



# Brain Drain and External Imbalances in sub-Saharan Africa

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## Abstract

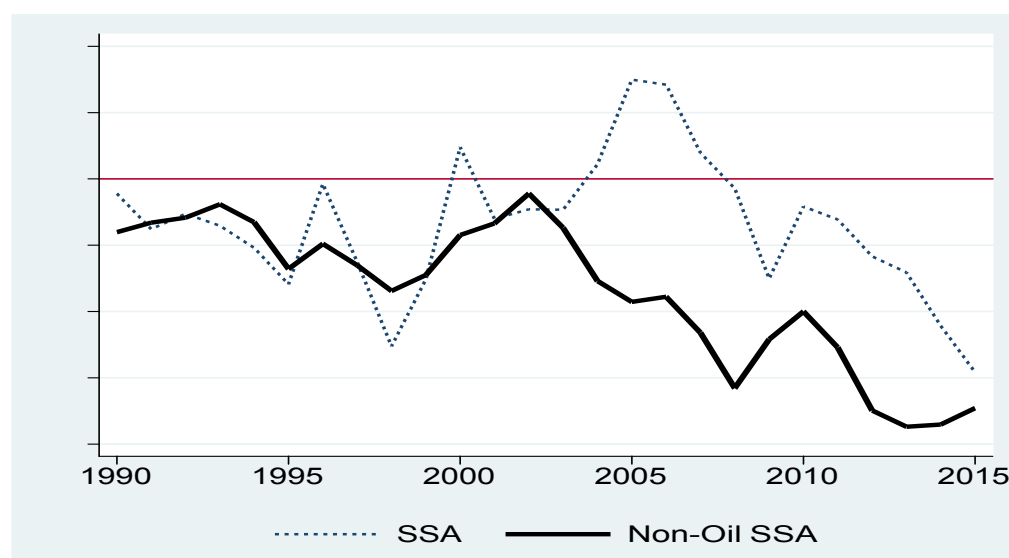
The persistent nature of external deficits in sub-Saharan Africa (SSA) is a major concern. This paper examines the extent to which migration from SSA to OECD countries affects the dynamics of external balances in SSA countries. Based on panel regressions and gravity-based 2SLS estimation strategies on data from 46 SSA countries over the period 1990-2014, we establish that emigration—particularly of highly-skilled people—contributes to the persistence of external deficits in SSA countries. While emigration globally has a negative impact on the current account, only high-skilled emigration has a significant and robust impact. These findings are corroborated by the fact that highly skilled individuals

emigrate with their saving potential as suggested by the life-cycle theory. In addition, while remittances to home countries can help to compensate this negative effect of brain drain, our results show that highly skilled emigrant's contribution to remittances is less important compared to that of low-skilled emigrants. Therefore, policy makers in sub-Saharan (SSA) countries should implement policies to attract more remittances, particularly from highly skilled emigrants, to reduce their external imbalances or external financing needs.

## Introduction

Sub-Saharan Africa's (SSA) strong economic growth since the early 2000s has not been enough to alleviate the structural funding needs on the continent. Indeed, the average growth rate of SSA countries over the period 2000-2015 was 5.5% against a world average of 3.9%. However, the average saving rate in SSA was only 18.8% over the same period, while the world average saving rate was 24.3%. This low level of mobilization of national saving may have the corollary of limiting ambitions in terms of the investment needed to sustain long-term growth while also contributing to fuelling the current account structural deficit. Therefore, contrary to mainstream thinking in the literature, global imbalances are not just a problem for developed, emerging or oil-producing countries. Indeed, Figure 1 clearly indicates that there is a persistence of external deficits in SSA countries. This persistence is more marked for non-oil SSA countries due to the oil price increase in recent years. The aim of this paper was to investigate how emigration influences these external imbalances.

**Figure 1: External imbalances in SSA countries**



Note: Data on the current account are from the IMF (2013).

There are two different channels through which brain drain influences current account, leading to contradictory effects. On the one hand, in connection with the life-cycle theory, emigration deprives SSA countries of a labour force with a higher potential for saving in the demographic structure. Indeed, according to the life-cycle hypothesis (Leff, 1969), a rise in the share of the economically dependent population would lead to an increase in national consumption, a fall in national saving, and a deterioration in the current account. The architecture of international migration clearly shows that migrants are mainly of working age: 82% of international migrants in 2015 are between 15 and 64 years old (UN, 2017). In this regard, SSA countries are distinguished by emigration to developed OECD countries, particularly brain drain defined as emigration of highly-skilled people (with tertiary level of education). As a proportion of the potential educated labour force, the brain drain rate in Africa is among the highest in the world (Docquier & Marfouk, 2004). Consequently, the saving rate in SSA countries may be adversely affected by emigration, which should result in an external deficit or deterioration in the current account (given by the difference between national saving and national investment).<sup>1</sup> More importantly, since highly-skilled workers generally have a high propensity to save, the adverse impact of emigration on current account should be more pronounced for brain drain (high-skilled emigration).

On the other hand, emigration may lead to an improvement in SSA current account balance through emigrants' remittances. Indeed, there is a direct impact of remittances on current account, since remittances (of permanent migrants) are, by definition, recorded as credit in the current account balance.<sup>2</sup> Remittances being a source of income, they can also have an indirect impact on current account that depends on their use, i.e., how they influence consumption (saving), investment and in end trade balance.<sup>3</sup> It is now well known that emigrants make a significant contribution to the transfer of capital from Organisation for Economic Co-operation and Development (OECD) countries to their countries of origin.

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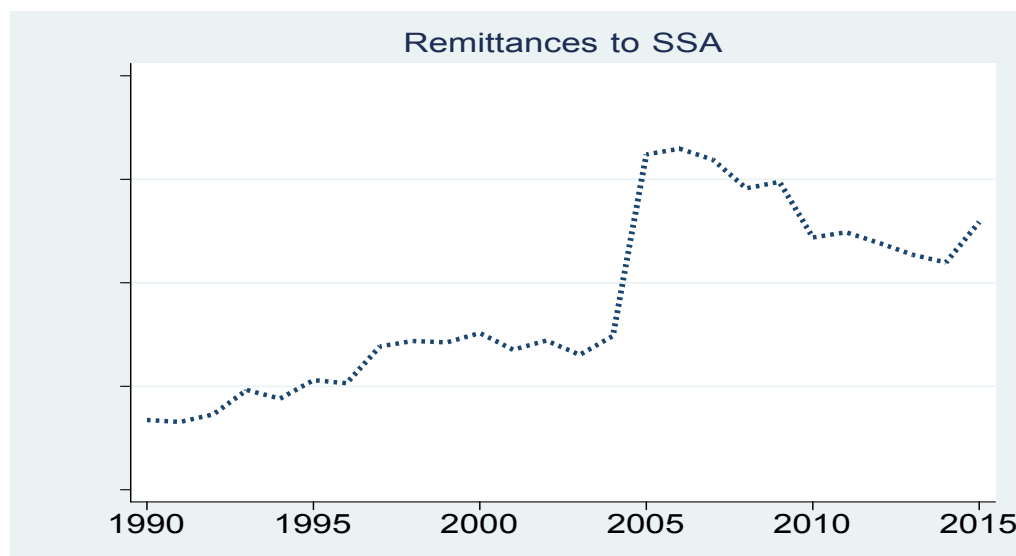
1 Since both public spending (social security, schools) and income tax are age-dependent, international migration may also influence fiscal balance through its impact on the age structure of the population. This consideration was recently investigated by d'Albis et al. (2018) on 15 Western European countries and by d'Albis et al. (2019) on 19 OECD countries over the period 1985-2015.

2 In the IMF's categorization (see the sixth edition of the IMF's Balance of Payments Manual [BPM6]), remittances of permanent migrants correspond to personal transfers that consist of all current transfers in cash or in kind made or received by resident households to or from non-resident households. There is another item called compensation of employees that refers to the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident and of residents employed by non-resident entities. Personal transfers and compensation of employees are the two components of personal remittances; and both are recorded in the current account.

3 For more details see, for example, the recent paper of Lartey (2018).

These remittances (as a percentage of GDP) increase significantly over time, especially with the development of new technologies and the reduction of transfer costs (see Figure 2).<sup>4</sup> In some countries, such as Cape Verde, Democratic Republic of Congo, Gambia, Lesotho, Liberia, Senegal and Zimbabwe, migrant remittances per year exceed 10% of annual GDP. As much as the adverse impact through saving, the improving impact through remittances should depend on the skill levels of emigrants, since they matter for remittances received in the country of origin. Indeed, highly-skilled emigrants can remit more because they are more likely to get high skilled jobs and thus higher wages. However, it is reasonable to think that, for a given level of earnings, highly-skilled emigrants will have a low propensity to send money to their home country because they have strong incentives to integrate into the host community, to bring family to the host country, and to undertake long-term life projects (long-term borrowing for home or vehicle purchases) in the destination country. Empirical evidence from Faini (2007) and Niimi et al. (2010) shows that high-skilled emigration is associated with a low level of per capita remittances.

**Figure 2: Remittances to SSA countrie**



Notes: Remittances are taken from the World Bank WDI and are defined as the sum of personal transfers and compensation of employees. The series is estimated by the World Bank staff based on IMF balance of payments data.

In the end, the overall impact of brain drain on current account depends on how the skill composition of emigrants matters for both the adverse impact through saving and the improving effect through remittances. Thus, an empirical study on

4 In Figure 2, the jump in 2005 is due to the change in the way remittances are recorded in the balance of payments. Indeed, data starting from 2005 are based on the sixth edition of the IMF's Balance of Payments Manual (BPM6), while data before 2005 are based on the previous version.

the impact of brain drain on the current account (net effect) can help to respond appropriately.

Therefore, this paper explored empirically the impact of emigration on the external balances of SSA countries depending on the skill composition of emigrants, in order to shed more light on the persistent deficit nature of the latter. Since the current account is the difference between saving and investment, and remittances may influence consumption (saving) and investment in the home country, we push even further by analysing the impact of emigration on saving and investment.

The study considered a sample of 46 SSA countries selected based on data availability, over the period 1990-2014. Given the structural context of this study, the empirical strategy followed the standard empirical model of medium-term current account determination. Therefore, our empirical strategy emphasizes the role of the medium-term determinants of current account, rather than factors behind the short-run dynamics of the current account. In this regard, we focus on current account variations that are not caused by cyclical factors or that do not result from the influence of nominal rigidities (Chinn & Prasad, 2003; Lane & Milesi-Ferretti, 2012). The study employs different econometric approaches. Firstly, we employ panel (pooled) ordinary least squares (OLS) using five-year non-overlapping averages. Secondly, to account for potential simultaneity bias (for example, institutional quality matters for both current account balance and emigration), we rely on panel (pooled) two-stage least squares (2SLS). Following recent developments in international migration literature, this 2SLS estimation approach uses gravity-based predictors as instruments.

## Methodology

This paper was designed to empirically investigate the effect of emigration on the current account balance of SSA countries, depending on the skill levels of emigrants. Given the structural aspect of the study, we follow the standard empirical model of medium-term current account determination (Chinn & Prasad, 2003; Chinn & Ito, 2007; Gruber & Kamin, 2007; Lane & Milesi-Ferretti, 2012). Therefore, our empirical strategy emphasizes the roles of the medium-term determinants of current account, rather than factors behind the short-run dynamics of the current account. In this regard, we focus on current account variations that are not influenced by cyclical factors or nominal rigidities. We then consider panel data to allow medium-term variations in current account across time. More specifically, we construct a panel that contains five-year non-overlapping averages of the data for each country (as in Chinn & Prasad, 2003; Chinn & Ito, 2007; Lane & Milesi-Ferretti, 2012). Averages are constructed over 1990-1994, 1995-1999, 2000-2004, 2005-2009, and 2010-2014, giving us five period observations for each cross-sectional unit.

## Conclusion and policy recommendation

In this paper, we examined how emigration—the extent of which, particularly with regard to skilled emigration, has increased since the early 1990s—influence current account deficits in SSA countries. To this end, we relied on the literature on the medium-term determinants of current accounts which we extended by adding emigration rate among the determinants. Inclusion of the emigration rate is particularly based on the life-cycle theory that emigration of working people increases the dependency ratio of the population and reduces the national saving rate. Then, in addition to traditional pooled OLS regression approaches, we use a gravity-based pooled 2SLS strategy to identify a causal effect of emigration according to emigrants' skill level.

Our results clearly establish a negative brain drain effect. Indeed, although emigration globally has a negative impact on the current account in SSA countries, only high-skilled emigration has a significant negative impact. This result is robust regardless of the estimation strategy—pooled OLS or pooled 2SLS. We provide an explanation for this result by examining the two components of the current account, saving and investment. Indeed, the results show that brain drain significantly deteriorates the current account because it induces a significant reduction in national saving without affecting investment.

This study thus contributes to the literature on the two phenomena that are probably among the most complex topics of contemporary international economics faced by economists and decision makers: global imbalances and international migration. Global imbalances are generally considered as a phenomenon of developed, emerging or oil-exporting countries. Our study highlights that they may involve developing countries, particularly SSA countries, through international migration. In other words, our paper makes a connection between these two characteristics of contemporary globalization which have been investigated separately in the literature.

Given that the current account surplus (deficit) reflects a nation's financing capacity (need), our study points out the role of emigration on the external imbalance or external financing need of African countries. Our findings give rise to policy recommendations to reverse, in the short and medium term, the negative effect of brain drain on the external balance and thereby reduce the magnitude of the brain drain itself in the long run. Given that the negative effect of brain drain is due to insufficient remittances to offset the loss of savings, policy makers should implement policies to attract more remittances, particularly from highly-skilled emigrants. A relevant way is via issuance of "diaspora bonds" which can effectively drain diaspora savings ("bring saving back") for financing economic development. Since the remuneration of savings in advanced countries is low as the marginal productivity of capital is lower compared to developing countries, diaspora savings potentially

constitute an abundant, stable and inexpensive source of financing for African countries compared to alternative financing (local, regional and international financial markets).

Diaspora bonds have already been operationalized by several countries in the world including China, Japan, Israel and India. For example, through diaspora bonds, Israel has established a strong economic and social link with its diaspora since 1951. African countries could learn from this model of success. So far, Ethiopia is one of the few African countries to have operationalized this type of financing (with little success) even though several experiments are under way in other countries such as Rwanda, Ghana and Nigeria. In fact, for diaspora bonds to be successful, countries must create the conditions for a healthy business environment (political stability, solid financial institutions). This particularly concerns highly-skilled emigrants who, having access to financial services in host country, have great sensitivity to the quality of the business environment in origin country. In addition, diaspora bonds should be used to finance infrastructure projects without falling into “white elephant projects” that undermine economic prosperity in several African countries.

African countries could also attract more remittances through traditional channels by implementing appropriate policies. This includes reducing the cost of transfers, improving the quality of internet connection and access to financial services, and recognition of dual nationality. Indeed, empirical studies clearly show that origin countries that do not allow dual nationality are less attractive for remittances. With effective mobilization of diaspora savings or remittances and rational use of these resources, Africa could achieve economic prosperity which is the only condition for a long-term reduction of brain drain.

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