | 5.70 |
| South Africa | 4.82 | 4.99 | 0.65 | 3.01 | 5.22 | 1.61 | 12.68 | 6.14 | 6.92 | 5.12 |
| UAE | 0.72 | 0.22 | 1.19 | 2.89 | 10.62 | 2.67 | 3.97 | 2.10 | 0.59 | 2.77 |
| Italy | 2.58 | 1.20 | 0.39 | 5.30 | 6.17 | 0.32 | 2.38 | 0.02 | 3.97 | 2.48 |
| Brazil | 5.10 | 0.02 | 3.93 | 0.01 | 4.07 | 1.27 | 1.50 | 1.23 | 2.45 | 2.18 |
| Germany | 0.62 | 0.70 | 2.15 | 1.34 | 0.69 | 0.47 | 6.91 | 4.51 | 2.00 | 2.15 |
| Netherlands | 0.95 | 0.05 | 12.22 | 0.48 | 0.07 | 1.47 | 0.97 | 1.67 | 0.68 | 2.06 |
| Japan | 0.69 | 1.43 | 0.86 | 1.45 | 9.03 | 0.13 | 1.75 | 0.40 | 1.74 | 1.94 |
| Russia | 0.16 | 1.08 | 0.24 | 2.85 | 1.34 | 0.54 | 2.00 | 3.87 | 1.00 | 1.45 |

Source: Author's elaboration from FT data.

### 4.1.3 Aid flows

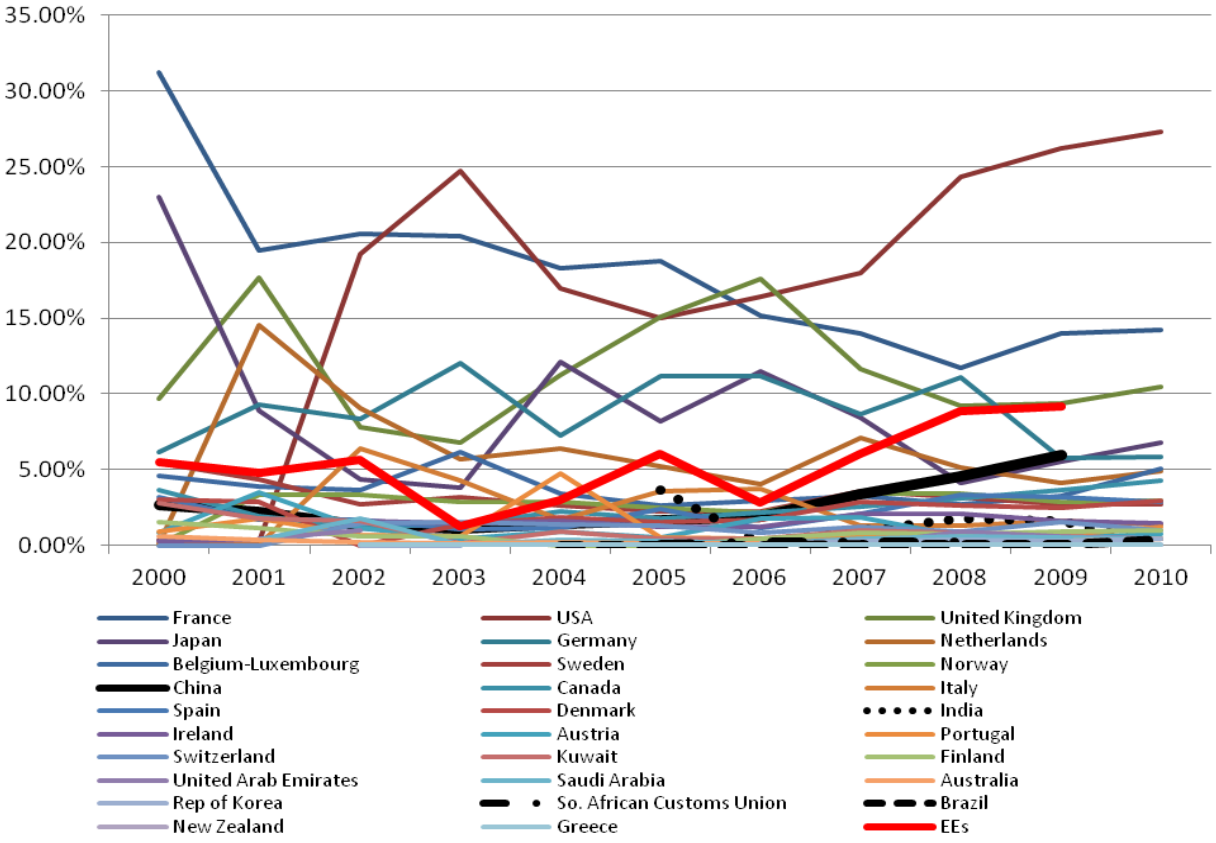
Describing trends in development cooperation flows is challenging given the existing different definitions for non-DAC donors. As suggested above, for Brazil, India and some of the Gulf states we use data available from the aiddata.org project, which collected data on development assistance projects that can be categorised under any of the OECD DAC sectors. This list may omit some important aid projects, but to our knowledge it represents the best source of harmonised data available. In the case of China we use the adjustment to MOFCOM figures of development cooperation based on Brautigam (2011) estimates for 2008 and 2009 OECD DAC equivalents for China's flows that represent around 8 per cent of the published figures on development cooperation.

Figure 4.3 plots the shares for OECD and rising powers, with the exception of Turkey for which there were no data available. Aid flows continue to be dominated by OECD donors, mainly the USA, France and the UK. However, China was already in 2009, and considering adjusted figures, the fourth most important donor in the region, with shares similar to Japan and Germany, just above 5 per cent. According to the data, total aid flows share for rising powers in 2009 was 9.2 per cent.

Regarding the remaining rising powers, the data suggest that India is the second largest donor of the group followed by the Gulf states, but all with shares below 2 per cent. Finally, South Africa and Brazil are the two donors with lower development assistance according to this dataset, with shares below 0.2 per cent.

It is possible that these results represent an underestimate of aid flows due to the omission of some projects for rising powers. However, it is also likely that some of these low numbers are explained by the fact that other concessional flows that do not count as aid under DAC rules are a significant proportion of these countries' development cooperation. In any case, the data show the importance of China as a donor and the increasing importance of India and the Gulf states.

**Figure 4.3 Aid shares by donor, 2000–2010**




The main results regarding the size and importance of rising power economic engagement in SSA suggest that rising powers are significant economic players in SSA in relation to trade and FDI and are capturing significant shares from OECD countries, whose importance has been decreasing. China is the main driver in the increase of trade, while both India and China lead FDI flows. Brazil and the Gulf states have been increasing their importance in the region significantly but are still not major players, while South Africa has kept its significance in the region stagnant. On the other hand, Turkey still has a more marginal role in the region in terms of trade and FDI flows. Regarding aid, with the exception of China aid disbursements by rising powers are still small compared to the main OECD countries.

## 4.2 Concentration of flows

While the overall size of the economic engagement is important, it is also critical to describe the patterns of concentration of this economic engagement. To this end, we first describe the concentration across countries and across sectors. Finally, in order to better understand the allocation of these flows, we analyse concentration across country economic and governance characteristics.

### 4.2.1 Country concentration

Table 4.2 shows the concentration of export markets and import sources for the largest EE traders with SSA. As expected, exports from rising powers are more diversified than imports and concentrate on larger markets. The Southern African Customs Union (SACU) and Nigeria tend to be the main export destinations for the rising powers. South Africa exports in the region concentrate in neighbouring countries. Sudan is also an important export market in the region for China, India and Saudi Arabia.

## Table 4.2 Average market share for main rising powers trading partners, 2000–2010

| Rising powers | Main export markets (%) | | Main import sources from SSA (%) | |
|---|---|---|---|---|
| Brazil | SACU | 27.96 | Nigeria | 72.37 |
| | Nigeria | 26.20 | SACU | 12.66 |
| | Angola | 15.66 | Angola | 5.66 |
| | Ghana | 5.27 | Equatorial Guinea | 2.60 |
| | Senegal | 2.49 | Congo | 2.16 |
| China | SACU | 30.45 | Angola | 32.56 |
| | Nigeria | 17.38 | Sudan | 20.97 |
| | Sudan | 6.21 | SACU | 16.15 |
| | Benin | 5.10 | Congo | 7.43 |
| | Ghana | 3.66 | Equatorial Guinea | 5.78 |
| India | SACU | 18.65 | Angola | 39.76 |
| | Nigeria | 15.09 | Benin | 36.13 |
| | Kenya | 8.61 | Burkina Faso | 5.48 |
| | Mauritius | 6.70 | Burundi | 2.50 |
| | Sudan | 5.71 | Cameroon | 2.45 |
| SACU | Zimbabwe | 17.49 | Nigeria | 24.07 |
| | Zambia | 14.06 | Zimbabwe | 20.21 |
| | Mozambique | 11.66 | Angola | 9.67 |
| | Angola | 8.51 | Mali | 9.51 |
| | Nigeria | 7.08 | Ghana | 9.48 |
| Saudi Arabia | SACU | 53.27 | Benin | 41.96 |
| | Sudan | 14.57 | Burkina Faso | 18.69 |
| | Ethiopia | 9.76 | Burundi | 15.56 |
| | Kenya | 7.33 | Cameroon | 6.77 |
| | Djibouti | 7.10 | Cape Verde | 6.76 |

Source: Author's compilation using BACI data.

Regarding imports sources, Table 4.2 shows a significantly more concentrated geographical picture, explained by the SSA specialisation pattern in primary commodities such as petroleum and minerals. More than 70 per cent of Brazilian imports originated in SSA come from Nigeria. In the case of China, more than 50 per cent of SSA imports on average originated in oil-producing countries such as Angola, Sudan and Equatorial Guinea. For India, imports are concentrated in oil imports from Angola, as well as agricultural imports from countries such as Benin. A similar pattern applies to South Africa, whose imports are concentrated in oil from Nigeria and Angola, and agricultural products and electricity from Zimbabwe. Saudi Arabia's imports from SSA are derived mainly from exporters of agricultural products such as Benin.

In order to analyse the country allocation of FDI we try to use the UNCTAD bilateral FDI dataset, since the FT dataset that we use does not provide such information on bilateral flows for all SSA countries. Unfortunately, the dataset is largely incomplete for rising powers and captures hardly any investments to SSA. However, to have an idea on the bilateral composition of flows for some rising powers, we check national sources for China and Brazil. Table 4.3 shows the main destinations of Chinese investments in SSA according to

MOFCOM. Chinese FDI is very largely concentrated in South Africa, with more than half of FDI in the period 2003–2010. The second destination was Nigeria with just above 10 per cent, followed by Zambia with 5.77 per cent. Interestingly, according to MOFCOM, oil-rich countries such as Sudan and Angola only received 3.14 per cent and 1.51 per cent of FDI flows during the period.

## Table 4.3 Destinations of Chinese FDI, 2003–2010 by share

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Total | Percentage share |
|---|---|---|---|---|---|---|---|---|---|---|
| South Africa | 8.86 | 17.81 | 47.47 | 40.74 | 454.41 | 4,807.86 | 41.59 | 411.17 | 5,829.91 | 53.74% |
| Nigeria | 24.40 | 45.52 | 53.30 | 67.79 | 390.35 | 162.56 | 171.86 | 184.89 | 1,100.67 | 10.15% |
| Zambia | 5.53 | 2.23 | 10.09 | 87.44 | 119.34 | 213.97 | 111.80 | 75.05 | 625.45 | 5.77% |
| DRC | 0.06 | 11.91 | 5.07 | 36.73 | 57.27 | 23.99 | 227.16 | 236.19 | 598.38 | 5.52% |
| Niger | 0.00 | 1.53 | 5.76 | 7.94 | 100.83 | -0.01 | 39.87 | 196.25 | 352.17 | 3.25% |
| Sudan | 0.00 | 146.70 | 91.13 | 50.79 | 65.40 | -63.14 | 19.30 | 30.96 | 341.14 | 3.14% |
| Ethiopia | 0.98 | 0.43 | 4.93 | 23.95 | 13.28 | 9.71 | 74.29 | 58.53 | 186.10 | 1.72% |
| Kenya | 0.74 | 2.68 | 2.05 | 0.18 | 8.90 | 23.23 | 28.12 | 101.22 | 167.12 | 1.54% |
| Madagascar | 0.68 | 13.64 | 0.14 | 1.17 | 13.24 | 61.16 | 42.56 | 33.58 | 166.17 | 1.53% |
| Angola | 0.19 | 0.18 | 0.47 | 22.39 | 41.19 | -9.57 | 8.31 | 101.11 | 164.27 | 1.51% |

Source: MOFCOM.

For Brazil, information from the Central Bank also appears to have large gaps in the data on investments to SSA. According to this source, the overall FDI for the period 2001–2010 in SSA amounted to $570 million, 83 per cent of which was concentrated in Angola and 11 per cent in Mozambique, which clearly shows stronger affinity of investors with the two Lusophone countries, especially Angola. The amount invested in other countries is marginal and does not correspond to some of the information available in other documents and reports.

Finally, Table 4.4 shows the main destinations of aid flows for rising powers. For Brazil, the table confirms the importance of Lusophone Africa for Brazilian assistance, which absorbs most of the assistance to SSA. For China, perhaps with the exception of Tanzania, there is a strong alignment between the main destinations of exports, FDI and aid flows according to the data available. India, on the other hand, does not appear to allocate most aid flows to its main trade partners; while South Africa allocates mainly to neighbours and a few other African countries. Finally, the country allocation of aid for the Gulf states does not appear to match their export destinations in SSA.

In terms of total concentration, aid disbursement appears to be more concentrated in a few countries for Brazil and South Africa, but much less so in the remaining countries.

Overall, the results regarding country concentration suggest significant concentration of exports from SSA to rising powers in a few countries. China shows some alignment between FDI and aid allocation, and Brazil's FDI and aid flows are largely concentrated in Lusophone countries, while most imports come from Nigeria. South Africa's main economic relationships are with neighbouring countries and India appears more country diversified.

## Table 4.4 Main recipients of rising powers aid flows (%)

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | | | | | | | | | | | |
| Cape Verde | | | | | 99.43 | 5.27 | 37.89 | 8.54 | 21.51 | 19.20 | 6.34 |
| Mozambique | | | | | 0.57 | 4.52 | 23.03 | 21.67 | 40.07 | 2.51 | 56.46 |
| Sao Tome and Principe | | | | | 0.00 | 18.11 | | 16.83 | 3.14 | 64.84 | 14.17 |
| Guinea-Bissau | | | | | | 63.51 | | 0.63 | 13.71 | 1.03 | 6.72 |
| Angola | | | | | | 5.37 | 21.26 | 25.26 | 10.32 | 6.62 | 4.39 |
| China | | | | | | | | | | | |
| Sudan | 9.86 | 19.03 | 26.21 | 2.71 | 25.32 | 1.66 | 25.09 | 24.01 | 18.48 | 10.83 | |
| SACU | 9.77 | 7.34 | 5.83 | 28.65 | 10.51 | 9.53 | 6.06 | 5.71 | 5.43 | 4.81 | |
| Nigeria | 5.10 | 7.66 | 9.29 | 0.34 | 16.89 | 0.39 | 16.31 | 15.38 | 11.62 | 10.48 | |
| Angola | 0.26 | 0.01 | 0.31 | 1.59 | 2.78 | 6.11 | 14.41 | 12.85 | 23.11 | 25.85 | |
| Tanzania | 4.26 | 4.77 | 2.56 | 0.22 | 3.01 | 26.85 | 3.76 | 2.92 | 3.01 | 2.84 | |
| India | | | | | | | | | | | |
| Ethiopia | | | | | | | 89.04 | 56.22 | 36.90 | 0.14 | 4.04 |
| Sudan | | | | | | 50.71 | | 23.04 | | | |
| SACU | | | | | | 0.57 | | | | 4.45 | 46.75 |
| Mali | | | | | | 5.46 | | 20.74 | | 12.37 | |
| Rwanda | | | | | | | | | | 14.71 | 3.76 |
| South Africa | | | | | | | | | | | |
| DRC | | | | | | 46.47 | 76.97 | 23.63 | 4.21 | | |
| Zimbabwe | | | | | | | | 2.91 | 63.83 | | |
| Liberia | | | | | | 53.53 | 1.91 | | | | |
| Guinea | | | | | | | 1.35 | 50.12 | | | |
| SACU | | | | | | | | | 21.03 | | |

(Cont'd.)

## Table 4.4 (cont'd.)

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Kuwait | | | | | | | | | | | |
| Sudan | | | 61.86 | | | | | 25.34 | 28.01 | 38.07 | 8.02 |
| Ghana | 9.68 | | | 79.51 | | 0.55 | | | | | 3.15 |
| Guinea-Bissau | | | | 20.49 | | | | | | | |
| Senegal | | | 8.18 | | 10.72 | 30.58 | 27.36 | 9.34 | 18.67 | | 17.38 |
| Mauritania | | | | | 24.15 | | | 9.03 | 19.23 | | 16.15 |
| Saudi Arabia | | | | | | | | | | | |
| Djibouti | | | 3.84 | 100.00 | | | | | | | |
| Sudan | | | 82.43 | | | | | | 41.50 | 28.09 | |
| Senegal | | | | | | 15.25 | | 53.58 | | | |
| Mali | | 56.96 | | | | | 21.58 | | | | 20.55 |
| Mauritania | | | | | 48.15 | | | | 17.34 | 14.04 | 20.82 |
| UAE | | | | | | | | | | | |
| Sudan | | | | | | | | | | 4.81 | 45.93 |
| Seychelles | | | | | | | | | | 24.41 | 15.28 |
| Tanzania | | | | | | | | | | 31.62 | 6.07 |
| Eritrea | | | | | | | | | | 13.86 | 3.23 |
| Comoros | | | | | | | | | | 0.24 | 14.13 |

*Source*: Compiled from OECD DAC and aiddata.org.

### 4.2.2 Sector concentration

Regarding the sector concentration of trade, rising powers show different export patterns to SSA. Brazil tends to export mainly foodstuffs, while China's main exports are machinery items. The main export sector of India and the Gulf states to SSA is mineral products. Overall, however, imports to SSA from the rising powers tend to be quite diversified, especially imports from South Africa, China and India. While some of these imports may compete with domestic sectors, they also provide valuable cheap inputs and machinery for SSA countries.

On the other hand, exports from SSA to rising powers confirm the findings in the literature and are concentrated in natural resource sectors. Exports to Brazil and China are very concentrated in mineral products, with shares in this sector above 80 per cent on average for the period. Exports to India also concentrate mainly in the mineral products sector, but with an average share during the period of around 52 per cent. Exports to the Gulf states and Turkey are concentrated in metals for Saudi Arabia, Qatar and Kuwait, with around one-third of exports; and stones for the UAE and Turkey with also approximately one-third of all exports. Finally, exports to South Africa appear to be concentrated in two sectors, mineral products and stones, with an average of around 43 per cent and 24 per cent respectively.

It is important to stress that this concentration of exports in these sectors is not only evident in the trading relationships with the rising powers but also with most OECD countries. However, as we will show below, concentration in less sophisticated commodities is more pronounced in rising powers.

In the case of FDI, data for bilateral investments by sector is not available. However, the FT dataset compiles information about the number of projects to SSA by origin. Table 4.5 shows the percentage of projects for each rising power in the top investment sectors. One must be cautious when interpreting the numbers, since projects can have very different sizes and therefore the number may not capture accurately the significance of the projects.

In general, the data suggest a significantly diversified investment portfolio for the rising powers, especially for India and South Africa. India combines investment in services (financial, communications and IT) with investments in the extractive industry. The Gulf states have concentrated their investment projects mainly in services including real estate and tourism. In Brazil, almost half of the projects concentrate in natural resources, while China shows a more diversified portfolio, with a larger number of projects in the communications sector followed by metals and the automotive sector.

Finally, regarding the concentration of aid flows across DAC sectors, our dataset suggests significant differences in the sector composition of aid flows.[2] While in specific years aid flows may be heavily allocated in specific sectors, these may change from one year to the other. In general, we observe that South Africa's aid concentrates in the government and civil society sector, as well as agriculture. Brazil's aid is mainly concentrated in the education sector; India's in the energy generation sector; Kuwait's on transport and storage; Saudi Arabia's on transport and storage and water and sanitation sectors; and the UAE has focused mainly on budget support and other multi-sector initiatives.

Sector concentration, therefore, appears very large on imports from SSA, but less so on exports. FDI flows appear quite diversified when looking at the number of projects, and aid flows are concentrated in specific sectors, which are different across rising powers.

[2] We exclude China due to the lack of data on the sector allocation of aid.

## Table 4.5 Percentage of investments projects by sector, 2003–2011

| Country | Sector | (%) | Country | Sector | (%) |
|---|---|---|---|---|---|
| India | Financial services | 17.32 | Saudi Arabia | Communications | 35.29 |
| | Automotive OEM | 9.09 | | Food and tobacco | 23.53 |
| | Software and IT services | 8.66 | | Financial services | 17.65 |
| | Coal, oil and natural gas | 6.93 | | Real estate | 11.76 |
| | Communications | 5.63 | | Beverages | 5.88 |
| South Africa | Financial services | 22.97 | Kuwait | Communications | 53.33 |
| | Communications | 12.44 | | Hotels and tourism | 20.00 |
| | Food and tobacco | 10.53 | | Financial services | 13.33 |
| | Metals | 8.13 | | Real estate | 6.67 |
| | Chemicals | 5.26 | | Software and IT services | 6.67 |
| China | Communications | 19.09 | Qatar | Communications | 26.67 |
| | Metals | 15.45 | | Financial services | 26.67 |
| | Automotive OEM | 13.64 | | Real estate | 20.00 |
| | Coal, oil and natural gas | 11.82 | | Hotels and tourism | 6.67 |
| | Building and construction materials | 7.27 | | Coal, oil and natural gas | 6.67 |
| UAE | Transportation | 16.67 | Turkey | Metals | 20.00 |
| | Hotels and tourism | 16.67 | | Consumer products | 20.00 |
| | Financial services | 12.82 | | Textiles | 20.00 |
| | Real estate | 7.69 | | Real estate | 10.00 |
| | Business services | 7.69 | | Transportation | 10.00 |
| Brazil | Coal, oil and natural gas | 31.03 | | | |
| | Metals | 17.24 | | | |
| | Automotive OEM | 13.79 | | | |
| | Chemicals | 10.34 | | | |
| | Building and construction | 6.90 | | | |

Source: Elaborated from FT dataset.

### 4.2.3 Concentration of aid flows according to country characteristics

In order to further understand the concentration of rising power economic flows in SSA countries, we look at the allocation of aid flows[3] across different country characteristics, which have been suggested as important by aid allocation literature. This allows us to better understand some of the motivations behind rising powers' aid allocation.

Appendix 1 shows the plot of concentration curves for seven rising powers, excluding Turkey due to lack of aid data, and six different types of characteristics. The first and second figures in each column represents commercial interest in aid allocation, given by the degree of exports to a particular SSA country (first figure) and imports from each SSA country (third figure). The figures should be interpreted as the cumulative amount of aid flows ranked by the size of exports (imports). This is similar to a Lorenz curve and represents the amount of aid flows that concentrate in countries with more or fewer trade relationships. For example, if the concentration curve resembles the 45 degrees line, this suggests that aid is allocated to

[3] The lack of complete data on bilateral FDI flows implies that we could not reproduce this analysis for FDI flows.

all countries in similar ways independent of whether they are large or small export (import) destinations (origin) for rising powers. On the other hand, the closer the curve is to the flat lower horizontal axis, the more aid is concentrated in countries with strong trade relationships; and the closer to the top horizontal line, the more aid is disbursed to countries with little trade relationship.

The third figure in each column shows the concentration across levels of income per capita, to capture the importance of relative income levels in the allocation of aid by rising powers. The fourth figure uses the variable natural resources depletion[4] as a percentage of gross national income calculated by the World Bank to capture the concentration of aid flows across countries with more or less natural resource exploitation. The fifth figure shows concentration of aid allocation across different levels of transparency and corruption of the public sector. For this, we use the World Bank Country Policy and Institutional Assessment (CPIA) on transparency, accountability and corruption in the public sector index, which ranges from 1, low transparency and accountability, to 6, highly transparent and accountable public sector. These figures aim to capture the extent to which aid concentrates in countries with more or less governance problems in the public sector.

Finally, the last figure attempts to consider how allocation varies according to level of political affinity. To this end we use the index developed by Strezhnev and Voeten (2013) of affinity in UN voting. This index ranges between -1, no affinity, and 1, equal voting.[5]

Before starting with the analysis of the figures it is important to emphasise that the concentration curves do not imply causality or any attempt to measure the importance of each of these country characteristics on the aid allocation rule. Other elements may play a more important role in determining the allocation rule. The figures, however, do show the resultant allocation of flows and the final configuration across different country characteristics.

Starting with commercial interests, several authors have characterised India's and China's economic cooperation in SSA as market seeking. Looking at the concentration of aid flows according to importance as export destination shows that for all countries except South Africa aid allocation is slightly biased towards countries with larger export shares. However, this is more pronounced for Brazil and the UAE, which allocate the most aid to selected important export destinations. In the case of Brazil a significant amount of aid flows are concentrated in one of the most important exports markets, Angola. Finally, Saudi Arabia shows an even distribution of aid allocation across countries with different degrees of export relationships, while for Kuwait there is larger concentration especially in one country that is a significant export market.

The curves ranking concentration across sources of imports show a similar pattern to that for exports. It is possible that countries target aid flows to support countries that have key import sectors. While there is higher concentration in countries with larger import shares, this appears to be relatively large mainly for Brazil and the UAE.

Therefore, in terms of economic interests, the results show that while allocation tends to be more concentrated in countries with more intense trade relationships, this concentration is not especially large. More importantly, aid flows from some OECD countries show a similar pattern of concentration to some rising powers. For example, the UK shows a very similar concentration pattern to China's (see Appendix 2 for selected OECD countries).

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[4] Natural resource depletion is the sum of net forest depletion, energy depletion, and mineral depletion according to the World Development Indicators database for 2012.

[5] It is calculated as 1 –2*(d)/dmax, where d is the sum of metric distances between votes by country pairs in a given year and dmax is the largest possible metric distance for those votes (Strezhnev and Voeten 2013). Each vote is quantified with 1 = 'yes' or approval; 2 = abstain, 3 = 'no' or disapproval.

Regarding the extent to which countries allocate flows to poorer countries in SSA (second figures), the allocation appears to be quite neutral across income levels for China, India, Kuwait and Saudi Arabia. For South Africa, the allocation of flows appears to be progressive in the sense that most flows are allocated to poorer countries. On the other hand, in Brazil and the UAE flows are concentrated in a pair of countries with income around the median income per capita in SSA. Again the results are not so different from the allocation pattern of OECD countries, which for most countries do not appear to be progressive; and China's country allocation is similar to that for the UK, the USA or Denmark.

The fourth figure in each column focuses on the concentration in countries with greater exploitation of natural resources. In general, the allocation of aid flows is larger in countries with greater natural resource exploitation. This bias is very large in South Africa and the UAE, substantial in China, moderate in India and less so in Kuwait. For South Africa and the UAE, aid flows are concentrated heavily in a country with natural resource exploitation in the 75th percentile, while for Brazil these are concentrated in a country around the median. The figures in Appendix 2 suggest that aid allocation in rising powers may be allocated more to countries with natural resources than in some of the main OECD countries.

Regarding transparency and corruption, China, India, Kuwait and Saudi Arabia's allocations appear to be quite neutral across different levels of governance (similar to the USA in Appendix 2). However, while South Africa and the UAE concentrate aid flows in countries with low transparency and accountability of the public sector, Brazil allocates aid flows mainly to a country in the 75th percentile.

Finally, regarding UN voting affinity, most rising powers appear to be quite neutral in aid allocation and when there is concentration in a specific country, they do not appear to have a very high affinity in voting. The exceptions are Brazil and Kuwait with large concentration in countries with some affinity. Comparisons with OECD countries in Appendix 2 show that allocation in OECD countries is more concentrated in countries with less political affinity, although China and the USA appear very similar.

In general, the results show significant heterogeneity in aid allocation across rising powers. For Brazil, South Africa and the UAE the pattern of concentration is explained by the large concentration of flows in a very narrow number of countries. More importantly, these allocations, especially for China and India, do not appear very different from those of OECD countries. Perhaps the areas where there is more difference in concentration between main OECD countries and rising powers are concentration in countries with more natural resources and more political affinity.

## 4.3 Similarity of flows

One of the most important hypotheses about South–South cooperation is the claim of a 'differentiated' approach to economic cooperation. While this 'differentiated' approach can be translated into many different types of economic engagement, one important question in terms of the footprint is whether it is translated into significant differences in the allocation of flows across countries and sectors. This might indicate whether any expected 'differentiated' development impact may arise from different sector or country allocation. In order to make comparisons meaningful, however, we also need to include traditional OECD donors in the analysis and identify how similar the rising powers are to OECD countries.

As a similarity indicator, we use the Finger-Kreinin (FK) index. This index is used in trade analysis to compare similarity of flows between two countries or one country with different destinations. The index is bounded between 0, totally different, and 1, totally identical sector or country allocation (see Box 4.1).

We start by looking at the similarity between countries for each type of flow individually. Tables A3.1 to A3.7 in Appendix 3 show the similarity matrices. Table A3.1 shows the similarity for HS-2 chapters (sectors) of imports in rising powers and selected OECD countries originated in SSA. The measure computes the degree of similarity in sector imports from SSA. Table A3.2 reports the same matrix for similarity of HS-2 chapter exports to SSA. Tables A3.3 and A3.4 focus on similarity of destinations for exports and import origins of rising powers and OECD countries. Table A3.5 reports the similarity matrix for country allocation of aid flows, while Table A3.6 shows the similarity of OECD DAC-3 digits sector. Finally, Table A3.7 shows the similarity matrix for the sector composition of FDI projects.

## Box 4.1 Finger-Kreinin index

The Finger Kreinin index is defined as:

$$FK_{ijSSA} = \sum_{k} \min\left[\frac{x_{ik}}{X_{iSSA}}, \frac{x_{jk}}{X_{jSSA}}\right]$$ where k is either SSA destinations or sectors

The index is bounded between 0 and 1, with 0 indicating that the country or sector allocation of flows of country i and j in SSA are totally different; and 1 indicating that the pattern of allocation between the countries is identical. The intuition of the index is that it compares for two countries the similarity of country or sector shares in their allocations. For example, in the case of two countries where the sector share allocation is identical, the index will take the sum of the shares for one or the other and it will add up to 1. On the other hand, if the countries' allocation is totally different, for each sector or country the minimum value will be 0, since at least one country will not allocate in the same sector.

On average, the type of flow that tends to be more similar among rising powers and OECD countries is the country allocation of exports to SSA. On the other hand, there is less similarity in the sector composition of FDI and sector and country aid allocation.

There is considerable heterogeneity of Finger-Kreinin indices within rising powers, within OECD countries and also between rising powers and OECD countries. In addition, this heterogeneity is present when looking across different types of flows. Regarding rising powers, the similarity matrices indicate that:

- Similarity in sector imports from SSA: Brazil appears highly similar to China, and even more similar to the USA, while China is also very similar to the USA. South Africa is similar to Japan, while the Gulf states appear dissimilar to each other.
- Similarity in sector exports to SSA: Brazil appears more similar to South Africa, and China to India and the UK, although the index is not high. On the other hand, sector exports to SSA are similar between India and South Africa and between India and Turkey. Again, the Gulf states appear quite dissimilar in sector trade.
- Similarity in SSA exports destinations: Brazil is similar to the USA, China and the UK, while China is also similar to Canada, India, the USA and the UK. India appears similar to the UK and China; Turkey to Canada and China; and the Gulf states appear more similar among themselves.
- Similarity in imports origins from SSA: Brazil is similar to the USA and India, and China relatively similar to the USA, France and Korea. India is similar to the USA; Turkey to the UK, Norway and Qatar; and South Africa appears very different from other countries regarding import origins from SSA.

Summing up, the results for trade flows show relatively high similarity indices. There is significantly high similarity between rising powers, especially China, Brazil and India.

However, these countries tend to have high similarity of trade structures with other OECD countries, especially the USA.

Regarding the similarity of aid allocation for both sectors and countries, the similarity matrices in A3.5 and A3.6 show much lower degree of similarity across countries than for trade flows, suggesting that aid allocation is more heterogeneous than trade patterns.

Most rising powers have different patterns in country targeting of aid. Brazil, India, South Africa and the Gulf states show low Finger-Kreinin indices with other rising powers and also with OECD countries. China is the country which shows more similarity, especially with Canada, the USA, the UK, Germany and Japan, although this is only around 0.43. A similar pattern of heterogeneity emerges in relation to DAC-3 digits sector allocation. Brazil's aid sector allocation is closer to Korea, India's is similar to the UAE, and the Gulf states are more similar to each other. However, most of these similarity indices are low and around 0.3–0.4. South Africa's sector aid allocation appears very different from other countries.

The last matrix A3.7 shows the similarity in relation to the number of FDI projects in SSA by sector for the period 2003–2011. The Finger-Kreinin indices are also lower than for trade flows, and lower on average than for aid flows. However, some of the similarity indices of rising powers appear to be relatively high: Brazil and China invest in similar sectors, as do China and France; India and South Africa, US and UK; and South Africa and the UK. On the other hand, Turkey appears to invest in different sectors from all others, while the Gulf states show similar sector investment patterns.

Therefore, regarding the similarity of aid flows of rising powers, we find that countries tend to be relatively different in both their sector and country aid allocations. In the case of FDI projects by sector, the data suggest some similarities between some of the rising powers, particularly Brazil, India and China (the BICs), and between some of the BICs and some OECD countries.

In addition to describing the most similar partners for rising powers, it is important to identify unusually similar or dissimilar country pairs. In order to do so, for each flow we identify the country pairs that have on average for the period a very low Finger-Kreinin index, defined as a value below the 10th percentile of the distribution, 'highly dissimilar'; and very high indices, defined as values above the 90th percentile, 'highly similar'.

Table 4.6 lists the country pairs, each including at least one rising power, that are highly similar or highly dissimilar. Panel (a) focuses on sector similarity of imports from SSA, while panel (b) focuses on sector similarity of exports to SSA. Table 4.7 shows the same information for country exports and imports. Finally, Table 4.8 shows the information for aid and FDI flows. One interesting element of Table 4.8 is that in panel (a) we cannot find any country pairs, including a rising power, that are highly similar – either in sector or country allocation.

Country pairs highlighted in red show those pairs with high similarity and dissimilarity where both countries are rising powers. In terms of imports from SSA, Brazil and China, and China and India show high similarity of sector imports, while India and the Southern African Customs Union (SACU), and Kuwait and Saudi Arabia are very similar on sector exports to SSA.

When looking at export destinations in SSA, rising powers do not have highly similar or dissimilar partners with the exception of SACU and Saudi Arabia. On the other hand, import sources tend to be highly dissimilar between Gulf states and other rising powers and between SACU and other rising powers.

# Table 4.6 Similarity and dissimilarity of trade flows by HS-2 chapter

| Imports from SSA (a) | | | | Exports to SSA (b) | | | |
|---|---|---|---|---|---|---|---|
| **HS-2 chapter dissimilar** | | **HS-2 chapter similar** | | **HS-2 chapter dissimilar** | | **HS-2 chapter similar** | |
| Brazil | Czech Rep. | Brazil | China | Austria | Kuwait | Belgium-Luxembourg | India |
| Brazil | Finland | Brazil | Portugal | Austria | Qatar | Belgium-Luxembourg | SACU |
| Brazil | Hungary | Brazil | Spain | Austria | Saudi Arabia | France | SACU |
| Brazil | Kuwait | Brazil | USA | Canada | Kuwait | India | SACU |
| Brazil | Norway | Canada | China | Canada | Qatar | Italy | SACU |
| Brazil | Poland | Canada | India | Canada | Saudi Arabia | Kuwait | Saudi Arabia |
| Brazil | Qatar | China | India | China | Kuwait | Portugal | SACU |
| Brazil | Slovakia | China | Portugal | China | Qatar | SACU | Spain |
| China | Czech Rep. | China | Rep. of Korea | Czech Rep. | Kuwait | SACU | UK |
| China | Hungary | China | Spain | Czech Rep. | Qatar | | |
| China | Kuwait | China | USA | Czech Rep. | Saudi Arabia | | |
| China | Poland | India | USA | Denmark | Kuwait | | |
| China | Qatar | Italy | SACU | Denmark | Qatar | | |
| China | Slovakia | Japan | SACU | Finland | Kuwait | | |
| | | | | Finland | Qatar | | |
| | | | | Finland | Saudi Arabia | | |
| | | | | France | Kuwait | | |
| | | | | France | Qatar | | |
| | | | | Germany | Kuwait | | |
| | | | | Germany | Qatar | | |
| | | | | Hungary | Kuwait | | |
| | | | | Hungary | Qatar | | |
| | | | | Hungary | Saudi Arabia | | |
| | | | | Iceland | Kuwait | | |
| | | | | Iceland | Qatar | | |
| | | | | Iceland | Saudi Arabia | | |
| | | | | Ireland | Kuwait | | |
| | | | | Ireland | Qatar | | |
| | | | | Ireland | Saudi Arabia | | |
| | | | | Italy | Kuwait | | |
| | | | | Italy | Qatar | | |
| | | | | Japan | Kuwait | | |
| | | | | Japan | Qatar | | |
| | | | | Japan | Saudi Arabia | | |
| | | | | Kuwait | Mexico | | |
| | | | | Kuwait | New Zealand | | |
| | | | | Kuwait | Norway | | |

The list of country pairs excludes other combinations of Gulf states and OECD countries. Dissimilar if Finger-Kreinin average index below 10th percentile, similar if index above 90th percentile.

## Table 4.7 Similarity and dissimilarity of trade flows by destination and origin

| Exports to SSA (a) | | | | Imports from SSA (b) | | | |
|---|---|---|---|---|---|---|---|
| **Country dissimilar** | | **Country similar** | | **Country dissimilar[a]** | | **Country similar** | |
| Austria | SACU | China | Italy | Brazil | Kuwait | China | Italy |
| China | Portugal | China | USA | Brazil | Qatar | China | USA |
| Greece | Kuwait | China | UK | Brazil | Saudi Arabia | China | UK |
| Hungary | SACU | Italy | Turkey | Brazil | UAE | Germany | Turkey |
| Iceland | Kuwait | | | China | SACU | Kuwait | Qatar |
| Iceland | Qatar | | | Kuwait | SACU | Norway | Turkey |
| Iceland | Saudi Arabia | | | Qatar | SACU | Qatar | UK |
| Iceland | SACU | | | Saudi Arabia | SACU | Turkey | UK |
| India | Portugal | | | SACU | Turkey | | |
| Kuwait | Norway | | | SACU | UAE | | |
| Kuwait | Portugal | | | Australia | Brazil | | |
| Kuwait | Rep. of Korea | | | Australia | China | | |
| Mexico | SACU | | | Australia | SACU | | |
| Poland | SACU | | | Brazil | Czech Rep. | | |
| Portugal | Qatar | | | Brazil | Denmark | | |
| Portugal | Saudi Arabia | | | Brazil | Finland | | |
| Portugal | SACU | | | Brazil | Hungary | | |
| Portugal | Turkey | | | Brazil | Iceland | | |
| Portugal | UAE | | | Brazil | Ireland | | |
| Rep. of Korea | SACU | | | Brazil | Norway | | |
| Saudi Arabia | SACU | | | Brazil | Poland | | |
| | | | | Brazil | Slovakia | | |
| | | | | Brazil | UK | | |
| | | | | China | Hungary | | |
| | | | | China | Iceland | | |
| | | | | China | New Zealand | | |
| | | | | China | Slovakia | | |
| | | | | Czech Rep. | SACU | | |
| | | | | Denmark | SACU | | |
| | | | | Finland | SACU | | |
| | | | | France | Kuwait | | |
| | | | | France | Qatar | | |
| | | | | France | Saudi Arabia | | |
| | | | | Hungary | SACU | | |
| | | | | Iceland | SACU | | |
| | | | | Ireland | SACU | | |
| | | | | Japan | SACU | | |
| | | | | Norway | SACU | | |

Note: [a]The list of country pairs is incomplete and excludes other combinations. Dissimilar if Finger-Kreinin average index below 10th percentile, similar if index above 90th percentile.

Table 4.8 panel (a) emphasises that in terms of aid flows rising powers do not tend to be highly similar or dissimilar to other countries, with the exception of Brazil and the Gulf states. In relation to FDI sector allocation, however, we find high similarity between the Gulf states States, Brazil and China, and India and SACU.

## Table 4.8 Aid and FDI flows similarity pairs

| Aid to SSA (a) | | | | FDI in SSA (b) | | | |
|---|---|---|---|---|---|---|---|
| **Country dissimilarity** | | **Aid sector dissimilarity** | | **FDI sector dissimilarity** | | **FDI sector similarity** | |
| Australia | Qatar | Greece | Kuwait | Australia | Kuwait | Australia | Canada |
| Brazil | South Africa | Kuwait | New Zealand | Australia | Saudi Arabia | Brazil | China |
| Brazil | UAE | Kuwait | Sweden | Brazil | Denmark | China | France |
| Denmark | Qatar | New Zealand | South Africa | Brazil | Kuwait | France | India |
| Kuwait | Portugal | Saudi Arabia | USA | Brazil | Saudi Arabia | Germany | India |
| Norway | Qatar | | | Canada | Kuwait | India | South Africa |
| Portugal | Saudi Arabia | | | Canada | Saudi Arabia | India | USA |
| Portugal | South Africa | | | China | New Zealand | India | UK |
| Portugal | UAE | | | India | New Zealand | Kuwait | Qatar |
| Qatar | Sweden | | | Kuwait | Turkey | Kuwait | Saudi Arabia |
| Qatar | Switzerland | | | New Zealand | South Africa | Qatar | Saudi Arabia |
| Qatar | UK | | | | | Qatar | South Africa |
| Saudi Arabia | South Africa | | | | | South Africa | UAE |
| | | | | | | South Africa | UK |
| | | | | | | UAE | UK |

Note: Dissimilar if Finger-Kreinin average index below 10th percentile, similar if index above 90th percentile.

Overall the results when looking at individual economic flows suggest:

- High similarity among rising powers, mainly Brazil, China and India; and this occurs mainly on sector trade and investment.
- However, for these flows there is also high similarity between rising powers and some OECD countries.
- South Africa appears quite different from other rising powers for some flows. The same applies to Turkey for flows with data available.
- Gulf states also appear different from other rising powers and similar to each other.

To further analyse the issue of similarity, we compare similarity across all types of flows. Specifically, we look at country pairs where Finger-Kreinin indices for all flows are above the 75th percentile (highly similar across economic flows) and below the 25th percentile (highly dissimilar across economic flows). We cluster observations for country allocations and separately for sectors. Figures 4.4 and 4.5 illustrate graphically the clustering exercise for

rising power similarities. In each quadrant is represented the scatter plot of similarities indices between country pairs in terms of sector/country composition. In each quadrant we search for country pairs with similarities indices that are concentrated in the top right-hand corner, for all types of flow combinations. For example, country pairs that are very similar in the sector allocation of aid, FDI, exports and imports.

**Figure 4.4 Scatter plot rising powers' similarity indices for 2010: sector allocation**

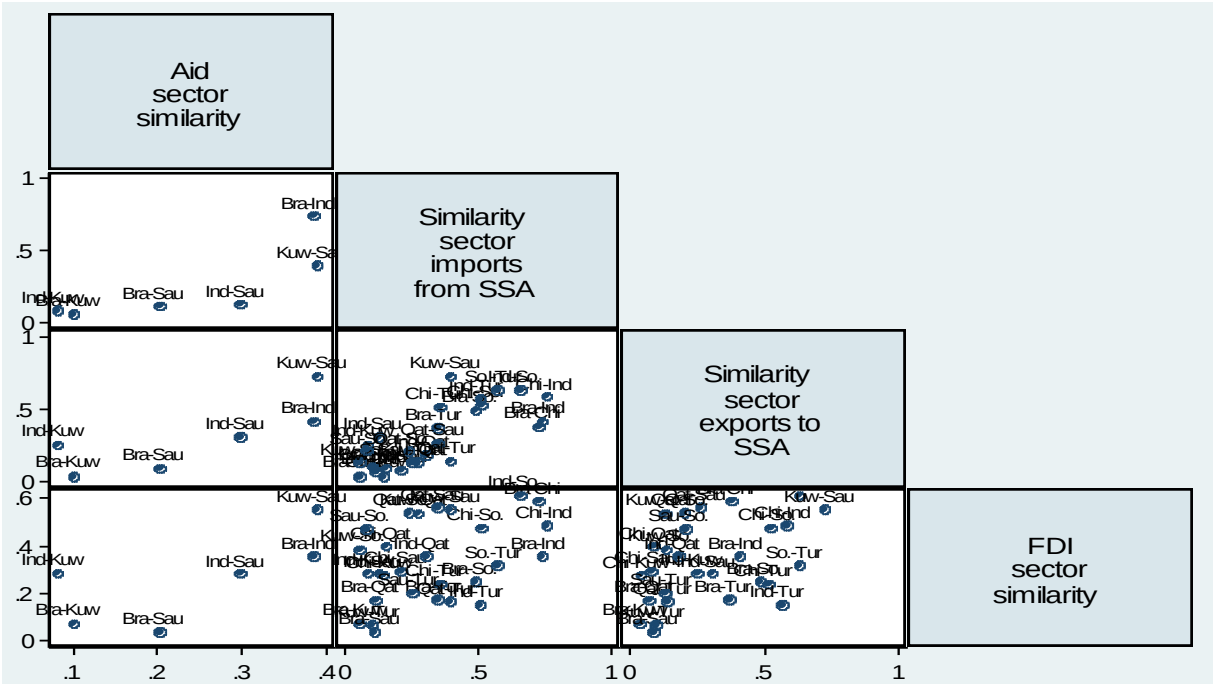
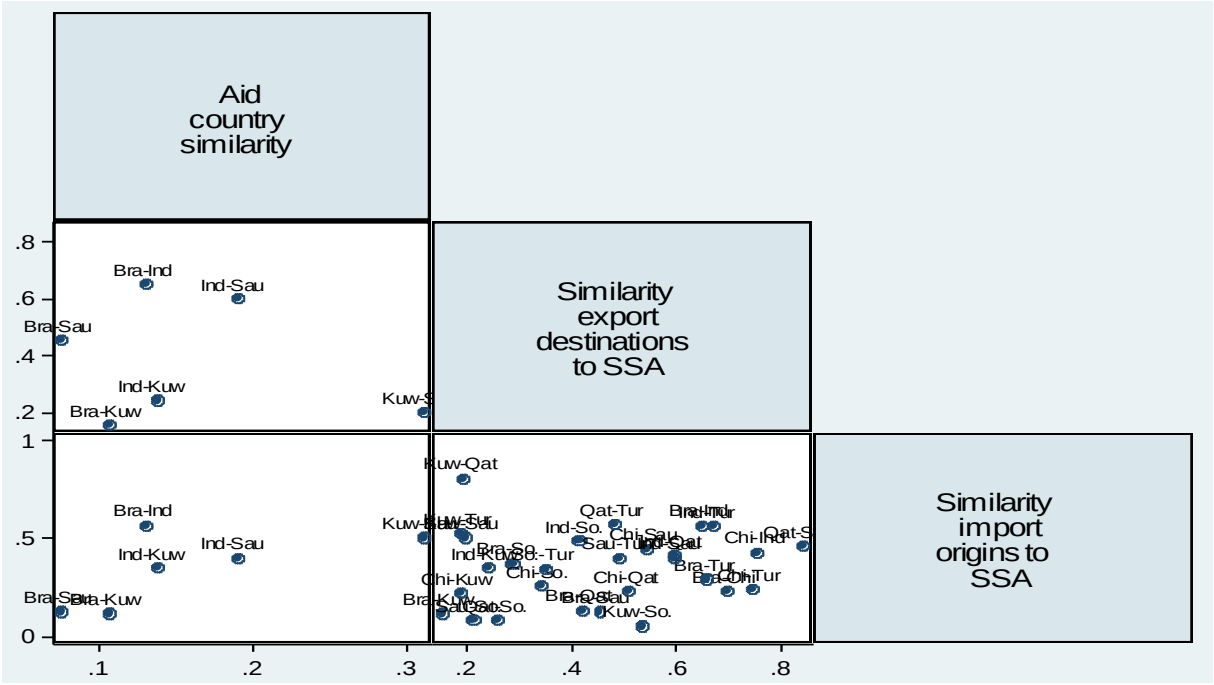



**Figure 4.5 Scatter plot rising powers' similarity indices for 2010: country allocation**



In terms of country allocation, similarity – considering aid, export and imports, since FDI bilateral countries' shares are not available – the main outcome is that mainly some OECD countries can be clustered in these three dimensions in the highly similar group. On the other hand, highly dissimilar clustering shows that the Gulf states and South Africa tend to be very different from other rising powers and OECD countries.

The sector clustering shows that very few countries can be clustered along the four dimensions of export, imports, FDI and aid as highly similar or dissimilar. Only three dyads of OECD countries are clustered as highly similar;[6] while Brazil and Kuwait and Brazil and Saudi Arabia are the only dissimilar country pairs. Given that China cannot be clustered due to lack of aid sector allocation, we reproduce the exercise but exclude from the clustering aid sector allocation. Therefore, this new clustering exercise compares similarity in terms of sector trade flows, exports and imports, and FDI flows by sector. In this case, the results show a larger number of country pairs that are highly similar,[7] including China and India, India and South Africa and China and South Africa.

These results reinforce the following findings:

- Aid allocation introduces significant differences across rising powers, across OECD countries and between rising powers and OECD countries.
- Sector allocation clustering indicates significant similarities between some rising powers, mainly China, India and South Africa. However, this similarity also exists between these rising powers and some OECD countries, especially the USA.
- Country allocation clustering does not suggest large similarity across rising powers.

Overall, the data does not suggest that South–South cooperation is necessarily translated into a cluster of similar sector and country allocation of economic flows for all rising powers. As expected, divergences in objectives translate in different engagement patterns, some of which are similar to those of OECD countries.

Based on the data analysis in this section, Table 4.9 attempts to summarise the country profile for each rising power's economic engagement footprint.

[6] Germany with Japan, Germany with UK and Germany with France.
[7] Concretely the highly similar dyads for trade and FDI are: China and France; China and India; China and South Africa; France and Germany; France and India; France and South Africa; France and the USA; France and the UK; Germany and Japan; Germany and South Africa; Germany and the UK; India and South Africa; India and the USA; South Africa and the USA; South Africa and the UAE; and South Africa and the UK.

## Table 4.9 Summary of economic engagement footprint

| | Brazil | China | India | South Africa | Turkey | Gulf states |
|---|---|---|---|---|---|---|
| General profile | Resource-seeker (commodities), Lusophone concentration and focus on technical cooperation assistance | Main trade partner for SSA.<br>Resource-seeker and market-seeker.<br>Important investor and diversified portfolio, increasingly important donor | Very important partner for SSA.<br>Resource-seeker and market-seeker.<br>Very important investor and diversified portfolio in services.<br>Increasing aid donor, especially in energy generation | Important trade partner and investor for the region given its location.<br>Resource-seeker and market-seeker. Aid and investment relations mainly with neighbours, although aid also for security and peacekeeper | Marginal economic partner for the region | Increasingly important trade, investor and aid partner. Resource-seeker (land and water) |
| Economic engagement and allocation of flows | Net importer.<br>Access to natural resources, political alignment, mainly with Lusophone countries.<br>Investments directed by a few multinational corporations.<br>Aid takes the forms of knowledge sharing, skills transfer, technical assistance for social programmes | Net exporter.<br>Access to natural resources and export markets, business opportunities in Africa for Chinese companies, acceptance of the One-China policy, reducing production and transport costs via infrastructure development.<br>Allocations appear similar to other OECD countries regarding recipients governance, trade interests, levels of income per capita or natural resources | Net importer.<br>Access to resources and to markets.<br>Interest in energy sector<br>Avoidance of being perceived to operate like Chinese business.<br>Allocation of aid flows in SSA also similar to other OECD countries in terms of recipient characteristics.<br>Important services investor | Net exporter. Political influence through the African Renaissance Fund (ARF) and conflict prevention, peacekeeping, resolution, mediation, post-conflict reconstruction.<br>Different aid allocations to other rising powers and OECD countries | Net importer.<br>Marginal partner for SSA | Net exporter. Increasingly important partners in investment and aid.<br>Important services investors |

(Cont'd.)

## Table 4.9 (cont'd.)

| | | Brazil | China | India | South Africa | Turkey | Gulf states |
|---|---|---|---|---|---|---|---|
| Trade | Size | 16th import origin and 14th export destination in 2010 | Main trade partner for SSA | Fifth import origin and third export destination | Fourth main import origin and export destination in 2010 | Marginal trade partner 30th import origin and 29th export destination in 2010 | UAE and Saudi Arabia more important as import origin (13th and 15th in 2010), marginal export destinations (25th and 32nd) |
| | Sector concentration | Imports from Brazil foodstuffs<br>Exports from SSA mineral products (85–90%) | Imports from China machinery/electrical<br>Exports from SSA mineral products (75–80%) | Imports from India mineral products<br>Exports from SSA mineral products (65–70%) | Diversified imports from South Africa<br>Exports from South Africa mineral products and stone/glass | Imports from Turkey concentrated in metals<br>Exports from SSA stone/glass (35%) | Imports from Gulf states concentrated in mineral products (45–70%)<br>Exports from SSA metals and stone/glass |
| | Country concentration | Imports from Brazil SACU 27.96%, Nigeria 26.20%<br>Exports from SSA Nigeria 72.37% | Imports from China SACU 30.45%, Nigeria 17.38%<br>Exports from SSA Angola 32.56%, Sudan 20.97% | Imports from India SACU 18.65%, Nigeria 15.09%<br>Exports from SSA Angola 39.76%, Benin 36.13% | Imports from South Africa Zimbabwe 17.49%, Zambia 14.06%, Mozambique 11.66%<br>Exports from SSA Nigeria 24.07%, Zimbabwe 20.21%, Angola 9.67% | Imports from Turkey largely concentrated from SACU, Sudan and Nigeria<br>Exports from SSA mainly from SACU | Imports from Gulf states diversified – SACU, Kenya, Sudan etc.<br>Exports from SSA mainly from SACU, but also Benin for Saudi Arabia |
| | Similarities (sector) | Exports from SSA: China, Spain, Portugal | Exports from SSA: Brazil, India, Portugal, USA etc. | Exports from SSA: China, USA etc.<br>Imports: South Africa, Belgium/Luxembourg | Exports from SSA: Italy, Japan<br>Imports: Portugal, Spain, UK | | Exports from SSA: other Gulf states |
| | Similarities (country) | | Imports from China: Italy, US and UK<br>Exports from SSA: Italy, US and UK | | | Imports from Turkey: Italy,<br>Exports from SSA: UK and Germany | Exports from SSA: Qatar and Kuwait |
| | Dissimilarities (sector) | Exports from SSA: Kuwait, Norway etc. | | | | | Exports from SSA: Brazil, China etc.<br>Imports: China and other OECD etc. |
| | Dissimilarities (country) | Exports from SSA: Gulf states and other OECD | Exports from SSA: South Africa and other OECD | Imports from India: Portugal | Imports from South Africa: India, Gulf states and other OECD<br>Exports from SSA, China, Turkey, Gulf states and other OECD | Imports from Turkey: Portugal<br>Exports from SSA-South Africa | Imports from Gulf states: SACU and other OECD countries<br>Exports from SSA- South Africa and other OECD |

(Cont'd.)

## Table 4.9 (cont'd.)

| | | Brazil | China | India | South Africa | Turkey | Gulf states |
|---|---|---|---|---|---|---|---|
| FDI | Size | 11th investor (2003–11) | 6th investor (2003–11) | 4th investor (2003–11) | 8th investor (2003–11) | Marginal investor in SSA | UAE 9th investor (2003–11) |
| | Sector concentration | Main sectors (projects): coal, oil and natural gas | Main sectors (projects): communications, metals, automotive | Main sectors (projects): financial services | Main sectors (projects): financial services | Main sectors (projects): metals, clothing | Main sectors (projects): transportation, communications, tourism and financial services |
| | Country concentration | Angola | South Africa, Nigeria and Zambia | | | | |
| | Similarities (sector) | China | Brazil and France | South Africa, USA, UK, France, Germany | India, Qatar, UAE, UK | | Among Gulf states, UAE with UK |
| | Dissimilarities (sector) | Denmark and Kuwait | | New Zealand | New Zealand | Kuwait | Brazil, Australia and Canada |
| Aid | Size | Marginal | Estimated 4th donor in 2009 and 10th donor for period 2000–10.<br>Increasing importance | 19th donor for period 2000–10.<br>Increasing importance | Marginal | Negligible | Kuwait, UAE and Saudi Arabia together 17th donor. Increasing importance |
| | Sector concentration | Education | | Energy generation | Government and civil society, general | | Transport and storage; water and sanitation |
| | Country concentration | Mozambique and other Lusophone countries | Angola, Nigeria, Sudan | Ethiopia, Sudan, SACU<br>Mali | DRC, Zimbabwe, Liberia, Guinea<br>Other SACU | | Sudan and others |
| | Similarities | | | | | | |
| | Dissimilarities (sector) | | | | New Zealand | | Greece, New Zealand and USA |
| | Dissimilarities (country) | South Africa, UAE | | | Brazil, Portugal, Gulf states | | Portugal and South Africa |

## 4.4 Development footprint impacts

From the perspective of SSA countries, the most important element in relation to rising powers' economic engagement is its developmental impact. The analysis above suggests that: (i) rising powers are becoming important countries for SSA, especially regarding trade and investment; and (ii) rising powers are not a homogenous group and in some cases are not so different from traditional OECD donors. Whether they are likely to have similar or differentiated development impacts is uncertain. However, their increasing importance as economic partners for SSA implies that any development impact is likely to be increasing over time.

Understanding the development footprint of rising powers' engagement in SSA ultimately depends on the micro impact of these engagements, mainly on firms and households. In this section, we analyse four trade and investment elements that can be measured in our dataset and are associated with enhanced/reduced economic and development impacts. These are: the volatility of flows, the contribution to export diversification, integration in value chains and the sophistication and technological intensity of exports from SSA.

### 4.4.1 Volatility of flows

High volatility of economic flows is bad for economic development since it increases economic uncertainty. In the case of trade flows, volatility matters mainly for exports, since changes in import values may reflect only reallocation of import sources. We start by calculating the standard deviation of exports for each of the rising power destinations and compare it with that of exports to OECD countries. However, given the very large increase in exports to rising powers experienced during the period, this measure can be misleading. This is observed in the data, where the standard deviation of exports, normalised by the mean, is larger in rising powers than OECD countries, especially in countries with the largest export increases such as China, India and Brazil. The standard deviation, however, falls considerably when the exports series is de-trended.

One natural experiment when looking at the potential contribution of rising powers in reducing volatility for exports is to analyse the role of trade with rising powers during the world trade collapse in 2009. While the crisis was mainly experienced in OECD countries, it is critical to understand the role of rising powers in balancing the reduction of exports to these markets. To this end, we calculate the change in exports from 2008 to 2009. Given that the economic recession was mainly experienced in OECD countries, the results are somewhat surprising. Exports to China and India also fell significantly, by 29.46 per cent and 16.6 per cent, though not as much as the average reduction in OECD countries of 39 per cent.[8] Exports to Brazil decreased by 44.4 per cent and to South Africa by 40 per cent, since these countries also experienced a recession. Exports to Turkey were reduced by 16.9 per cent. Therefore, while export performance to rising powers was better than to OECD countries, it was still negative and not good enough to positively offset any export reductions in OECD markets.

Regarding investment, it is very difficult to measure FDI volatility since bilateral FDI flows tend to change substantially from year to year given that investments projects occur mainly in one period. As a result, we focus on aid flows volatility. The average volatility for rising powers for the period 2000–2010, as captured by the standard deviation over the mean, is 0.95, while for OECD countries it is 0.62. This large volatility of aid flows in rising powers is, however, difficult to interpret for two main reasons. First, the possibility that data for Brazil, South Africa and some of the Gulf states are incomplete, increasing the noise in the data.

[8] While most of the reduction corresponds to a reduction in oil and mineral exports, other sectors such as agriculture, chemicals or wood products also experience significant reductions in exports from SSA to China and India.

Second, the fact that China has substantially increased aid flows during the period and the measure is capturing a positive trend.

The results suggest, therefore, that rising powers have contributed to reducing the volatility of trade flows, although less than expected. In relation to aid volatility, this appears large, but it is difficult to determine how robust this result is, given the gaps in the data. In general, however, it is important to stress the positive trend in these flows.

### 4.4.2 Export diversification

The importance of export diversification for economic growth and development is almost uncontroversial nowadays. For example, Imbs and Wacziarg (2003) show that countries diversify during the initial process of economic development. Diversification reduces risks and vulnerability with respect to external shocks and creates higher opportunities for investments in profitable activities, learning and externalities. Therefore, one additional benefit of trade engagement from rising powers in SSA is the potential contribution to export diversification in the region.

The previous section showed a high dependence of SSA exports in primary commodity sectors. However, it is important to understand whether the increase in exports has been translated into diversification into new products.

Table 4.10 shows the number of products exported for each year. In order to avoid the adjustment of the trade collapse in 2009, the last column calculates the change in exported products from 2000 to 2008. The number of products exported to China, India and the UAE experienced a substantial increase, especially for the former, given the large export base in terms of products already existing in 2000. On the other hand, export diversification to Brazil and Turkey was extremely modest, and exports to Saudi Arabia and South Africa experienced increased concentration in fewer products exported.

This indicates that mainly China, India and the UAE have played a positive role in export diversification in the SSA region.

## Table 4.10 Numbers of products exported by year

| | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **Change 2000–2008** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 783 | 742 | 714 | 792 | 726 | 739 | 800 | 778 | 837 | 766 | 862 | 6.90% |
| China | 1,220 | 1,215 | 1,357 | 1,482 | 1,210 | 1,391 | 1,414 | 1,616 | 1,677 | 1,520 | 1,688 | 37.46% |
| India | 1,410 | 1,282 | 1,447 | 1,521 | 1,464 | 1,541 | 1,580 | 1,540 | 1,663 | 1,560 | 1,781 | 17.94% |
| Kuwait | 538 | 209 | 240 | 296 | 229 | 242 | 223 | 765 | 701 | 261 | 227 | 30.30% |
| Qatar | 343 | 369 | 422 | 518 | 509 | 732 | 783 | 807 | 807 | 289 | 786 | 135.28% |
| Saudi Arabia | 1,127 | 1,210 | 1,320 | 1,578 | 1,175 | 1,227 | 1,241 | 1,210 | 793 | 678 | 741 | –29.64% |
| South Africa | 2,926 | 2,518 | 2,648 | 2,443 | 2,086 | 2,195 | 2,278 | 2,363 | 2,286 | 2,183 | 2,161 | –21.87% |
| Turkey | 755 | 744 | 681 | 766 | 694 | 709 | 792 | 808 | 838 | 809 | 912 | 10.99% |
| UAE | 1,640 | 1,251 | 1,443 | 1,558 | 1,339 | 1,925 | 1,573 | 2,153 | 2,201 | 1,506 | 1,580 | 34.21% |

Source: Own calculations from BACI.

### 4.4.3 Value chain integration

In comparison to other regions, such as Asia or Latin America, SSA has been largely excluded from participation in global value chains due to the sector composition of its

comparative advantage and the high trade costs in the region. Participation in production fragmentation and trade in tasks has become more important in the last two decades and tends to involve more value-added creation than primary commodity exports. As a result, a potential development benefit from rising powers' economic engagement is to integrate SSA firms in value chains, and to participate in global production sharing.

In terms of trade flows, the data shown in section 4.2 indicate that no intra-industry trade is occurring between SSA and the rising powers and that export flows in manufactured goods to rising powers are marginal. This suggests that the existing trade engagement is similar to the existing trade pattern with OECD countries, and that no significant participation in value chains should be expected in SSA as a result of trading with rising powers.

Regarding FDI, however, investments from some rising powers, especially India and the Gulf states, appear more diversified that some OECD countries, and often focus on services. This could play an important role on increasing the competitiveness of SSA firms and facilitating future value chain integration.

### 4.4.4 Sophistication and technological intensity of exports

Increasing value added and productivity in SSA exports is critical for structural transformation in the region. As a result, it is important to analyse the concentration of bilateral exports across sectors with more or less sophistication and technological intensity.

Table 4.11 shows the value of the SSA export basket to rising powers and OECD countries using the EXPY index, the weighted average of the PRODY sophistication index (see Box 4.2) with export shares as weights (Hausmann, Hwang and Rodrik 2007).

#### Box 4.2 Measures of sophistication and technological intensity

PRODY – we use the measure of sophistication introduced by Hausmann *et al*.(2007) and Lall, Weiss and Zhan (2006). Using the BACI dataset from CEPII that includes COMTRADE HS-6 trade data, we calculate for each product and year from 2001 to 2007, the measure defined in (3) below. This measure is a weighted average of the GDP per capita of the countries that export a specific product k, weighted by the respective export shares in relation to the sum of exports shares for that product and year.

$$PRODY_{kt} = \sum_i \frac{x_{ikt} / X_{kt}}{\sum_i x_{ikt} / X_{kt}} GDPcap_{it}$$

Using the PRODY measure, one can calculate a measure of the sophistication of the export basket (EXPY) as a weighted average of PRODY using as weights the country's export shares.

$$EXPY_{it} = \sum_k \frac{x_{ikt}}{X_{it}} PRODY_{kt}$$

OECD classification for technological intensity (Hatzichronoglou 1999) – we use the technological content sophistication index from the OECD. This classification groups products according to the following rankings: (1) non-industrial products; (2) low technological intensity; (3) low/medium intensity; (4) medium/high intensity; and (5) high technological intensity.

The results are quite striking: with the exception of some Gulf states such as Kuwait or Qatar, exports to rising powers have the lowest sophistication indices, and they are well below the average of the period of around $8,500. This is an indication that exports to rising powers are mimicking the already established export patterns of low sophistication existing with OECD countries, and at even lower sophistication levels.

## Table 4.11 EXPY index exports from SSA (US$)

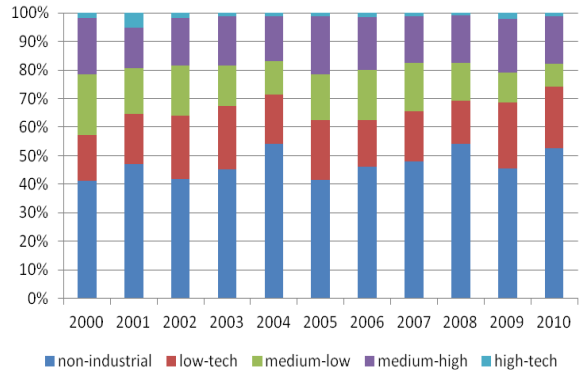
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Iceland | 17,238 | 10,307 | 11,348 | 17,609 | 10,410 | 18,316 | 16,907 | 14,052 | 15,233 | 17,497 | 10,959 | 14,534 |
| Sweden | 12,629 | 11,996 | 13,000 | 13,878 | 14,521 | 12,191 | 12,650 | 13,310 | 12,879 | 11,043 | 11,330 | 12,675 |
| Ireland | 10,853 | 10,720 | 10,384 | 12,162 | 12,415 | 10,699 | 10,657 | 12,648 | 13,197 | 10,630 | 11,694 | 11,460 |
| Denmark | 11,853 | 11,445 | 11,299 | 12,986 | 10,971 | 9,836 | 10,843 | 11,576 | 12,706 | 11,149 | 10,818 | 11,408 |
| Hungary | 8,439 | 8,650 | 10,709 | 11,044 | 12,459 | 12,567 | 12,973 | 11,730 | 11,219 | 10,306 | 10,092 | 10,926 |
| Finland | 11,543 | 11,963 | 10,892 | 11,347 | 11,072 | 10,803 | 10,230 | 11,175 | 10,388 | 10,069 | 9,092 | 10,780 |
| Mexico | 9,343 | 10,302 | 9,849 | 10,708 | 9,785 | 9,222 | 11,082 | 11,881 | 11,050 | 12,508 | 10,490 | 10,565 |
| Germany | 9,984 | 9,955 | 10,602 | 10,759 | 11,897 | 10,735 | 10,489 | 11,428 | 10,651 | 8,999 | 9,774 | 10,480 |
| New Zealand | 9,016 | 9,814 | 9,552 | 9,630 | 10,851 | 10,059 | 10,625 | 10,255 | 11,459 | 9,684 | 10,979 | 10,175 |
| Japan | 8,783 | 8,493 | 8,210 | 10,219 | 9,424 | 10,113 | 10,091 | 11,325 | 10,915 | 10,622 | 10,318 | 9,865 |
| Austria | 9,187 | 8,855 | 9,017 | 9,917 | 10,452 | 8,914 | 9,717 | 11,757 | 10,453 | 9,629 | 9,863 | 9,796 |
| Czech Rep. | 7,728 | 7,746 | 9,114 | 9,212 | 10,685 | 9,523 | 10,674 | 10,442 | 10,768 | 9,782 | 10,364 | 9,640 |
| Australia | 9,041 | 8,675 | 9,204 | 9,891 | 10,037 | 9,585 | 10,854 | 10,023 | 10,329 | 9,019 | 8,357 | 9,547 |
| Qatar | 7,574 | 6,884 | 8,791 | 10,497 | 11,926 | 10,521 | 8,310 | 11,832 | 10,347 | 7,769 | 6,787 | 9,203 |
| Slovakia | 6,858 | 6,151 | 6,809 | 7,172 | 12,109 | 9,806 | 9,174 | 10,243 | 11,175 | 10,600 | 9,780 | 9,080 |
| Rep. of Korea | 8,566 | 8,160 | 8,263 | 12,865 | 7,904 | 8,931 | 9,831 | 8,996 | 8,863 | 7,517 | 8,399 | 8,936 |
| France | 8,586 | 8,274 | 8,586 | 8,904 | 8,984 | 8,383 | 8,801 | 9,697 | 9,346 | 8,746 | 8,893 | 8,836 |
| Kuwait | 6,717 | 7,561 | 8,687 | 8,497 | 14,489 | 7,260 | 9,266 | 6,768 | 7,747 | 6,167 | 6,110 | 8,115 |
| Norway | 8,873 | 7,973 | 9,206 | 9,653 | 6,997 | 8,842 | 7,556 | 8,281 | 7,144 | 6,500 | 7,708 | 8,067 |
| Portugal | 6,589 | 6,818 | 7,146 | 7,594 | 8,496 | 7,938 | 8,336 | 8,927 | 8,678 | 8,742 | 7,749 | 7,910 |
| Italy | 7,131 | 7,247 | 7,328 | 7,851 | 8,607 | 7,525 | 7,855 | 8,718 | 8,412 | 7,976 | 8,098 | 7,886 |
| UK | 6,737 | 7,258 | 6,764 | 7,722 | 8,020 | 7,459 | 7,720 | 8,641 | 9,252 | 7,841 | 8,335 | 7,795 |
| Poland | 7,437 | 6,793 | 6,238 | 6,242 | 8,222 | 8,596 | 8,930 | 8,756 | 8,490 | 8,385 | 7,646 | 7,794 |
| Switzerland | 6,395 | 7,141 | 7,238 | 8,422 | 8,861 | 8,881 | 7,453 | 8,255 | 6,777 | 9,800 | 6,478 | 7,791 |
| Netherlands | 7,441 | 7,765 | 7,614 | 7,713 | 8,219 | 7,548 | 7,909 | 8,338 | 8,053 | 7,042 | 7,193 | 7,712 |
| Spain | 6,592 | 6,841 | 7,067 | 7,915 | 7,840 | 7,858 | 8,359 | 8,276 | 8,506 | 7,431 | 7,287 | 7,634 |
| USA | 7,261 | 7,372 | 7,668 | 7,371 | 7,408 | 7,186 | 7,502 | 8,387 | 8,503 | 7,538 | 7,697 | 7,627 |
| Belgium/ Luxembourg | 6,150 | 7,633 | 6,023 | 7,491 | 8,232 | 7,107 | 7,782 | 7,789 | 8,606 | 8,122 | 8,406 | 7,577 |
| Canada | 8,317 | 8,449 | 7,352 | 7,584 | 7,922 | 6,829 | 7,240 | 7,914 | 7,532 | 6,629 | 6,760 | 7,503 |
| UAE | 5,292 | 8,644 | 8,478 | 8,637 | 9,116 | 5,628 | 7,506 | 5,190 | 10,599 | 5,376 | 5,224 | 7,245 |
| Greece | 7,256 | 8,118 | 7,311 | 7,293 | 6,939 | 6,955 | 7,041 | 7,132 | 7,021 | 6,266 | 6,876 | 7,110 |
| Brazil | 6,142 | 6,381 | 6,810 | 5,989 | 5,738 | 6,497 | 6,811 | 6,492 | 7,566 | 6,200 | 6,632 | 6,478 |
| China | 5,481 | 6,120 | 5,859 | 5,741 | 5,600 | 5,710 | 6,051 | 5,880 | 6,601 | 5,415 | 5,083 | 5,776 |
| Turkey | 5,517 | 3,758 | 6,424 | 4,762 | 4,177 | 3,392 | 4,250 | 4,878 | 6,091 | 5,819 | 5,191 | 4,933 |
| India | 4,779 | 4,225 | 4,092 | 4,302 | 3,726 | 4,432 | 5,591 | 5,569 | 6,133 | 5,369 | 5,257 | 4,861 |
| Saudi Arabia | 3,947 | 4,938 | 3,914 | 4,745 | 5,019 | 5,089 | 5,792 | 4,730 | 4,143 | 4,064 | 4,230 | 4,601 |
| South Africa | 4,039 | 3,949 | 4,695 | 4,303 | 3,968 | 3,662 | 4,414 | 4,873 | 5,217 | 5,291 | 4,099 | 4,410 |

Source: Calculated from BACI.

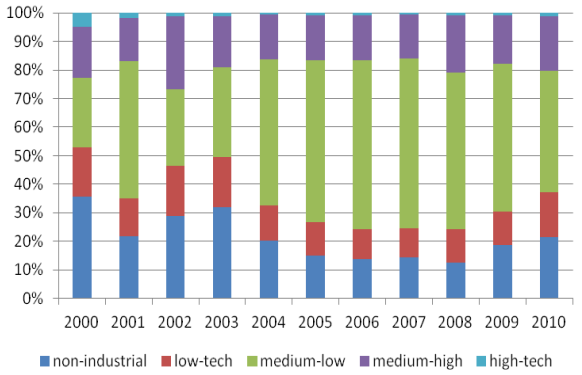
This pattern is also reflected in the low technological intensity of exports from rising powers. Figure 4.6 shows the share of exports from SSA to each rising power at each level of technological intensity and its evolution over the period 2000–2010.

# Figure 4.6 Export share by technology intensity

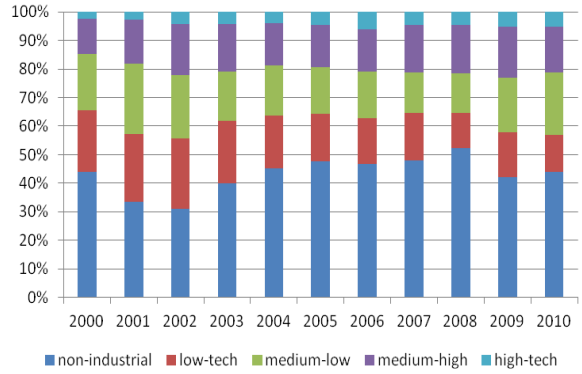
Brazil



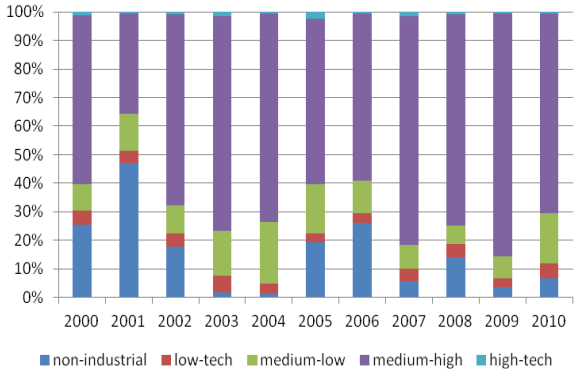

Turkey



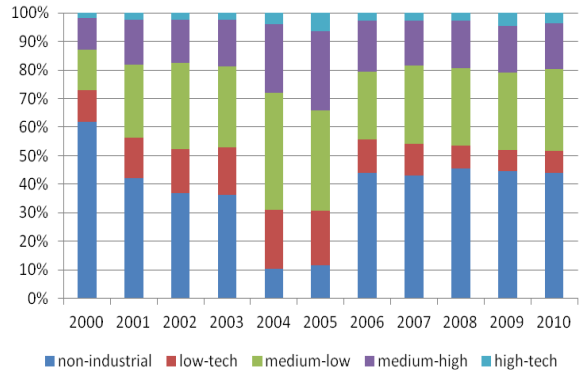

China



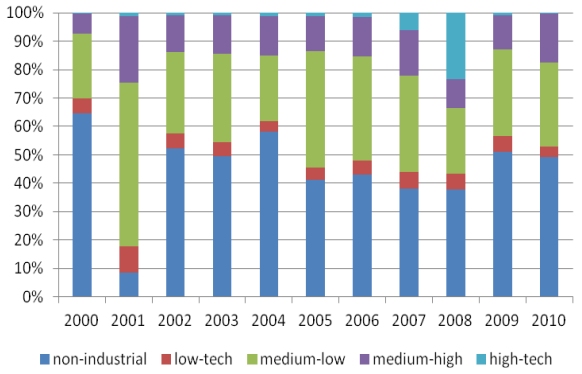

Qatar



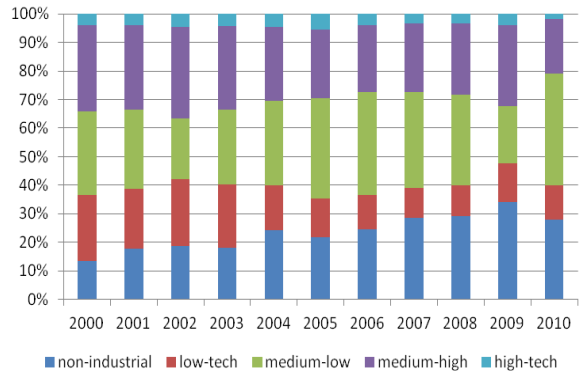

India



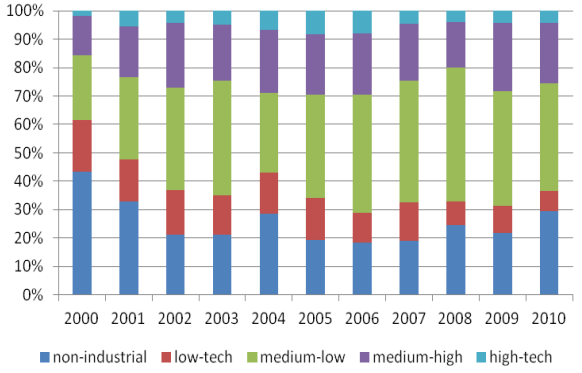

Saudi Arabia




South Africa




UAE



As expected, non-industrial products are an important share in most rising powers, but especially in Brazil, China, India and Saudi Arabia. This share has also been increasing over time in some countries but only slightly. The share of high technology intensity appears marginal for exports to all EE destinations for the entire period. On the other hand, medium–low technological intensity exports also have an important share in India, China, Saudi Arabia, Turkey and the UAE. Medium–low technological intensity is likely to be the area where SSA has more potential to increase exports. Only Qatar has a very important share of medium–high technological intensity; while in Brazil, China, India and Saudi Arabia in 2010 the share of non-industrial and low technology intensity imports from SSA represented more than 50 per cent of all imports from the region.

Overall, the results suggest a pattern of SSA exports to rising powers based on low sophistication, non-industrial sectors and low or medium–low technological intensity very similar to the pattern that currently exists with OECD countries. While this is likely to be the result of supply and demand factors, trade policy in EE countries is likely to have played a role, given the traditional high levels of protection, especially in manufacturing products, for most of rising powers.

### 4.4.5 Final comments on development impact

While these are only a few elements at a more macro level about the potential development footprint of rising powers' engagement in SSA, the analysis suggests that FDI potentially has a more positive impact than trade. While a growing relationship with the rising powers has proved positive for SSA in terms of export earnings, export patterns with rising powers seem to accentuate negative structural change in the region, and given the increasing importance of the rising powers as destination markets this is likely to increase in the future. As a result, most of the impact of rising powers' economic engagement is likely to be localised in the potential for FDI, in addition to other flows not explored in this paper, such as finance or technology transfer.

# 5 Conclusions

This paper has analysed the economic engagement footprint of rising powers in SSA. In so doing and in line with the South–South cooperation framework, we go beyond the analysis of aid flows to include FDI and trade flows. Several important elements arise from the footprint.

First, rising powers are important economic partners, especially regarding trade flows and investment. China is the main trade partner and the rising powers have been rapidly increasing their trade share at the expense of OECD countries. India, China, South Africa and the Gulf states are also important sources of FDI in the region. Regarding aid flows, mainly China and to a lesser extent India and the Gulf states are significant donors in the region. This is likely to be because some rising powers use instruments for development cooperation other than those that are considered 'development assistance' under the OECD DAC framework.

Second, while exports from SSA to these countries are very much concentrated in natural resources, imports, FDI and aid are allocated in different sectors and different countries reflecting different objectives and production structures in the rising powers. One element to be highlighted is the extent to which a significant number of FDI projects from rising powers, especially for India, South Africa and the Gulf states concentrate in services. In addition, the nature of this engagement between rising powers and SSA is strengthening, since all flows are increasing over time.

Third, the rising powers are not a homogenous group in terms of economic engagement; and not even the BICS countries are a homogenous group. While trade flows, especially exports from SSA, show more similarity, there are significant differences in terms of aid flows and FDI. These differences are also more important regarding BICS and Gulf states or Turkey.

Fourth, rising powers are not so different in their country and sector engagement from many OECD countries. Significant similarities appear, especially regarding trade flows and less so in investment between some rising powers and some OECD countries. Interestingly, this is also reflected in the aid allocation across SSA countries in terms of the recipient characteristics. While allocation of rising powers is perhaps more concentrated in natural resource-intensive countries and countries with larger UN affinity, contrary to what some commentators suggest, rising powers such as China or India are not significantly more concentrated in countries with higher income per capita, corruption or trade links than some OECD countries.

Fifth and looking forward, the importance of rising power engagement in SSA is likely to increase in the near future given the recent trends and economic difficulties in OECD countries. Regarding trade flows, this engagement does not appear particularly beneficial for SSA countries in terms of the sophistication and technological content of exports, export diversification or integration in global value chains. For aid flows, there appear to be some complementarities between rising power priorities and other traditional donors, although there is also significant overlapping in other sectors such as infrastructure. Finally, it is probably FDI flows from rising powers, especially investments in services, which are likely to become a significant opportunity for growth in the SSA region.

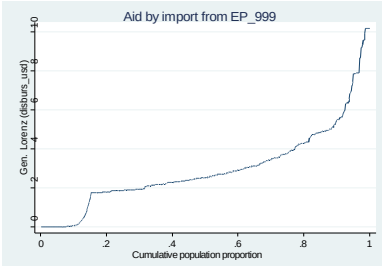
Overall, the economic engagement footprint suggests that neither rising powers nor BICS are a distinctive group in terms of economic engagement in SSA, or are significantly distinctive from other OECD traditional donors. Therefore, the South–South cooperation framework does not clearly translate into significant similarities among rising powers and differences between rising powers and OECD countries in country or sector allocation of trade, FDI and aid flows.

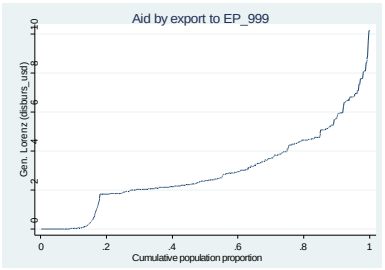
While these results appear quite robust, it is important to emphasise that the scope of this analysis does not include all flows emanating from rising power engagement in SSA. Other types of flows such as migration, technology and, especially, other forms of development finance and assistance are an important part of the economic engagement footprint of these countries in SSA. As a result, it is important to collect data on these flows to finish building the picture of the footprint. Moreover, it is critical to improve the quality of the data on aid flows and sector and country FDI.

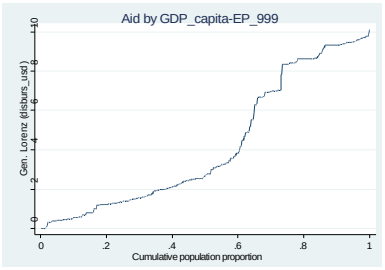
The findings of the paper do not suggest the South–South cooperation framework is irrelevant to development impact, but that, given the allocation of flows observed, this framework does not yet appear to be distinctive. It can be argued that this cooperation framework is not only about sector and country allocation of flows, but also about political engagement and cooperation, bilateral frameworks, and how aid and investment projects are selected and implemented. However, in order to understand whether this form of cooperation is expected to impact development 'differently' from other forms of cooperation and move from development rhetoric, it is necessary to understand the relevant micro channels through which this framework is likely to operate differently and evaluate its impact. More work is required to understand and quantify these micro channels and evaluate projects under this cooperation framework in comparison to traditional donor projects.

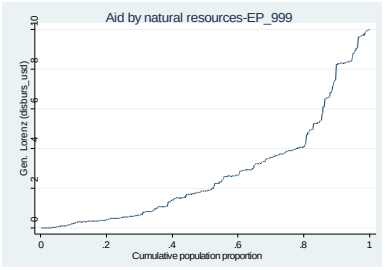
# Appendix 1 Concentration curves rising powers

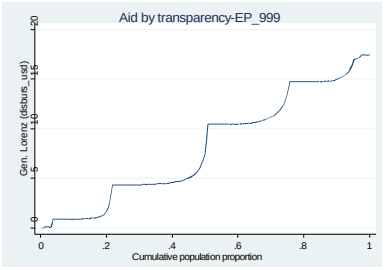
China

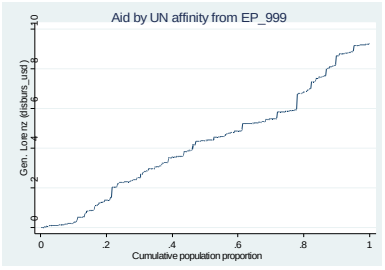


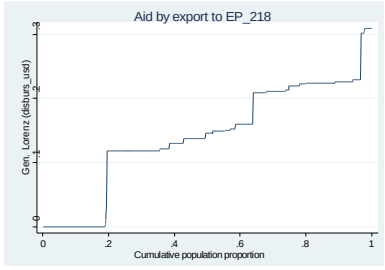



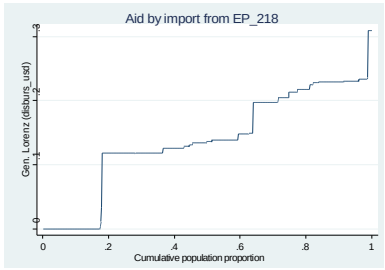



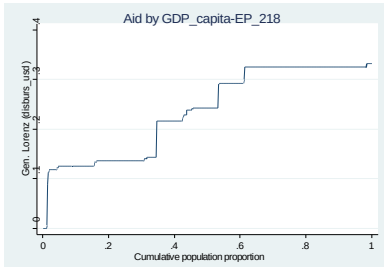



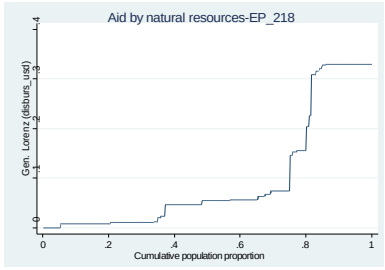



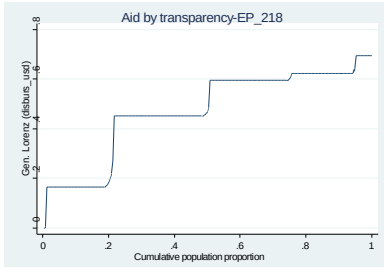

South Africa

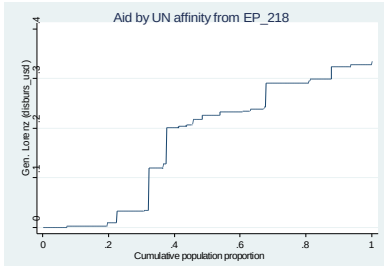


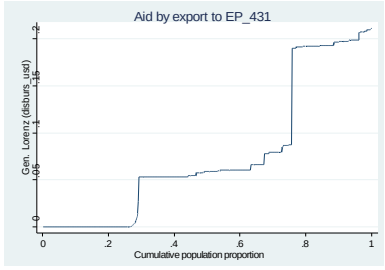



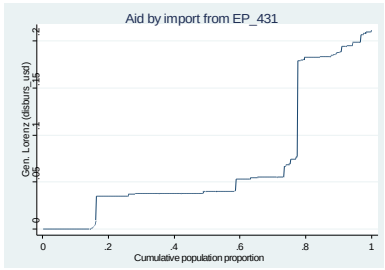



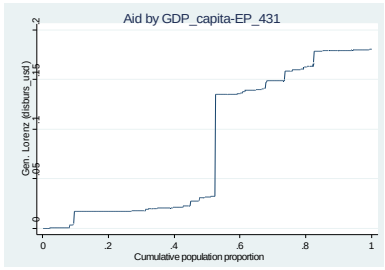



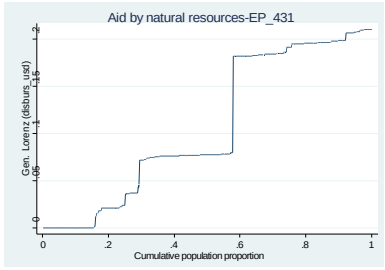



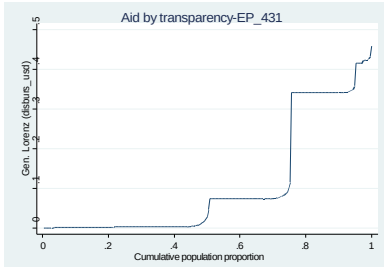

Brazil

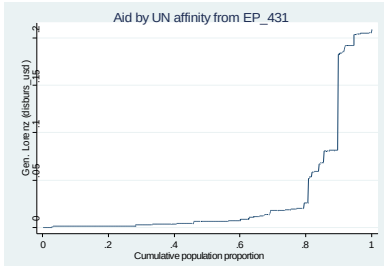
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# Appendix 1 (cont'd.)

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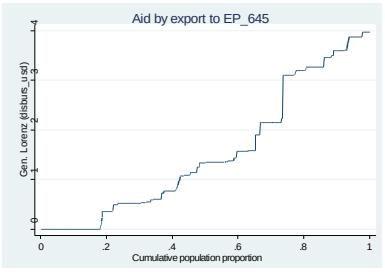
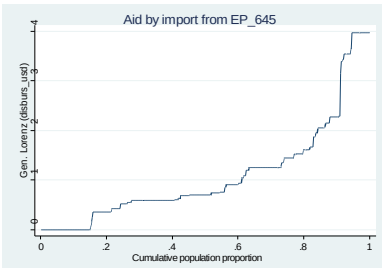
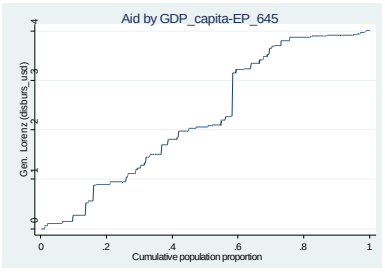
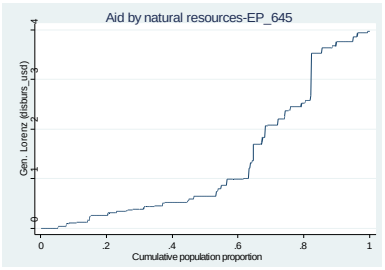
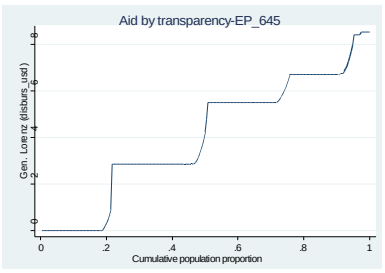
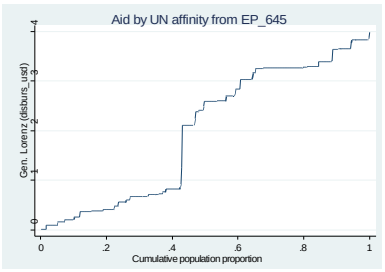


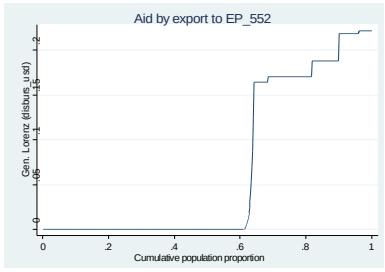



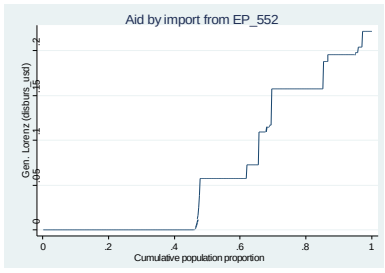



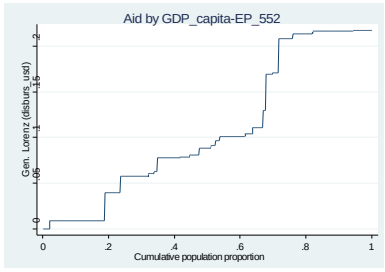



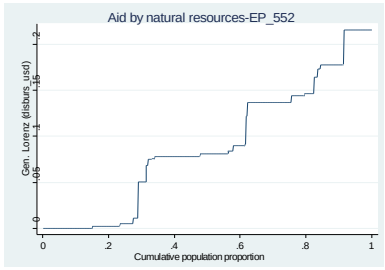



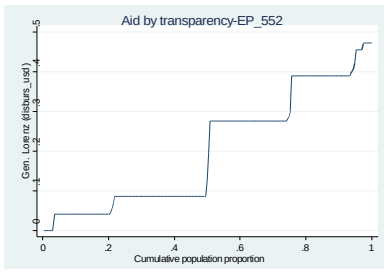

Kuwait

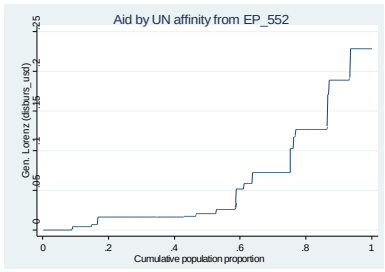


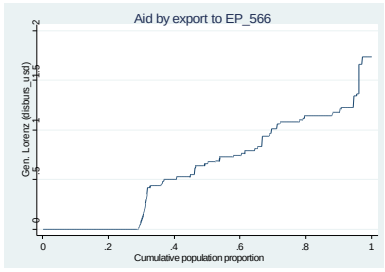



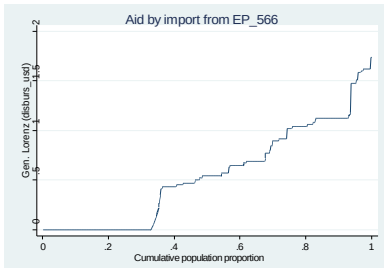



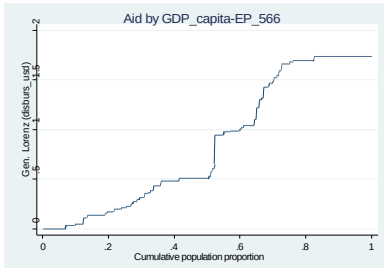



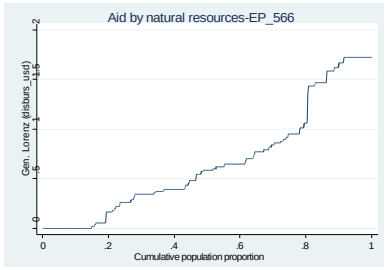



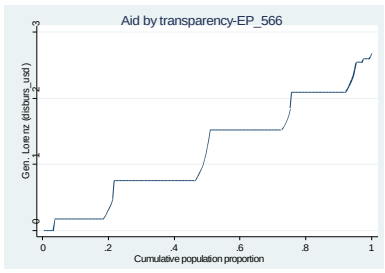

Saudi Arabia

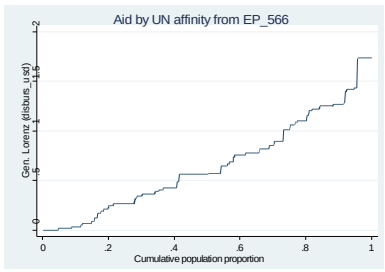
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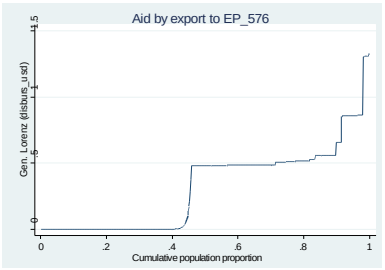
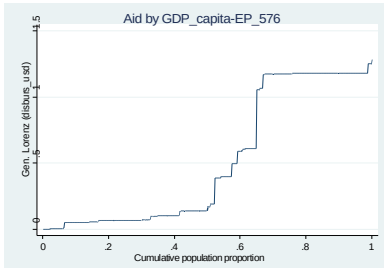
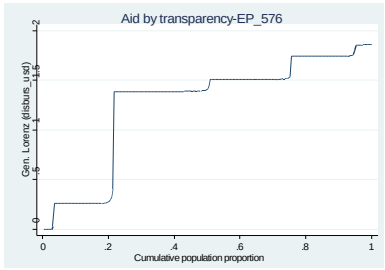
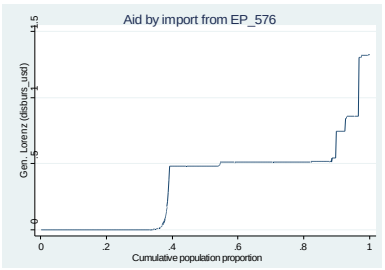
# Appendix 1 (cont'd.)

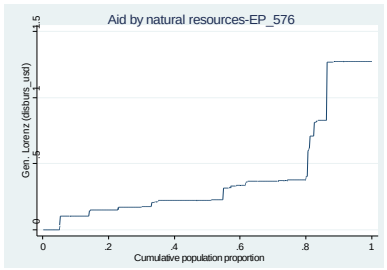
UAE

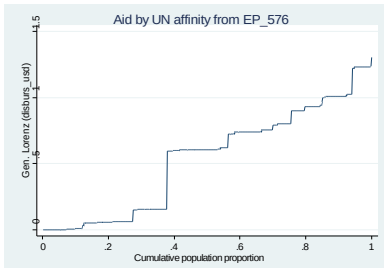


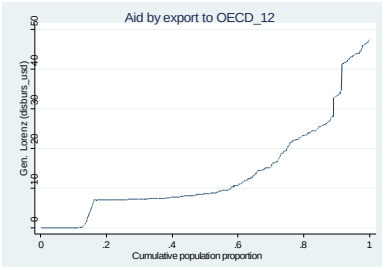



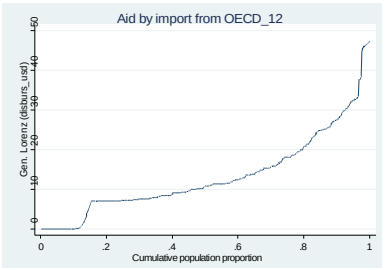



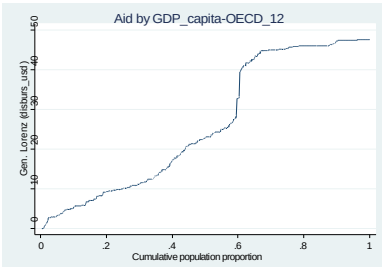



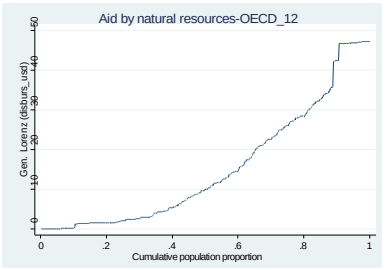
# Appendix 2 Concentration curves: selected OECD countries

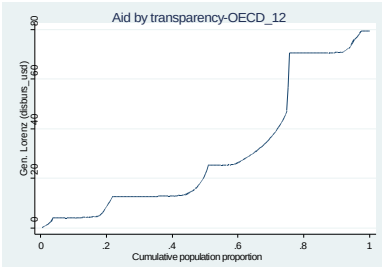
United Kingdom

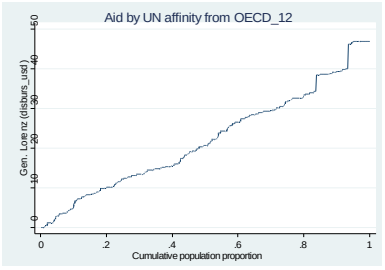


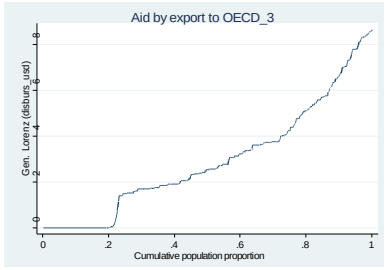



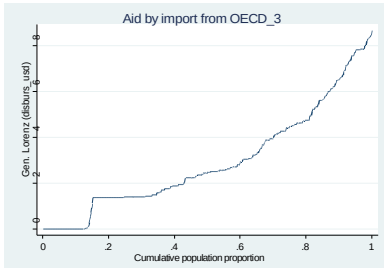



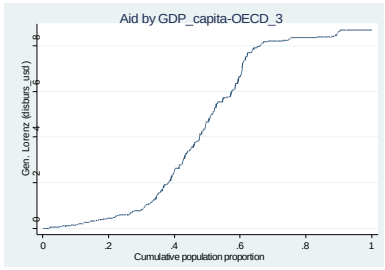



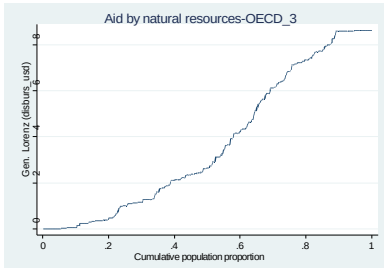



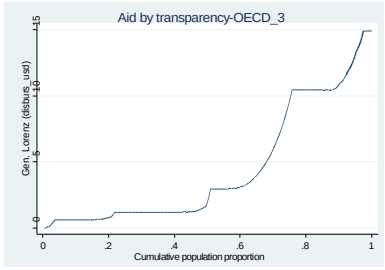

Denmark

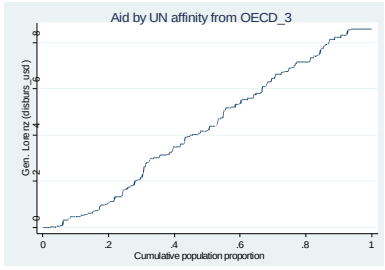


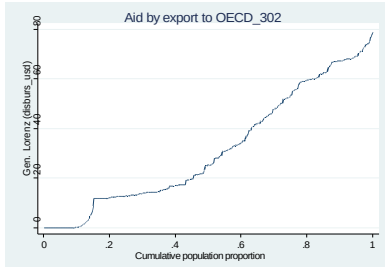



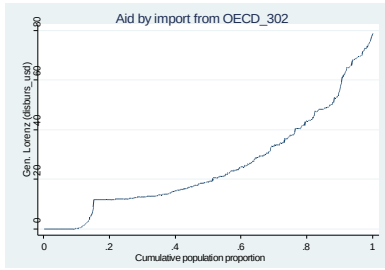



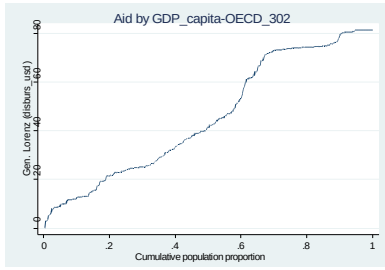



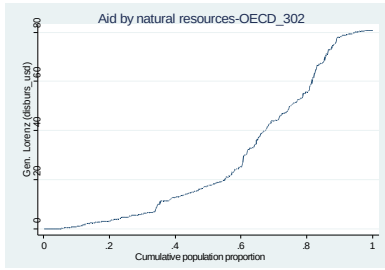



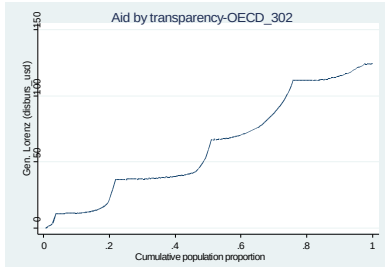

United States

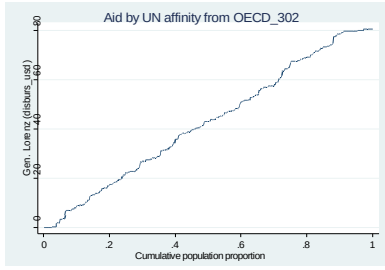


# Appendix 3 Similarity matrices

Use SACU for Tables A3.1-3.4 but South Africa for A3.5-3.7

## Table A3.1 Average FK similarity index – HS-2 chapters selected rising powers and OECD imports from SSA countries

| | Canada | China | France | Germany | India | Japan | Kuwait | Norway | Qatar | Korea | Saudi Arabia | SACU | Turkey | USA | UAE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 0.5784 | 0.7708 | 0.5400 | 0.3262 | 0.5843 | 0.3851 | 0.0821 | 0.1017 | 0.1033 | 0.5567 | 0.1605 | 0.4770 | 0.2912 | 0.8405 | 0.2338 | 0.1967 |
| Canada | | 0.6199 | 0.7866 | 0.6334 | 0.6227 | 0.5574 | 0.2150 | 0.2408 | 0.2956 | 0.6056 | 0.3137 | 0.5995 | 0.4949 | 0.6691 | 0.4110 | 0.4283 |
| China | | | 0.5794 | 0.4117 | 0.6274 | 0.5091 | 0.1233 | 0.2048 | 0.1184 | 0.6539 | 0.2013 | 0.5575 | 0.3327 | 0.7945 | 0.2670 | 0.2356 |
| France | | | | 0.6191 | 0.5708 | 0.5650 | 0.2611 | 0.2201 | 0.3032 | 0.5321 | 0.3285 | 0.5827 | 0.4691 | 0.6297 | 0.4085 | 0.4742 |
| Germany | | | | | 0.4412 | 0.5890 | 0.2744 | 0.2992 | 0.3580 | 0.4965 | 0.4145 | 0.5058 | 0.5487 | 0.4340 | 0.4953 | 0.5335 |
| India | | | | | | 0.5221 | 0.1680 | 0.1559 | 0.1928 | 0.5727 | 0.2969 | 0.5857 | 0.4628 | 0.6490 | 0.3915 | 0.4522 |
| Japan | | | | | | | 0.2156 | 0.2522 | 0.2289 | 0.5943 | 0.3874 | 0.6402 | 0.5301 | 0.4809 | 0.4857 | 0.5336 |
| Kuwait | | | | | | | | 0.1764 | 0.4539 | 0.2590 | 0.4236 | 0.1668 | 0.2056 | 0.1182 | 0.3440 | 0.2426 |
| Norway | | | | | | | | | 0.1737 | 0.2285 | 0.2655 | 0.2172 | 0.1454 | 0.1333 | 0.1974 | 0.2392 |
| Qatar | | | | | | | | | | 0.1903 | 0.3249 | 0.1850 | 0.2331 | 0.1424 | 0.3846 | 0.2798 |
| Korea | | | | | | | | | | | 0.4050 | 0.5881 | 0.3807 | 0.6101 | 0.3806 | 0.3369 |
| Saudi Arabia | | | | | | | | | | | | 0.3284 | 0.3226 | 0.2365 | 0.4375 | 0.4111 |
| SACU | | | | | | | | | | | | | 0.5389 | 0.5675 | 0.4971 | 0.5363 |
| Turkey | | | | | | | | | | | | | | 0.3585 | 0.5296 | 0.5776 |
| USA | | | | | | | | | | | | | | | 0.3073 | 0.3254 |
| UAE | | | | | | | | | | | | | | | | 0.5553 |

## Table A3.2 Average FK similarity index – HS-2 chapters selected rising powers and OECD exports to SSA countries

| | Canada | China | France | Germany | India | Japan | Kuwait | Norway | Qatar | Korea | Saudi Arabia | SACU | Turkey | USA | UAE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 0.3797 | 0.3985 | 0.4928 | 0.4724 | 0.5099 | 0.3669 | 0.1704 | 0.2738 | 0.1555 | 0.3212 | 0.2417 | 0.6044 | 0.4750 | 0.4733 | 0.4486 | 0.4652 |
| Canada | | 0.4475 | 0.5701 | 0.5278 | 0.4359 | 0.3889 | 0.0794 | 0.3944 | 0.0767 | 0.3021 | 0.1401 | 0.4703 | 0.3952 | 0.6601 | 0.3881 | 0.5467 |
| China | | | 0.5866 | 0.5688 | 0.5792 | 0.4496 | 0.0987 | 0.4119 | 0.0914 | 0.4002 | 0.1637 | 0.5408 | 0.5002 | 0.5298 | 0.4789 | 0.5718 |
| France | | | | 0.6840 | 0.6010 | 0.4758 | 0.1293 | 0.4993 | 0.1222 | 0.4034 | 0.2031 | 0.6453 | 0.5040 | 0.6773 | 0.5030 | 0.7132 |
| Germany | | | | | 0.4991 | 0.6212 | 0.1037 | 0.4960 | 0.1006 | 0.4198 | 0.1739 | 0.5747 | 0.4515 | 0.7210 | 0.4638 | 0.7403 |
| India | | | | | | 0.3800 | 0.1982 | 0.3412 | 0.1487 | 0.3667 | 0.2847 | 0.6333 | 0.5846 | 0.5434 | 0.5383 | 0.5527 |
| Japan | | | | | | | 0.0600 | 0.4414 | 0.0580 | 0.4922 | 0.1066 | 0.4146 | 0.3784 | 0.4597 | 0.3581 | 0.4579 |
| Kuwait | | | | | | | | 0.1065 | 0.3664 | 0.1163 | 0.8077 | 0.2280 | 0.1611 | 0.1250 | 0.5168 | 0.1569 |
| Norway | | | | | | | | | 0.1084 | 0.4871 | 0.1494 | 0.4113 | 0.3630 | 0.4813 | 0.3560 | 0.5038 |
| Qatar | | | | | | | | | | 0.1299 | 0.3563 | 0.2349 | 0.1387 | 0.1252 | 0.3233 | 0.1440 |
| Korea | | | | | | | | | | | 0.1714 | 0.3846 | 0.3714 | 0.3701 | 0.3597 | 0.3866 |
| Saudi Arabia | | | | | | | | | | | | 0.3087 | 0.2257 | 0.2092 | 0.5824 | 0.2348 |
| SACU | | | | | | | | | | | | | 0.6122 | 0.5969 | 0.5850 | 0.6393 |
| Turkey | | | | | | | | | | | | | | 0.4492 | 0.4898 | 0.4879 |
| USA | | | | | | | | | | | | | | | 0.4734 | 0.7270 |
| UAE | | | | | | | | | | | | | | | | 0.5233 |

## Table A3.3 Average FK similarity index – export destination for EC and OECD exports to SSA

| | Canada | China | France | Germany | India | Japan | Kuwait | Norway | Qatar | Korea | Saudi Arabia | SACU | Turkey | USA | UAE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 0.6245 | 0.6936 | 0.5504 | 0.5886 | 0.5744 | 0.5659 | 0.2913 | 0.5551 | 0.4208 | 0.5328 | 0.3856 | 0.3068 | 0.5947 | 0.7298 | 0.3412 | 0.7194 |
| Canada | | 0.7280 | 0.5493 | 0.6932 | 0.6391 | 0.7075 | 0.3923 | 0.4296 | 0.5946 | 0.4484 | 0.6071 | 0.3406 | 0.7157 | 0.7291 | 0.4605 | 0.7567 |
| China | | | 0.6121 | 0.6841 | 0.7216 | 0.7089 | 0.3598 | 0.4726 | 0.5310 | 0.5367 | 0.5197 | 0.3313 | 0.7242 | 0.7505 | 0.4549 | 0.7727 |
| France | | | | 0.5129 | 0.5819 | 0.5323 | 0.2591 | 0.4926 | 0.3446 | 0.4686 | 0.3175 | 0.3077 | 0.5847 | 0.5699 | 0.3540 | 0.5549 |
| Germany | | | | | 0.5469 | 0.7150 | 0.3609 | 0.4220 | 0.6815 | 0.4870 | 0.6539 | 0.2764 | 0.6177 | 0.7425 | 0.3529 | 0.7519 |
| India | | | | | | 0.6321 | 0.3649 | 0.4386 | 0.4911 | 0.4719 | 0.4696 | 0.4493 | 0.6608 | 0.6118 | 0.5874 | 0.6625 |
| Japan | | | | | | | 0.3681 | 0.4951 | 0.6061 | 0.6119 | 0.5625 | 0.3450 | 0.6467 | 0.6935 | 0.4425 | 0.7174 |
| Kuwait | | | | | | | | 0.1910 | 0.4040 | 0.2354 | 0.3731 | 0.3110 | 0.3394 | 0.3560 | 0.3592 | 0.3701 |
| Norway | | | | | | | | | 0.2725 | 0.5677 | 0.2555 | 0.3209 | 0.4445 | 0.5123 | 0.3394 | 0.4772 |
| Qatar | | | | | | | | | | 0.3261 | 0.6973 | 0.2550 | 0.5167 | 0.5756 | 0.4332 | 0.6070 |
| Korea | | | | | | | | | | | 0.3123 | 0.2401 | 0.4847 | 0.5081 | 0.3063 | 0.5102 |
| Saudi Arabia | | | | | | | | | | | | 0.1754 | 0.5469 | 0.5376 | 0.4447 | 0.5737 |
| SACU | | | | | | | | | | | | | 0.2998 | 0.3417 | 0.3566 | 0.3412 |
| Turkey | | | | | | | | | | | | | | 0.6450 | 0.4947 | 0.6567 |
| USA | | | | | | | | | | | | | | | 0.3942 | 0.8339 |
| UAE | | | | | | | | | | | | | | | | 0.4265 |

## Table A3.4 Average FK similarity index – import sources for EC and OECD imports from SSA

| | Canada | China | France | Germany | India | Japan | Kuwait | Norway | Qatar | Korea | Saudi Arabia | SACU | Turkey | USA | UAE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 0.4092 | 0.2623 | 0.4442 | 0.3042 | 0.5620 | 0.2568 | 0.1548 | 0.1945 | 0.1503 | 0.2888 | 0.1417 | 0.3163 | 0.2217 | 0.6755 | 0.1749 | 0.2060 |
| Canada | | 0.4395 | 0.5665 | 0.6398 | 0.6067 | 0.5428 | 0.4368 | 0.4820 | 0.4369 | 0.5045 | 0.4202 | 0.3195 | 0.5296 | 0.5561 | 0.4592 | 0.5140 |
| China | | | 0.4368 | 0.2953 | 0.3071 | 0.4059 | 0.2482 | 0.2833 | 0.2600 | 0.4314 | 0.3707 | 0.2057 | 0.2689 | 0.4727 | 0.3571 | 0.2560 |
| France | | | | 0.4829 | 0.5007 | 0.3519 | 0.2148 | 0.2946 | 0.2113 | 0.4038 | 0.2113 | 0.3923 | 0.3580 | 0.6339 | 0.2708 | 0.3560 |
| Germany | | | | | 0.5813 | 0.7193 | 0.6021 | 0.6799 | 0.6168 | 0.5749 | 0.4931 | 0.2673 | 0.7567 | 0.4155 | 0.5641 | 0.7299 |
| India | | | | | | 0.4871 | 0.4056 | 0.4588 | 0.4239 | 0.4651 | 0.3946 | 0.3266 | 0.5045 | 0.6361 | 0.4517 | 0.4981 |
| Japan | | | | | | | 0.6515 | 0.6730 | 0.6808 | 0.5967 | 0.5810 | 0.1818 | 0.6819 | 0.3516 | 0.6119 | 0.7093 |
| Kuwait | | | | | | | | 0.7121 | 0.7547 | 0.5004 | 0.5797 | 0.0879 | 0.6591 | 0.2328 | 0.5752 | 0.7354 |
| Norway | | | | | | | | | 0.7304 | 0.5074 | 0.4711 | 0.1213 | 0.7458 | 0.3117 | 0.5517 | 0.7401 |
| Qatar | | | | | | | | | | 0.4785 | 0.5465 | 0.0585 | 0.7178 | 0.2307 | 0.5966 | 0.7586 |
| Korea | | | | | | | | | | | 0.5024 | 0.1942 | 0.5278 | 0.4260 | 0.5000 | 0.5135 |
| Saudi Arabia | | | | | | | | | | | | 0.1167 | 0.4894 | 0.2222 | 0.5945 | 0.5014 |
| SACU | | | | | | | | | | | | | 0.1929 | 0.3986 | 0.1882 | 0.1879 |
| Turkey | | | | | | | | | | | | | | 0.3164 | 0.5678 | 0.7817 |
| USA | | | | | | | | | | | | | | | 0.2605 | 0.3064 |
| UAE | | | | | | | | | | | | | | | | 0.6103 |

## Table A3.5 Average FK similarity index – country aid allocation for selected EC and OECD countries in SSA

| | Canada | China | France | Germany | India | Japan | Kuwait | Norway | Korea | Saudi Arabia | South Africa | USA | UAE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 0.1149 | 0.1257 | 0.0794 | 0.1000 | 0.0803 | 0.0913 | 0.0684 | 0.1326 | 0.2057 | 0.0571 | 0.0285 | 0.0978 | 0.0390 | 0.0865 |
| Canada | | 0.4363 | 0.3629 | 0.5559 | 0.2784 | 0.5321 | 0.2644 | 0.4896 | 0.3629 | 0.1385 | 0.1070 | 0.4739 | 0.0948 | 0.5334 |
| China | | | 0.2764 | 0.4033 | 0.1906 | 0.4032 | 0.2120 | 0.3926 | 0.3944 | 0.1271 | 0.0909 | 0.4054 | 0.1766 | 0.4021 |
| France | | | | 0.5096 | 0.1716 | 0.3699 | 0.1678 | 0.1705 | 0.1854 | 0.0888 | 0.0635 | 0.2567 | 0.0474 | 0.2277 |
| Germany | | | | | 0.1947 | 0.5567 | 0.2027 | 0.4151 | 0.3284 | 0.0995 | 0.1191 | 0.4731 | 0.0760 | 0.5456 |
| India | | | | | | 0.1823 | 0.1922 | 0.2044 | 0.1623 | 0.1134 | 0.0467 | 0.2527 | 0.1758 | 0.1867 |
| Japan | | | | | | | 0.2205 | 0.4651 | 0.3597 | 0.1318 | 0.1234 | 0.4323 | 0.0977 | 0.5273 |
| Kuwait | | | | | | | | 0.1921 | 0.2001 | 0.3887 | 0.1015 | 0.2135 | 0.2135 | 0.1850 |
| Norway | | | | | | | | | 0.3099 | 0.1102 | 0.1393 | 0.5613 | 0.1610 | 0.5143 |
| Korea | | | | | | | | | | 0.1118 | 0.0747 | 0.3465 | 0.1008 | 0.3332 |
| Saudi Arabia | | | | | | | | | | | 0.0061 | 0.1470 | 0.3516 | 0.1224 |
| South Africa | | | | | | | | | | | | 0.1896 | | 0.1114 |
| USA | | | | | | | | | | | | | 0.1385 | 0.4698 |
| UAE | | | | | | | | | | | | | | 0.0774 |

## Table A3.6 Average FK similarity index – DAC 3 sector aid allocation for selected EC and OECD countries in SSA

| | Canada | France | Germany | India | Japan | Kuwait | Norway | Korea | Saudi Arabia | South Africa | USA | UAE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 0.2818 | 0.2041 | 0.1621 | 0.1389 | 0.1789 | 0.1017 | 0.2114 | 0.3977 | 0.1372 | 0.1357 | 0.1393 | 0.1197 | 0.1792 |
| Canada | | 0.3455 | 0.4683 | 0.1132 | 0.4204 | 0.1250 | 0.4810 | 0.3865 | 0.1176 | 0.1705 | 0.3526 | 0.1160 | 0.5378 |
| France | | | 0.5900 | 0.1220 | 0.5024 | 0.1122 | 0.2903 | 0.2549 | 0.0860 | 0.0787 | 0.1962 | 0.1100 | 0.4234 |
| Germany | | | | 0.1460 | 0.5263 | 0.2142 | 0.4010 | 0.3183 | 0.1346 | 0.1126 | 0.3058 | 0.1234 | 0.4966 |
| India | | | | | 0.1536 | 0.0823 | 0.1622 | 0.1875 | 0.1914 | 0.1169 | 0.0499 | 0.3077 | 0.0785 |
| Japan | | | | | | 0.3193 | 0.2976 | 0.2652 | 0.1589 | 0.0983 | 0.2484 | 0.1213 | 0.4631 |
| Kuwait | | | | | | | 0.0606 | 0.1766 | 0.3890 | | 0.1258 | 0.3141 | 0.0903 |
| Norway | | | | | | | | 0.3352 | 0.0682 | 0.1336 | 0.3625 | 0.1678 | 0.4633 |
| Korea | | | | | | | | | 0.2231 | 0.2628 | 0.2283 | 0.1678 | 0.2590 |
| Saudi Arabia | | | | | | | | | | 0.2103 | 0.0435 | 0.3632 | 0.0590 |
| South Africa | | | | | | | | | | | 0.0847 | 0.1126 | 0.1079 |
| USA | | | | | | | | | | | | 0.0494 | 0.3325 |
| UAE | | | | | | | | | | | | | 0.1318 |

## Table A3.7 Average FK similarity index – FDI sector allocation for selected EC and OECD countries in SSA (based on number of projects)

| | Canada | China | France | Germany | India | Japan | Kuwait | Qatar | Korea | Saudi Arabia | South Africa | Turkey | USA | UAE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 0.3173 | 0.5853 | 0.4440 | 0.4448 | 0.3547 | 0.3329 | 0.0690 | 0.1678 | 0.3514 | 0.0345 | 0.2460 | 0.1724 | 0.3465 | 0.1499 | 0.3251 |
| Canada | | 0.3631 | 0.2957 | 0.2634 | 0.2963 | 0.2249 | 0.0797 | 0.1899 | 0.2530 | 0.0362 | 0.3244 | 0.2797 | 0.3218 | 0.2748 | 0.4370 |
| China | | | 0.5439 | 0.4786 | 0.4866 | 0.4956 | 0.2727 | 0.3939 | 0.4521 | 0.2909 | 0.4727 | 0.2364 | 0.4907 | 0.3378 | 0.4723 |
| France | | | | 0.4963 | 0.5663 | 0.4056 | 0.2917 | 0.3417 | 0.3619 | 0.2083 | 0.4811 | 0.1333 | 0.6702 | 0.4346 | 0.5509 |
| Germany | | | | | 0.5434 | 0.6244 | 0.1864 | 0.3028 | 0.2877 | 0.1102 | 0.4043 | 0.2102 | 0.4543 | 0.4665 | 0.4026 |
| India | | | | | | 0.4295 | 0.2823 | 0.3567 | 0.3526 | 0.2814 | 0.6099 | 0.1472 | 0.6328 | 0.5107 | 0.6665 |
| Japan | | | | | | | 0.1358 | 0.2519 | 0.3250 | 0.1481 | 0.3633 | 0.1605 | 0.4004 | 0.3243 | 0.3034 |
| Kuwait | | | | | | | | 0.5333 | 0.0811 | 0.5529 | 0.3821 | 0.0667 | 0.2135 | 0.4385 | 0.2663 |
| Qatar | | | | | | | | | 0.1477 | 0.5608 | 0.5359 | 0.1667 | 0.2456 | 0.4538 | 0.3548 |
| Korea | | | | | | | | | | 0.1081 | 0.2564 | 0.1892 | 0.3747 | 0.2221 | 0.3468 |
| Saudi Arabia | | | | | | | | | | | 0.4683 | 0.2000 | 0.2362 | 0.2949 | 0.3470 |
| South Africa | | | | | | | | | | | | 0.3153 | 0.4998 | 0.5152 | 0.6285 |
| Turkey | | | | | | | | | | | | | 0.1766 | 0.3051 | 0.2389 |
| USA | | | | | | | | | | | | | | 0.4376 | 0.6733 |
| UAE | | | | | | | | | | | | | | | 0.5122 |

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