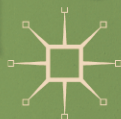


Development Finance

Innovations for
Sustainable
Growth

Edited by
Nicholas Biekpe
Danny Cassimon
Andrew William Mullineux



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Nicholas Biekpe • Danny Cassimon • Andrew William Mullineux
Editors

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Innovations for Sustainable Growth

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Preface

Overview

This textbook brings to focus core areas of development finance with special relevance to the strengthening of development finance research and training in an emerging market context. Unlike professional disciplines (e.g. engineering, accounting and economics), development finance (which is simply finance applied in a developmental context) is a relatively new entrant into the wider fields of research and training. Much work still needs to be done to develop and strengthen development finance capacity building and this book is a first crucial step aimed at establishing and strengthening academic and practitioner engagements in development finance research and training.

Binding Themes and Tone of Book

The chapters of the book were carefully selected to generate and stimulate discussions and debates around key knowledge attributes which define development finance research. Even though development finance is generic in content and applications, the book has been successful in conveying specific high level applied research with critical applications in an emerging markets context.

Subject Areas

The areas selected for the book are broadly specific in content but are closely linked, in their applications, to their applications in the African and other emerging markets settings. The areas covered are as follows:

- Domestic Resource Mobilization in Africa: Capacity Imperatives;
- Tax Buoyancy: A Comparative Study Between Kenya and South Africa;
- The Impact of Microfinance on Household Livelihoods: Evidence from Rural Eritrea;
- Reflections on Microfinance;
- A Chameleon Called Debt Relief: Aid Modality Equivalence of Official Debt Relief to Poor Countries;
- Foreign Direct Investment and Economic Growth: The Structural Vector Autoregressive Approach for South Africa;
- Foreign Capital Flows and Output Growth Volatility in Selected Sub-Saharan African Countries;
- Do Remittances Matter in Accelerating Labour Productivity and Capital Accumulation?

Target Audience

The book serves as a reference text with target audience including academic institutions, researchers, postgraduate students in development finance, development economists and other individuals and institutions interested in learning more about the critically important and fast growing area of finance for development. The book will also benefit researchers working in development finance institutions and research staff of central and investment banks.

Acknowledgements

Chapters from the book are from the *2015 Global Development Finance Conference* which took place on 29–30 October 2015 at Cape Town, South Africa. The Conference was organized by *Chartered Institute of Development Finance (CIDEF)* in partnership with Africagrowth Institute, partner academic institutions and other private sector institutions. This book has benefitted tremendously from the expert knowledge and experience of academics and researchers with a passion for development finance research and training. Our gratitude is extended to all contributing authors who have worked tirelessly to ensure that quality and the correct content specifications are achieved. Special gratitude goes to the Co-Editors of the book (Professor Nicholas Biekpe, Professor Danny Cassimon and Professor Andy Mullineux) for providing solid mutual collaborative efforts to ensure that the book meets the expected quality parameters prescribed by the publisher. Special thanks to Karel Verbeke and Dr Latif Alhassan for the excellent research assistance and technical support. Last but not the least, hurray to the hardworking CIDEF staff (Dina Potgieter, Kirk De Doncker and Lydia Le Roux) for organising the 2015 Global Development Finance Conference and for ensuring that the conference papers were ready for inclusion into the book.

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List of abbreviations

AAA	Addis Ababa Agenda
ACBF	African Capacity Building Foundation
ACI	Africa Capacity Index
ACR	Africa Capacity Report
ADF	Augmented Dicker Fuller
AEO	African Economic Outlook
AfDB	African Development Bank
AIC	Akaike Information criterion
ARCH	Autoregressive Conditional Heteroskedasticity
ATT	Average Treatment Effect on the Treated
AU	African Union
BoP	Balance of Payment
C2D	Contrats de Désendettement et de Développement
CBI	Community Based Institutions
CIA	Conditional Independence Assumption
DAC	Development Assistance Committee (of the OECD)
DRM	Domestic Resource Mobilization
ECA	Economic Commission for Africa (of the United Nations)
EITI	Extractive Industries Transparency Initiative
EL	Employee Loan
ER	Exchange rate
EV	Economic Value
FAO	Food and Agriculture Organisation
FDI	Foreign Direct Investment

FfD	Financing for Development
GARCH	Generalized Autoregressive Conditional Heteroscedasticity
GBS	General Budget Support
GDP	Gross Domestic Product
GFDI	Gross fixed domestic investment
GMM	Generalised Method of Moments
GMM-IV	Generalized Method of Moments-Instrumental Variables
GRA	Ghana Revenue Authority
HH	Household
HIPC	Heavily Indebted Poor Countries
IAL	Irrigated Agricultural Loan
IATF	Inter-Agency Task Force on Financing for Development
IDA	International Development Association
IDA-DRF	International Development Association's Debt Reduction Facility
IFF	Illicit Financial Flows
IV	Instrumental Variable
LR	Likelihood Ratio
M&E	Monitoring and Evaluation
MBL	Micro Business Loan
MDGs	Millennium Development Goals
MDRI	Multilateral Debt Relief Initiative
MFI	Microfinance Institutions
MNCs	Multi-National Corporations
NDS	National Development Strategy
NGO	Non-Governmental Organisation
NSEO	National Statistics and Evaluation Office
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OL	Oxen Loan
OLS	Ordinary Least Squares
PPS	Public-Private Partnerships
PSM	Propensity Score Matching
PV	Present Value
RCT	Randomized Controlled Trials
RDF	Rapid Deployment Force (Ghana)
SBL	Small Business Loan
SBS	Sector Budget Support

SC	Schwarz-Bayesian Criterion
SDGs	Sustainable Development Goals
SDI	Sustainability Dependent Index
SE	Standard Error
SMCP	Savings and Microcredit Programme
SME	Small and Medium-sized Enterprises
SSA	Sub-Saharan Africa
SSAL	Small Seasonal Agricultural Loan
SVAR	Structural Vector Autoregressive
TFCA	Tropical Forest Conservation Act (US)
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNU-WIDER	United Nations University World Institute for Development Economics Research
VAR	Vector Autoregressive
VAT	Value-Added Tax
VIF	Variance Inflation Factors
VMA	Vector Moving Average
WC	Windmeijer's Correction
WDI	World Development Indicators
WFP	World Food Programme

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1

Development Finance and Its Innovations for Sustainable Growth. An Introduction

Nicholas Biekpe, Danny Cassimon
and Karel Verbeke

1.1 Introduction

Development finance is all about assuring that the necessary financial resources are mobilized and utilized in an efficient, effective and sustainable way so as to promote development and meet particular (sustainable)

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development outcomes and goals. These goals can be set at different levels, ranging from global, to national (country) and even local level. At global level, the current reference framework is offered by the Sustainable Development Goals (SDGs), to be met by 2030, and the need to mobilize the necessary financial means to ‘finance’ its realization, which is typically referred to as the ‘Financing for Development (FfD)’ process. At individual country (and sometimes even sub-national) level, it deals with financing the realization of national development strategy plans, preferably designed and executed through a country-owned inclusive process, which provide similar and complementary framework to meet country-specific development goals, which may or may not be closely linked to the global process. At local level, it refers to the extent to which local communities and even individual households have access to appropriate financial services to meet their specific human development needs.

To the extent that there is a gap between required and currently available funding to meet the goals and needs, the FfD process, at all levels, tries to tackle this problem through a combination of (a) an increase in the level of current existing sources of finance as well as (b) trying to tap additional sources of finance, to make sure that this gap gets closed; often, it also deals with efforts to enhance the efficiency or effectiveness of their use at innovative ways of realizing this process, both in terms of the use of innovative instruments as well as innovative ‘technologies’ to enhance its effectiveness in producing desired outcomes and meet targets.

This book tries to lend a helping hand to realizing this intrinsic ambition of development finance by bringing together a selection of papers from the *2015 Global Development Finance Conference* by Africa’s growth that focus on key thematic areas of the FfD process, highlight neglected areas of research, and/or offer or provide country-level case study evidence in the hope of advancing our knowledge in this field.

This overview chapter takes off by situating development finance within this FfD framework and its associated current action agenda, the Addis Action Agenda. It then continues by presenting a brief overview of the rest of the book, clustered by some of the major themes identified in the international development finance agenda. For each of these themes treated, this chapter first provides a brief sketch of the key issues at play, followed by a brief presentation highlighting how the

particular chapter links to these key issues; consequently, it then summarizes the key conclusions of the chapter and its main contributions and novel insights to the field.

1.2 Development Finance from a 'Financing for Development' Perspective

Financing for development is a broad concept, encompassing not only the use of international financial resources, including Official Development Assistance (ODA), but also the mobilization of domestic resources (including tax revenues), the strengthening of the role of the private sector in financing development or other types of broadening the funding base by innovative financing resources and mechanisms; it even dwells in more diverse areas such as increasing trade capacity and investment to drive economic growth and other more systemic issues related, for example, to the creation of an international enabling environment and global governance.

This holistic approach has been present from the start of the 'FfD' process, kick started at the Monterrey Conference in March 2002 and producing the 2002 Monterrey Consensus (United Nations 2002), as a framework to ensure the financing of the Millennium Development Goals (MDGs), to be reached by 2015. This Monterrey Consensus recognized that all sources of financing, *public* and *private*, *international* and *domestic*, were needed to finance development; this was reaffirmed in the follow-up FfD Conference of 2008 in Doha, and its outcome 2008 Doha Declaration on FfD (United Nations 2008).

While the Monterrey Consensus still emphasized the crucial and central importance of (public) development cooperation and concessional financing, it was clear from the beginning that this source of finance would not be sufficient to produce the MDGs and close the gap between available and necessary financing and that this source of international finance was dwarfed by other international sources. Figure 1.1, taken from the contribution of Dzeha et al. in Chapter 9 of this book, shows that, whereas in the past, ODA constituted up to 70% of financial

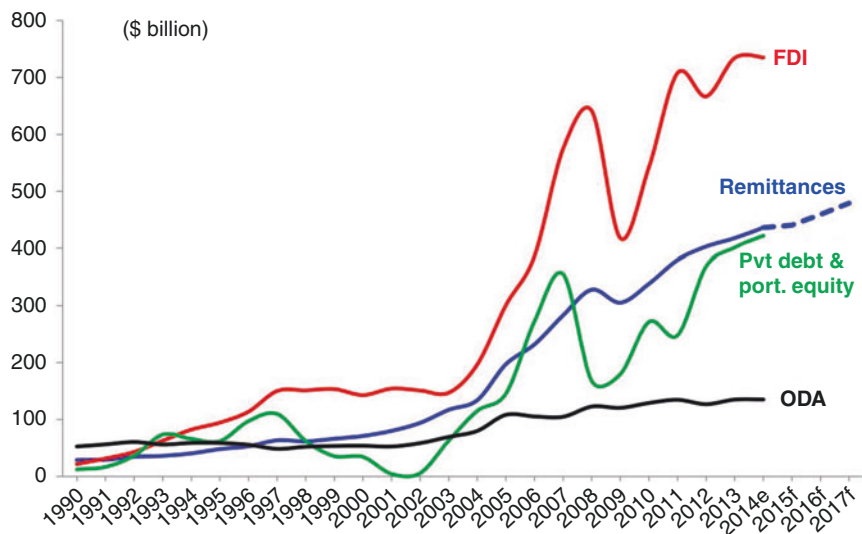


Fig. 1.1 Evolution of different types of external flows.

Source: Ratha et al. (2015, p. 5).

flows to developing countries, its proportion of all financial flows continues to decrease. Flows related to foreign direct investments (FDI), portfolio debt and equity flows, as well as remittances now make up the lion's share of external flows. As such, it was crucial to include these other international flows into the process and enhance their development-orientedness. Moreover, it was crucial to make sure that these other types of external finance became more available to lower-income countries, which remain relatively more excluded from these private flows and continue to rely more on ODA-related flows (see e.g. Cassimon et al. 2013).

Furthermore, focusing solely on international flows to meet these international goals would not only deny the prime responsibility of countries to mobilize resources for development domestically, first and foremost from public (fiscal) sources, but it would also hide its huge relative potential. Clearly, domestic public revenue mobilization (DRM) dwarfs by far any international source of development finance. It more

than doubled in developing countries between 2002 and 2011, increases from 838 billion USD to 1.86 trillion USD in that period (Inter-Agency Task Force on Financing for Development 2016, p. 7). Again, the picture is different between low-income and middle-income countries. While the median tax-to-GDP ratio of middle-income countries has increased over time and is now close to 20%, almost half of low-income countries (and 70% of fragile and conflict-affected states) still raise less than 15% of GDP in taxes in 2014 (IMF and World Bank Group 2016), so these are still a lot of potential for improvement and additional revenue mobilization. But still, in 2010, for example, Sub-Saharan African countries in total collected nearly 10 USD in own-source revenue for every USD of foreign assistance received (World Bank Group 2013, p. 10). This DRM should be complemented by domestic private sources, including through an efficient domestic financial system that provides households and SMEs access to appropriate financial services.

The process to develop the 2030 Agenda for Sustainable Development, leading to its adoption at the United Nations Sustainable Development Summit on 25 September 2015, has led to a new impetus of the thinking on how to further broaden financing of development. The Third International Conference on FfD held in Addis Ababa from 13 to 16 July 2015, approved a comprehensive Action Agenda, aimed at supporting the implementation of the 2030 Agenda. This Addis Ababa Agenda (AAA) identifies seven key action areas in the field of FfD, as well as a framework for data collection monitoring and follow-up (United Nations 2015). The main multilateral organizations and agencies involved, with the World Bank Group, IMF, WTO, UNCTAD, UNDP as the major ones and the FfD Office at the UN acting as the coordinator, were joined in an Inter-Agency Task Force on Financing for Development (IATF) responsible not only for implementing key ingredients of the AAA, but also for providing support to this monitoring process (see especially IATF 2016, for their inaugural report). Their activities should be complemented by interventions of national development finance institutions that operate mainly domestically.

These seven action areas of the AAA are

- A. Domestic public resources
- B. Domestic and international private business and finance
- C. International development cooperation
- D. International trade as an engine for development
- E. Debt and debt sustainability
- F. Addressing systemic issues
- G. Science, technology, innovation and capacity-building

As such, the AAA clearly builds on and confirms the Monterrey and Doha agendas, while enhancing it on a number of issues. It reaffirms the primary responsibility of (developing) countries themselves, and their public actors, for resource mobilization and development, as well as for the provision of an enabling environment to crowd in private resources for development. And it reaffirms the responsibility of international public actors, through international development cooperation and the provision of an international enabling environment that again crowds in private sector contributions. Furthermore, the important role of science, technology, innovation and capacity-building, touched upon in the previous agendas, is now being accentuated and given more detailed and separate treatment.

The AAA mainly goes beyond the previous ones by focusing on the central concept of ‘sustainable’ development, introducing policy actions to realize all its three dimensions, *economic, social and environmental*, emphasizing new dimensions such as sustainable global production and consumption patterns, environmental protection and the use of climate finance-specific financial instruments (Inter-Agency Task Force on Financing for Development 2016). Also from this sustainability perspective, it explicitly refers to debt sustainability as a separate key area.

One important additional key area that appears as a key cross-cutting area throughout the whole FfD process, from the beginning at Monterrey until today, is that of innovative finance. As already mentioned in the introduction to this chapter, the need to fill the gap between available and necessary resources fuelled the search for and use of ‘new’, ‘additional’ or ‘innovative’ financing options and instruments, as well as innovative ‘technologies’ to enhance its effective use in

producing the desired development goals. The joint occurrence of tightened aid budgets against a broadening international development agenda has over the past decade led to an intensification of this quest.

The term covers a broad range of new actors and new sources of development funding. While the term is widely used, a universally agreed definition is lacking and the use of the term has changed over time; as a result, the terms mean different things to different people. Some leading fora, such as the so-called 'Leading group on Innovative Financing for Development', a group of 66 states and numerous international and non-governmental organizations, focus on new innovative financing modalities and initiatives at the global level, such as new international taxes such as a Tobin-type tax, an international solidarity levy on air tickets, idea such as Advanced Market Commitments to crowd in private research to cure neglected tropical diseases, or an International Finance Facility for Immunization. Others, often lead by The World Bank, focus more on innovative finance as 'add-ons' to existing instruments, that aim at providing additionality, or enhance its efficiency and/or results-orientedness. They focus more on funding coming from emerging sovereign donors, Public-Private Partnerships (PPS) or other forms of blended financing such as through guarantee instruments (especially in the case of infrastructure finance), the development of local currency bond markets or results-based financing (such as development impact bonds) as innovative solutions for development financing.

A very broad definition, that is often used, refers to innovative finance as 'involving non-traditional applications of solidarity, PPS and catalytic mechanisms that (1) support fundraising by tapping new sources and engaging beyond the financial dimension of transactions, as partners and stakeholders in development; or (2) deliver financial solutions to development problems on the ground' (Ketkar and Ratha 2009). It is in this very broad sense that we will refer to innovative finance throughout this chapter and the book.

While the importance of innovative financing mechanisms is still limited compared to more traditional ODA, the range of instruments and amounts invested in these instruments is growing, certainly when the funds indirectly mobilized from the private sector are taken into

account. The broadening of the FfD agenda to sustainable development and the inclusion of climate-finance-related innovative financing (see e.g. UN DESA 2012) will definitely increase the relative importance of innovative finance.

In the next section, we will present a brief overview of each of the chapters of this volume and also show how each of them links to the major themes of the current FfD debate and the AAA.

1.3 An Overview of the Chapters and Their Link with the International FfD Debate

1.3.1 Domestic (Public) Resource Mobilization

As already mentioned in the previous section, in the course of three successive International FfD Conferences, the mobilization of domestic resources has gradually emerged as the priority sector in mobilizing higher and more sustainable levels of development finance. This is particularly true for the low-income or least-developed countries, as their public revenue mobilization rates (tax revenues in percentage of GDP) are particularly low. Moreover, and again especially for these latter countries, mobilization of (public) domestic resources also reduces dependency on aid, encourages good governance and accountability and helps strengthening the social contract between governments and their citizens. Strengthening of tax administration, fight against fraud and tax evasion are recognized as essential factors to increased domestic resource mobilization.

Apart from reaffirming the continued effort to increase tax rates and increase their efficiency, two distinctive new features of the AAA in the field of DRM concern (a) the increased importance attached to efforts of capacity building to increase this performance, and (b) the increased focus on curbing illicit financial cross-border outflows that reduce DRM availability, through techniques such as tax evasion, corruption, smuggling or less illegal (strictly speaking) through tax avoidance or transfer pricing techniques (see e.g. Reuter 2012; HLP 2015). The two contributions in this key area focus exactly on these three elements.

In [Chapter 2](#), Nnadozie, Munthali, Nantchouang and Diawara start from the observation that the capacity component of DRM appears to have received little attention in the development discourse. As such, they attempt to fill this gap by identifying these capacity gaps in and their causal effects on the (lack of) mobilization of domestic resources among African countries. The authors hereby draw on the findings of the Africa Capacity Report 2015, which they analyse using a mixed methods approach. From this analysis, they identify weak tax administration, inefficient collection of tax in the agriculture and informal sectors, financial non-inclusiveness, as well as high levels of illicit financial outflows as the major capacity challenges faced. In their policy recommendations, the authors stress the need to strengthen capacity building of human and institutional capacity, not only at country but also at the regional level. Furthermore, it is crucial to modernize tax administration and promote full financial inclusion. The authors also point at the crucial dimension of political will and mind-set change at all levels.

From a more macroeconomic perspective, [Chapter 3](#), by Mandela and Olukuru, extends the discussion on FfD to cover the efficiency of tax systems to maximize revenue for economic growth. More particularly, the authors employ annual data from 1972 to 2014 to estimate the buoyancies of income, value added, import and excise tax revenues. In doing so, they, interestingly, compare the experiences of a middle-income country, South Africa, with that of a low-income country, Kenya. Using a vector error correction model to estimate the short- and long-run tax buoyancy and its convergence property, the findings indicate the existence of both short run and long run tax buoyancy on economic growth in both countries.

1.3.2 Mobilizing Private Domestic Resources: The Role of Innovative and Sustainable Micro-Finance

One particularly important component of DRM does not relate to the public sector but relates to mobilizing private savings for ‘productive use’ (from a development goals perspective), as well as assuring that households as well as micro-enterprises and Small and

Medium-sized Enterprises (SMEs) are financially included, for example, have access to appropriate types of finance, in terms of savings, lending and insurance facilities. What is generally labelled as micro-finance has been put forward as the key solution to realizing this goal of universal financial access to finance. Furthermore, it has been shown convincingly that access to financial services can help achieve the SDGs (see e.g. Klapper et al. 2016). However, providing micro-finance in a 'sustainable' way, realizing all three dimensions of the concept, *economic, social and environmental*, has proven quite difficult. More particularly, it proves to be difficult to reconcile the more financial sustainability dimensions with the more social and poverty reduction dimensions. This is especially the case when providing assistance in rural areas, for longer-term agricultural activities (see e.g. Armendáriz de Aghion and Morduch 2010, for a recent, detailed overview).

In Chapter 4, Habte, Visser and Ocran address the shortfalls of the formal financial sector in improving financial inclusion in Eritrea. More particularly, this study examines the impact of microfinance on the livelihoods of households in rural Eritrea. It specifically sought to find out whether the *Saving and Microcredit Programme (SMCP)*, introduced by the Eritrean Government in 1996, to support the poorest of the poor, had a significant impact on the livelihood of its clients. The study employed logistic regression and propensity score matching estimation techniques. The findings reveal that households that participated in the *SMCP* had reported significantly higher profits, had more valuable assets, higher consumption expenditure, significantly improved nutrition, and increased savings. The findings have important social and economic policy implications regarding the role of finance in rural development in an African context.

In Chapter 5, Muriu, Murinde and Mullineux review the theoretical and empirical literature on microfinance to make a general assessment on its performance from a sustainability perspective. They also situate their analysis within the SDG perspective. They examine the tensions between formal and informal credit markets, review a number of regulatory and governance issues, and discuss both the impact of microfinance on poverty reduction, competition

and financial performance. They conclude by identifying promising research ideas for future research, including the need for mainstreaming the gender dimension in microfinance to realize both financial inclusion and the SDGs and also suggest special attention to fragile states.

1.3.3 Debt Relief as Innovative International Aid and Vehicle to Restore Debt Sustainability

Apart from trying to increase the volume of aid, the international aid debate during the last two decades was dominated by the search for increased ‘aid effectiveness’. Debt relief appeared prominently in this debate, as an intervention that could kill three birds with one stone, that is, restore debt sustainability while at the same time providing additional resources, as well eliminating the disincentive effects on investment and reform of high debt overhang (Krugman 1988), hence proving itself as effective aid.

In Chapter 6, Cassimon and Essers critically review this theoretical assumption through assessing three decades of official creditors’ public debt relief practice from a novel angle, namely along debt relief’s similarities with aid modalities. The analysis shows that debt relief to poor countries is a true ‘chameleon’ which mimics different sorts of development aid, from traditional project aid to multi-year general budget support. The ‘colour’ of this chameleon depends on the embedded conditionality, alignment with recipient country policies and systems, and the budgetary resource effect of particular debt relief interventions. They argue that characterizing debt relief from an aid modality equivalence perspective is helpful in better understanding its varying performance track record. In this respect, more recent, comprehensive operations such as the HIPC and MDRI initiatives offer better perspectives in terms of effectiveness and restoration of debt sustainability. On the other hand, they also assess more innovative types of debt-development swaps, such as the Debt2Health swap operations put forward by the Global Fund (to Fight AIDS, Tuberculosis and Malaria) as ineffective interventions. As such, it

holds important policy lessons for designing future debt relief interventions.

1.3.4 International Private Capital Flows for Development

The current general ‘external finance-growth-development’ literature states these ‘foreign savings’ not only complement domestic public and private revenue mobilization and provide financial deepening (widening the scope of financial instruments and services available), but are also said to provide important so-called indirect benefits related to better macro-economic discipline and higher quality of institutions and governance in recipient developing countries; as such, they are assumed to lead to positive outcomes such as higher growth on the one hand and reduced consumption volatility on the other (Kose et al. 2009). However, in order to attract a substantial amount of these private flows, recipient country (macro-) policies, institutions and governance should surpass a particular minimal quality level. Moreover, the same threshold quality of policies, institutions and governance is deemed crucial in order to turn these external flows into a virtuous outcome; if not, chances are considerable that they merely contribute to higher economic volatility and crisis (Kose et al. 2009; Van Campenhout and Cassimon 2012).

Chapters 7 and 8 of this volume explicitly link to this central discussion. They are also complementary as one focuses more on the FDI-growth nexus, while the next chapter focuses more on the volatility dimension.

In Chapter 7, Josué, Magwiro, Klingelhöfer and Kaggwa are motivated by the inconclusive conclusion in the current literature on the effect of FDI on economic growth and examine the dynamic relationship between FDI and economic growth, and other macroeconomic variables in South Africa. Using a structural vector autoregressive (SVAR) model, results show that on the one hand the impact of FDI on GDP is positive, yet minimal and insignificant, while on the other hand, the impact of GDP on FDI is positive and significant. As such, they claim that national efforts to encourage more FDI should be continued, but be augmented by policies

accelerating economic growth and domestic capital formation as well as policies that create synergy between activities of local and FDI firms.

Chapter 8 by Brafu-Insaadoo and Biekpe examines the effect of international capital flows on output growth volatility in 42 selected Sub-Saharan African countries between 1975 and 2011. The findings, from applying an instrumental variable system generalized method of moments technique, are consistent with the theory that a higher level of international equity integration reduces instability in growth of output after a threshold level. The authors argue that stronger financial institutions, which increase the depth of domestic financial markets and reduce the financial vulnerability of the host country, are only associated with higher level of equity integration. The authors recommend the implementation of selective control measures that increase the inflow of foreign equity and reduce the inflow of international non-equity.

1.3.5 Remittances for Development

In the first section of this chapter, we also identified the inflow of remittances as a major and growing source of international resources for developing countries, and also indicated that the FfD process, and its associated public interventions, should be targeted at enhancing its effectiveness in contributing to the realization of the SDGs. Clearly, at the macro-level, remittances help in providing recipient countries with additional hard currency, while at the local level, remittances support to meet human development needs of receiving households. At the same time, there is still a lot of under-exploited potential in order to improve the link between migration-linked remittance flows and sustainable development, not only by intervention such as reducing remittance costs but also by applying innovative financing techniques such as mobilizing diaspora savings, for example, through diaspora bonds, or the future-flow securitization of remittances (see e.g. Ratha et al. 2015).

Finally in **Chapter 9**, Dzeha, Abor, Turkson and Agbloyor assess a particular under-researched dimension of remittances, namely the inter-relationship between remittances, labour productivity and capital accumulation in Africa. Using a fixed and random effects model on a panel of

25 African countries from 1990 to 2013, the findings indicate that remittances on their own do not promote labour productivity and capital accumulation. Indeed, remittances are observed to have a negative impact on both labour productivity and capital accumulation. However, remittances tend to promote labour productivity in the presence of high natural resource endowments. In addition, the interaction between remittances and human capital was also found to have a positive effect on capital accumulation.

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2

Domestic Resource Mobilization in Africa: Capacity Imperatives

Emmanuel Nnadozie, Thomas C. Munthali,
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2.1 Introduction

Interest in domestic resource mobilization (DRM) in developing countries is increasing and attention on its role and importance as a sustainable and efficient source of development financing stems from the Monterrey Consensus (United Nations 2002). Adopted at the International Conference on Financing for Development in 2002, the Consensus was based on the premise that the challenges faced around financing for development required a global commitment and response. Of the six pillars of the commitments made by the

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international community as part of the Monterrey Consensus, the first one is on mobilizing domestic resources.¹

Besides following the sustainable development agenda which builds on the successful outcome of the Conference on Financing for Development held in Addis Ababa, Ethiopia, in July 2015, African countries are also implementing Agenda 2063 which defines the road-map for the structural transformation of Africa over the next 50 years. In its call to action, Agenda 2063 explicitly mentions the strengthening of DRM, building capacity of continental capital markets and financial institutions, and the reversal of illicit flows of capital from the continent, in order to achieve 'an integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in the global arena'.²

Issues related to DRM are rapidly gaining importance and remain at the forefront of discussions on the financing of the post-2015 agenda and the Agenda 2063. Notably, while the international community is increasingly recognizing the importance of DRM, relatively little attention has been paid to the capacity needed to (1) effectively mobilize domestic resource; and (2) efficiently allocate and utilize the domestic resource mobilized. Reports and studies related to Africa have mainly focused on the role of DRM (Bhushan et al. 2013), the state of DRM (Nnadozie 2012; Bhushan 2013; Bhushan et al. 2013), the efforts in terms of revenue collected (AfDB et al. 2010, 2013) and the challenges faced by African countries (Nnadozie 2012). Paying attention to the capacity dimension of DRM can help rigorously and strategically answer the 'how-to' question crucial to achieving sustainable development. It is increasingly clear that no amount of financing is sufficient to achieve ambitious development goals without the supporting country-level or indigenous capacities (World Bank 2013).

¹ The other remaining pillars of the Monterrey Consensus are attracting international resources flows; promoting international trade as an engine for development; international cooperation; sustainable management of the external debt, as well as debt relief efforts; and enhancing the coherence and consistency of the international monetary, financial and trading systems (United Nations 2002).

² <http://www.au.int/en/about/vision> (accessed on 18 September 2015).

This chapter is mainly based on the findings of the Africa Capacity Report (ACR) 2015 on the ‘Capacity Imperatives for Domestic Resource Mobilization in Africa’ produced by the African Capacity Building Foundation (ACBF). The ACR 2015 defines *DRM as the generation of savings and taxes from domestic resources, and their allocation to economically and socially productive activities, as opposed to external sources of financing such as foreign direct investment, loans, grants or remittances* (African Capacity Building Foundation 2015). Although remittances are not technically part of DRM, they can have an important impact once they reach receiving countries and are thus discussed in the Report.³ The ACR also focuses on *illicit financial flows (IFFs), which are resource flows that are ‘illegally earned, transferred or used’* (African Union and Economic Commission for Africa 2015, p. 9), and represent a significant loss of resources for the African continent.

The rest of the chapter is organized as follows. Section 2.2 gives an overview of DRM in the African context. Section 2.3 reviews the recent literature paying attention to the existing gaps. Section 2.4 describes the methodology used to empirically show the importance of the capacity dimension with respect to DRM. Section 2.5 presents the key findings while section 2.6 teases out the key lessons and policy implications. The last section concludes.

2.2 Domestic Resource Mobilization in the African Context: Importance and State

2.2.1 Why Is It Important to Focus on Domestic Resource Mobilization?

The year 2015 is a landmark and of paramount importance and remains strategic for the international development agenda in general and Africa’s development agenda in particular. The commitment of African countries towards a successful implementation of the Sustainable Development

³ Remittances are not examined in this chapter. For further details, see ACBF (2015).

Goals (SDGs) and Agenda 2063 will be meaningless in the absence of hard financial commitments, including the mobilization of domestic resources. DRM is therefore important in the African context for at least four reasons.

First, focusing on DRM allows countries to reduce their dependency on foreign aid. For the low-income African countries, Official Development Assistance (ODA) still accounts for a significant share of total external resources. However, according to a recent survey of donors' spending plans, aid to Africa is projected to decline while the least-developed countries will see continued stagnation or decline in programmed aid (OECD 2014). In particular, two-thirds of the countries in sub-Saharan Africa are expected to see a decline in aid from 2014 to 2017. More generally, most donor countries have not lived up to the Pearson Commission's recommendation of providing 0.7% of gross national income as aid, and aid flows remain more unpredictable and volatile over time compared to other more stable sources of financing. For example, in 2014, only 5 of 28 Development Assistance Committee (DAC) donor countries met the 0.7% target, and since the 2008 global financial crisis, aid budgets in many DAC countries have come under pressure and total aid flows have declined in real terms. Neither have donors lived up to several recent initiatives to increase the volume of ODA to Africa.

Second, it is well recognized that high domestic savings is necessary for high investment and growth while it is important to build strong domestic fiscal and financial systems. Indeed, classical, neoclassical and endogenous growth theories all show a clear association between increased savings, increased investment and higher growth, not only until a new steady-state is reached but also on a more permanent basis through increases in total factor productivity. However, although countries can, and sometimes must, rely on foreign capital flows to finance investment, capital inflows to developing and emerging countries have been very volatile over the years and foreign savings are an imperfect substitute for domestic savings, both public and private.

Third, there is an extensive literature that argues that taxation is fundamental to state building. Taxation creates a social contract between the state and citizens and fosters representative democracy, and taxation revenue can help build institutions, thus enhancing state capacity. These

can potentially support the legitimacy of the state and enhance accountability between the state and its citizens. Conversely, an over-reliance on unearned income, such as foreign aid or resource-related revenues, rather than earned income in the form of broad-based domestic taxation, can be a disincentive to develop institutional capacity, state-to-citizen accountability and ultimately development.

Fourth, there are significant differences between the application of external resources (aid, foreign direct investment and remittances) and internal ones. For example, foreign direct investment (FDI) flows are more likely to respond to the profit motives of private firms and remittance flows are often used for immediate consumption rather than long-term investment. Foreign aid can be driven by the strategic considerations of donors and can be highly conditional rather than aligned with domestic development priorities; reducing dependence on foreign aid can thus increase 'ownership' of the development process. In the case of FDI flows to Africa, which have increased significantly in recent years, they tend to go mostly to the extractive sectors of a few countries and do not have a significant impact on employment creation and poverty reduction (UNCTAD 2013).

It is however to be noted that the emphasis on DRM does not mean that external resources should be discouraged. The point in emphasizing DRM is simply that there are certain drawbacks to being excessively reliant on external resources and that it is ultimately better for countries to gradually mobilize more resources domestically.

2.2.2 What Is the State of Domestic Resource Mobilization in Africa?

In addressing the state of domestic resource mobilization in Africa, the chapter focuses on trends in savings, taxation and illicit financial flows.

2.2.2.1 Savings

Figure 2.1 shows that among all developing regions, sub-Saharan Africa has the lowest savings rate which has been trending downwards over the years. In

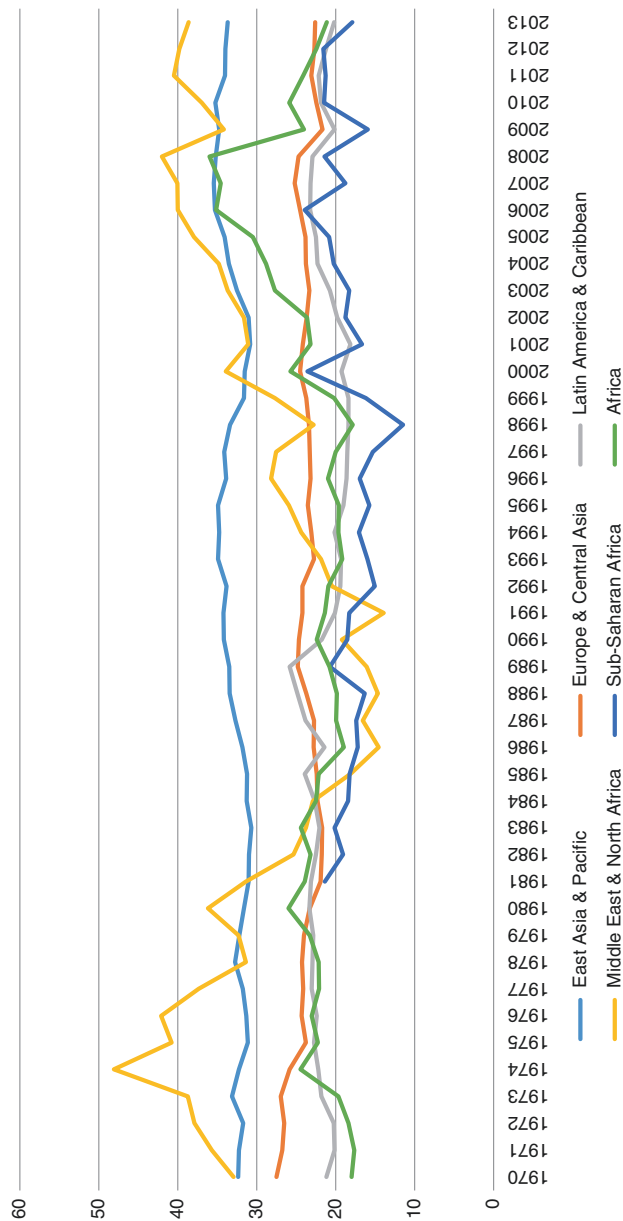


Fig. 2.1 Gross domestic savings (% of GDP) by region, 1970–2013

Source: World Development Indicators (World Bank 2016)

2013, gross domestic savings in sub-Saharan Africa was 17.9% of GDP; the corresponding numbers were 33.70% in East Asia and Pacific, 21.12% in Latin America and the Caribbean, and 38.64% in the Middle East and North Africa. The region never quite recovered from the collapse in private saving that took place in the 1970s and 1980s and its savings rate has been more volatile over time. Given the relationship between savings, investment, and growth (both in theory and practice), it is clear that mobilizing savings and channelling those into productive investments are paramount.

2.2.2.2 Taxation

Unlike in the case of savings, sub-Saharan Africa and Africa do not have the lowest tax-to-GDP ratio in the world. In fact, in recent years, the ratio has been far higher than South Asia, lower than Latin America and slightly lower than in East Asia. As income levels rise, countries are able to mobilize more revenues, and the tax-to-GDP ratio is positively correlated with per capita incomes; the average tax-to-GDP ratio is skewed by resource-rich countries. In fact, as shown in [Fig. 2.2](#), most countries in Africa have tax-to-GDP ratios that are below the regional average.

Looking at [Fig. 2.3](#), it becomes clear that the increase in tax revenues has been driven by resource rents, despite the latter's volatility, and even if other taxes (direct and indirect) have also increased quite significantly. This has created a situation where in several countries, including Chad, Equatorial Guinea and Nigeria, resource rents significantly dominate the tax mix.

2.2.2.3 Illicit Financial Flows

By their very nature, IFFs—which occur as a result of commercial activities, criminal activities and corruption—are difficult to measure. Estimates from various studies for Africa tend to come up with fairly different numbers and even if some focus on capital flight rather than what is illicit, all of them indicate that the problem has increased in the last few years and that it is highly concentrated in a few countries.

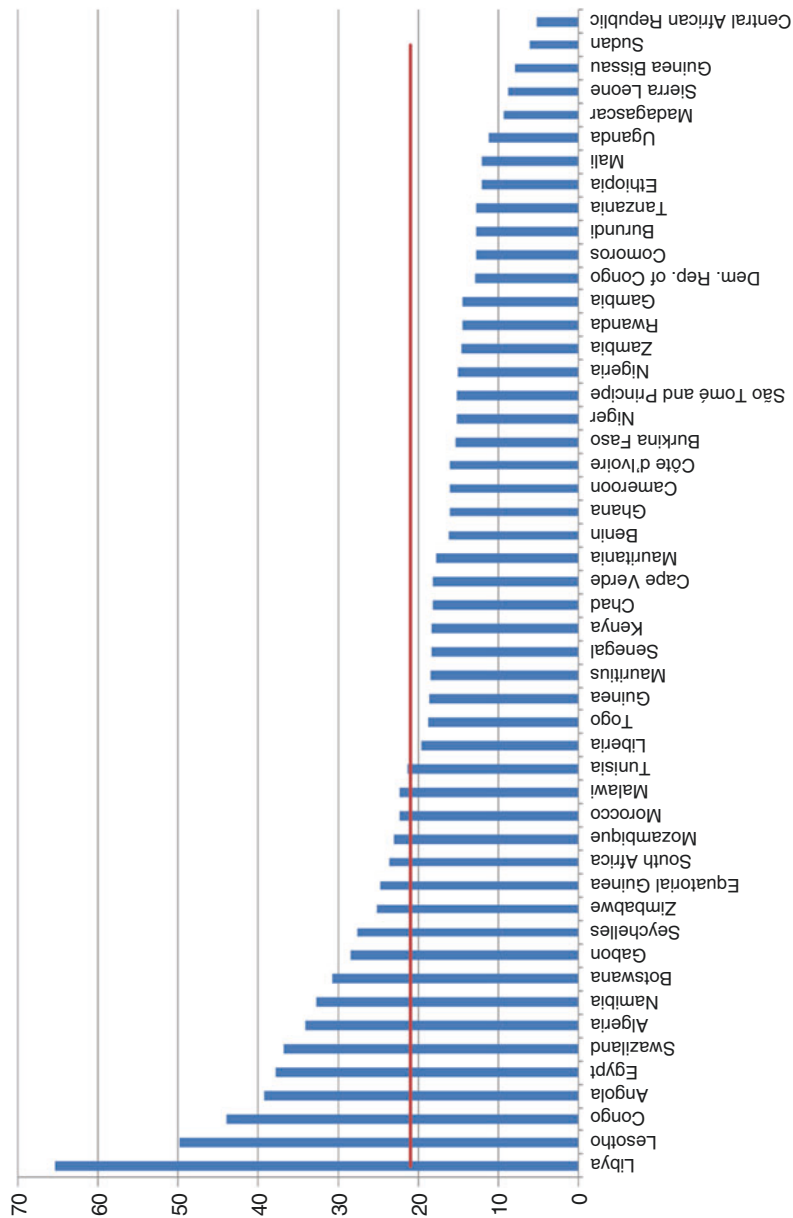


Fig. 2.2 Tax-to-GDP ratio across Africa, 2013

Source: AfDB et al. (2015)

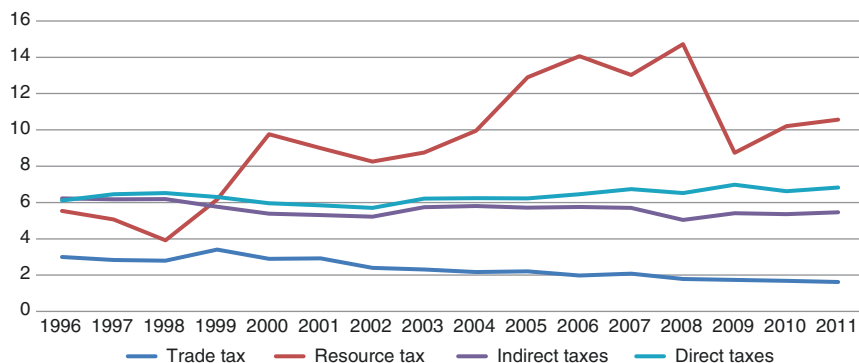


Fig. 2.3 Tax revenues in Africa, 1996–2013

Source: AfDB et al. (2015)

Figure 2.4 compares IFFs with ODA flows, in current dollars, to Africa over the 10-year period from 2003 to 2012. It shows that IFFs from Africa were almost always higher than the amount of aid received every year and have been increasing over time. The total amount of IFFs over that period was US\$603.4 billion compared to US\$421.6 billion in ODA flows. The point of this comparison is to illustrate that more dollars are leaving the region than the amount of development aid received.

It is also to be noted that IFFs are also highly concentrated. Based on available data from Kar and Spanjers (2014), the top ten list of countries for illicit flows in Africa account for 80% of the total and is dominated by several resource-rich countries (see Table 2.1).

To sum up, data clearly show that African countries are making commendable efforts in mobilizing domestic resources but these efforts are not up to the international standards. To complete the picture and situate DRM at both the African and international levels since Monterrey, and identify both the developments that have taken place as well as the existing challenges, a brief review of the literature is important.

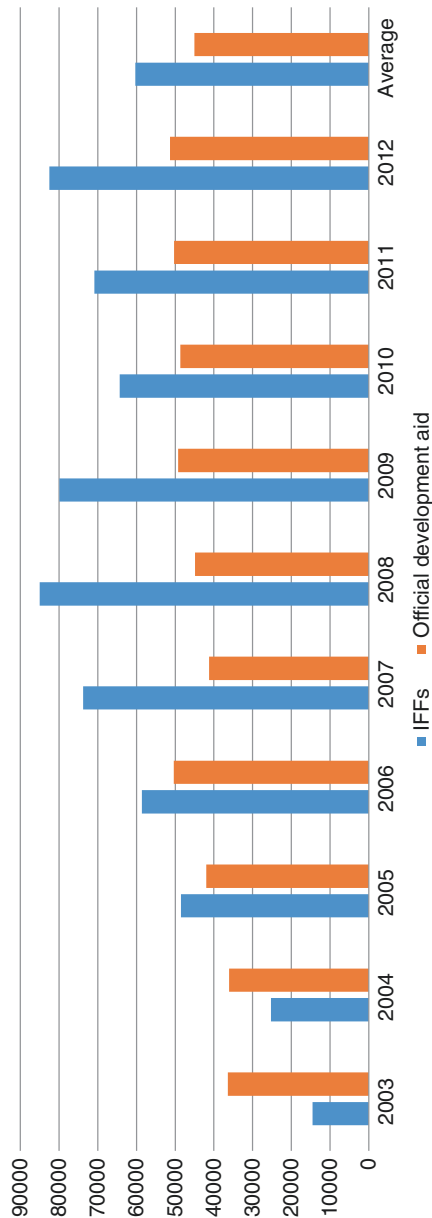


Fig. 2.4 Illicit financial flows and aid to Africa, 2003–2012

Source: IFFs from Kar and Spanjers (2014) and ODA from World Development Indicators (World Bank 2016)

Table 2.1 Top 10 African countries for IFFs, 2012

Country	US\$ million
South Africa	29,134
Nigeria	7,922
Libya	5,397
Egypt	5,093
Zambia	4,272
Equatorial Guinea	3,334
Ethiopia	3,117
Algeria	2,620
Sudan	2,605
Côte d'Ivoire	2,190

Source: Kar and Spanjers (2014)

2.3 Brief Review of the Literature

2.3.1 Selected Evidence at the International Level

The UNCTAD (2007) report on ‘Reclaiming Policy Space: Domestic Resource Mobilization and Developmental States’ provides a rich analysis of various aspects of DRM, namely savings, taxation, financial markets and intermediation and capital flight. It presented a rather pessimistic picture (low and unstable savings rates, a weak formal financial sector that does not encourage official financial savings, low tax revenues that are constrained by state legitimacy, and an informal financial sector that does not intermediate resources towards productive investments) but noted some encouraging signs (the emergence of a semi-formal sector that could cater for the needs of small- and medium-sized enterprises in some countries, and technological advances that could improve financial service provision).

The role of the financial sector in enhancing DRM was further examined in a United Nations University (UNU-WIDER) study that benefited from contributions by leading experts in the area of finance and development (Mavrotas 2008). The study included a few African country case studies and made several policy recommendations specifically related to the financial sector that include: deepening financial sector development; improving the efficiency of the financial sector; building better financial institutions; promoting competition within the financial sector and

providing a broader variety of saving instruments; promoting the role played by microfinance institutions; enabling clients of microfinance institutions to gain access to other (bigger and long-term) sources of finance; and improving access to savings institutions.

2.3.2 Selected Evidence on Africa

In a follow-up report to the Monterrey Consensus (United Nations 2007), it was noted that there had been a better understanding of the importance of focusing on the internal conditions for DRM since Monterrey and that governments, through public investment and the expansion of fiscal space, had an important role to play to catalyze private sector DRM. Prior to the Follow-Up International Conference on Financing for Development held in Doha, Qatar, in 2008, which reaffirmed the commitments made in Monterrey, the United Nations Economic Commission for Africa (ECA) surveyed African policymakers by sending two questionnaires to each of 53 African countries—one to the Central Bank and another to either the Ministry of Finance and Planning or a government department responsible for economic development (Economic Commission for Africa 2007). The responses received consisted of 32 countries that represented all of the five regions of Africa and included various types of countries (landlocked, low-developing countries, oil exporters and island economies).

With respect to the six areas of the Monterrey Consensus, trade was identified as the area where the least progress had taken place (by 34.6% of respondents), while DRM was tied with the mobilization of international resources in second place (at 17.3%). However, oil exporters were more optimistic about the progress on DRM than low-developing countries or the full sample of countries. ECA (2007) also noted that progress in mobilizing domestic savings had been modest. Most respondents (58.9%) indicated that national economic policies had been moderately supportive of DRM while 17.9% indicated that domestic policies were not supportive; 60% indicated that implementation of a national development strategy for DRM was low or completely absent. In terms of obstacles to DRM, the most important ones identified by

respondents were weak financial infrastructure (at 30.8%) followed by governance issues and corruption.

The second part of the 2010 issue of the African Economic Outlook (AEO) focused on public resource mobilization and aid in Africa. Although the AEO recognized that domestic resources include both private (savings channelled towards investment, for example, through private banks) and public (taxation, public borrowing) resources, it focused only on how a more equitable and efficient taxation system could help improve the financing of Africa's development. It did not consider the issue of private resources, and neither did it look at the quantity and quality of expenditure. The report discussed three main challenges to the mobilization of public resources, namely structural bottlenecks, an unbalanced tax mix and the erosion of existing tax bases. The issue of structural bottlenecks in the form of high levels of informality is one that is found in many studies (more on this below), including the AEO report, and is recognized as a major constraint to tax collection. Furthermore, the absence of a fiscal pact, together with administrative capacity constraints and the lack of donor involvement in building taxation capacity, add to the challenge of mobilizing public resources. Several African countries are too reliant on a narrow set of taxes and tax payers, and trade liberalization (decline in trade taxes) has led to a gap in public resources. Finally, the excessive use of tax preferences, the inefficient taxation of extractive industries and abusive transfer pricing by multinational have eroded the already shallow tax bases.

Many of the findings from the above studies were further confirmed in a study of domestic resource mobilization in Africa (North-South Institute 2010). Drawing on case-studies of five African countries—Burundi, Cameroon, Ethiopia, Tanzania and Uganda—the North-South Institute study identified several challenges related to DRM (structural constraints; tax exemptions, tax evasion and capital flight; capacity constraints and lack of legitimacy of tax authorities; constraints to private DRM and lack of access to the formal financial sector; and underdeveloped capital markets that lead to precautionary savings being held in non-financial forms). As in the case of the previous studies, it proposed tax and financial sector reforms to enhance DRM in Africa. It also argued for a greater role to be played by the international community and donors through measures such as increased technical assistance

to build tax capacity, and ensuring greater coherence across aid, trade and investment policies. Specifically, it called on the international community to make sure that its mining companies paid their fair share of taxes and to fight capital flight more aggressively.

Bhushan et al. (2013) calculated a tax effort index for Africa as a ratio between the share of actual tax collection and taxable capacity. Taxable capacity is estimated as the predicted tax-to-GDP ratio calculated from the estimated coefficients of a regression equation (using a panel dataset of 48 African countries for the period 1996–2010 and tax data from the AEO fiscal database) that takes into account the country specific characteristics influencing tax mobilization. ‘High tax effort’ is indicated by a tax effort index above 1 while ‘low tax effort’ is indicated by a tax effort index below 1. High tax effort countries are those that are using their tax bases well in order to increase revenues and may not be able to mobilize more resources without affecting other objectives such as growth and investment. However, low tax effort countries are those that could still increase the amount of revenues collected. The authors find that 25 out of 48 African countries have a tax effort index less than 1 when averaged over the period 1996–2010. The low tax effort group includes resource-rich countries such as Algeria, Sudan, Nigeria, the Democratic Republic of the Congo and Angola, where the abundance of natural resource revenues reduces the incentive to make greater effort to collect direct and indirect taxes.

A key message from the brief review is that several recommendations have been made but the capacity dimension of DRM has been neglected in all discussions and empirical investigations.

2.4 Looking at the Capacity Issues: Methodological Framework

2.4.1 Assessing the Overall State of Capacity: the Africa Capacity Index

The Africa Capacity Index (ACI) is a composite index computed from four sub-indices, or clusters, each of which is an aggregated measure

calculated from both a quantitative and qualitative assessment of various components. Sub-measures are generated using cluster analysis, and the clusters cover the following four dimensions: policy environment; processes for implementation; development results at country level; and capacity development outcomes. Cluster indices are the arithmetic mean of their underlying variables, and the ACI is a harmonically weighted aggregation of the four cluster indices.

The *policy environment* cluster considers the conditions that must be in place to make transformational change and development possible, notably effective and development-oriented organizations and institutional frameworks. It focuses on four components: whether countries have put in place national strategies for development (including a strategy for agricultural development, given the importance of transforming agriculture and achieving food security), and their level of legitimacy; countries' commitment to meeting development and poverty reduction goals set under the Millennium Development Goals (MDGs); country-level awareness and focus on better use of limited resources for capacity development, as measured by the presence of policies for aid effectiveness such as endorsement of the Busan Global Partnership and existence of an aid coordination policy; and the degree of inclusiveness that supports the country's long-term stability as measured by the existence of gender-equality and other socially inclusive policies. Broad participation and good governance underpin this cluster.

The cluster on the *processes for implementation* assesses the extent to which countries are prepared to deliver results and outcomes. This cluster focuses on the creation of an environment that motivates and supports individuals; the capacity to manage relations with key stakeholders inclusively and constructively; and the capacity to establish appropriate frameworks for managing strategies, programs and projects. Equally important are processes for designing, implementing and managing national development strategies to produce socially inclusive development outcomes.

Development results at the country level refer to tangible outputs that encourage development. The cluster's main components are as follows: coordination of aid support to capacity development; creativity and innovation; success in implementing the Paris Declaration on Aid

Effectiveness; gender equality; and social inclusion and partnering for capacity development. *Capacity development outcomes* largely measure change in the human condition. Indicators are captured mainly through: actual achievement of specific MDGs; measures of gender and broader social equity; and gains in agriculture and food security (African Capacity Building Foundation 2012, p. 30).

All the data that serve to compute the various indicators are obtained through annual country surveys.

2.4.2 Looking at Capacities Specific to Domestic Resources Mobilization: The Three Dimensions

The capacities specific to domestic resources mobilization fall into three categories: (1) soft and societal capacities, (2) human capacity, and (3) institutional capacity. The *soft and society level capacity* means understanding the development issues and the importance of paying tax; following positive social norms, values and practices conducive to DRM; building strong political leadership; and having operational and adaptive capacities. The operational capacities include organizational culture and values; leadership, political relationships, and functioning; implicit knowledge and experience; and relational skills such as negotiation, teamwork, conflict resolution, facilitation, and so on. The adaptive capacities entail the ability and willingness to self-reflect and learn from experience; the ability to analyze and adapt; the change readiness and change management; the confidence, empowerment, and participation for legitimacy to act; and the problem-solving skills (African Capacity Building Foundation 2014).

The *human capacity* specific to domestic resource mobilization distinguishes sufficient skills for assessment, formulation and implementation of DRM-specific policies and measures, as well as for monitoring, reporting and reviewing the same. Human capacity also includes the individual abilities to conduct forensic audits and transfer-pricing analysis in mining enterprises, analysis for use in financial and cybercrime investigations, asset forfeitures, and other legal matters.

The *institutional capacity* is constituted by the ability to design, implement, monitor and evaluate DRM policies; the ability to effectively plan expenditures and delivery of public services; the establishment and operationalization of appropriate regulatory and/or prudential frameworks for conducting productive business; the ability to collect statistical information; and the managerial capacity to ensure the recruitment and retention of specialists in areas such as ICT, accounting and finance, audit and legal.

2.4.3 Measuring the Domestic Resource Mobilization Efforts: Tax Effort Index

Tax effort is the ratio between the actual revenue and the tax capacity. The tax capacity is estimated as the predicted tax-to-GDP ratio calculated from the estimated coefficients of a regression equation (using a panel dataset of 47 African countries for the period 1996–2013 and tax data from the AEO fiscal database) that takes into account the country specific characteristics influencing tax mobilization.

Tax capacity is estimated after controlling for income per capita, agricultural value added as a percentage of GDP, population growth rate, and trade as a percentage of GDP. These various independent variables are obtained from The World Bank's World Development Indicators database and are typically included in empirical models that examine tax performance across countries. A measure of government effectiveness from the Worldwide Governance indicators is also included in the estimations for which only taxes that require significant domestic effort are considered, namely direct, indirect and trade taxes. Resource rents and aid grants are excluded.

'High tax effort' is indicated by a tax effort index above 1 while 'low tax effort' is indicated by a tax effort index below 1. High tax effort countries are those that are using their tax bases well in order to increase revenues and may not be able to mobilize more resources without affecting other objectives such as growth and investment. However, low tax effort countries are those that could still increase the amount of revenues collected.

2.4.4 Looking at Country Cases: Specific Experiences and Lessons

The countries chosen for the countries' case studies were selected based on the following criteria: tax effort performance (using the most recent literature available at the time of conducting the study),⁴ size of the economy, linguistic line and geographic coverage. The case studies primarily aimed at documenting the experience of the selected countries with respect to DRM and drawing lessons for the others. Moreover, the country cases facilitate the mapping of the DRM strategies, approaches and special initiatives undertaken by the country; inform about the efficiency of the country's resource mobilization system based on best practices; interrogate the capacity development issues, challenges, opportunities and possibilities for DRM and illicit financial flows in the country; identify the lessons learnt including the best practices; and suggest the way forward for effective DRM and curbing of illicit financial flows.

2.5 Key Findings

2.5.1 Overall Capacity: The Africa Capacity Index

As shown in [Table 2.2](#), the ACI ranges from 20.7 (Central African Republic) to 70.8 (Cabo Verde).

There are no countries at the extremes of capacity (Very Low or Very High). [Table 2.2](#) shows that there are eight countries in the High category and that no countries are in the Very Low category. More effort will be required for countries to move into the Very High bracket (ACI values of 80 and above). The bulk of countries have medium capacity. Of the 45 countries surveyed, most (73.3%) fall within the medium (yellow) bracket, 17.8% are in the high bracket, and 8.9% are in the low bracket.

⁴ Le et al. (2012).

Table 2.2 The 2015 Africa capacity index

Country	2015 ACI values	Country	2015 ACI values
1. Cabo Verde	70.8	24. Togo	52.0
2. Rwanda	67.9	25. Algeria	50.6
3. Tanzania	67.4	26. Congo	50.1
4. Mauritius	66.4	27. Senegal	50.1
5. Gambia	64.6	28. Madagascar	50.0
6. Morocco	64.4	29. Ghana	49.9
7. Tunisia	60.7	30. Côte d'Ivoire	49.8
8. Mali	60.1	31. Djibouti	49.6
9. Malawi	58.5	32. South Sudan	49.2
10. Liberia	58.4	33. Guinea	48.8
11. Burkina Faso	57.3	34. Chad	48.3
12. Lesotho	57.3	35. Cameroon	47.0
13. Mozambique	57.0	36. Zimbabwe	46.7
14. Namibia	56.1	37. Nigeria	46.4
15. Ethiopia	55.0	38. Botswana	44.8
16. Sierra Leone	54.8	39. Gabon	43.4
17. Burundi	54.5	40. Comoros	41.9
18. Kenya	54.4	41. Congo (Republic of)	40.4
19. Egypt	54.3	42. Swaziland	38.6
20. Zambia	53.8	43. Mauritania	36.1
21. Uganda	53.3	44. Guinea Bissau	34.7
22. Benin	52.9	45. Central African Republic	20.7
23. Niger	52.6		

Source: African Capacity Building Foundation (2015)

Analysis by cluster indicates a pattern that has not changed significantly from year to year (Table 2.3). As in previous ACRs (2011–2014), the ‘policy environment’ cluster remains the strongest and ‘capacity development outcomes’ the weakest (African Capacity Building Foundation 2011, 2012, 2013, 2014).

On the policy environment, most countries are ranked High or Very High, and even if excellent, these results are in fact not as good as in 2014 when 91% of countries were in the Very High category. Processes for implementation are also impressive, with 87% of countries in the High or Very High categories. However, only 6.7% of countries are ranked Very High on development results, while 13% are ranked Low or

Table 2.3 Percentage of countries by 2015 ACI bracket and by cluster

Level	Policy environment	Processes for implementation	Development results at country level	Capacity development outcomes
Very high	80	37.8	6.7	–
High	17.8	48.9	44.4	–
Medium	2.2	13.3	35.6	8.9
Low	–	–	11.1	86.7
Very low	–	–	2.2	4.4
Total	100	100	100	100

Source: African Capacity Building Foundation (2015)

Very Low. Capacity development outcomes are even worse: 91% of countries rank in the Low or Very Low brackets.

Overall capacity scores have improved from 49.9 in 2014 to 52.0 in 2015. Only 8.9% of countries are now in the Low capacity bracket, compared to 13.6% in 2014. Countries with High capacity have seen an improvement in the average of their scores, and there is now a higher percentage of countries in Medium capacity (see African Capacity Building Foundation 2014).

2.5.2 Capacities Specific to Domestic Resource Mobilization: Soft and Societal Capacities, Human Capacity and Institutional Capacity

Table 2.4 represents the acuteness of capacity needs for DRM as expressed by the surveyed countries. It shows that countries have acute capacity needs for scaling-up DRM. Results show that almost all areas for ensuring effective and sustainable DRM face high capacity constraints.

The capacity needs as highlighted by the surveyed countries are embedded in the soft and societal, human and institutional capacities. A closer look suggests that there is need to foster visionary leadership,

Table 2.4 Acuteness of capacity needs for DRM (% of surveyed countries)

Area of capacity needs	Very Low	Low	Medium	High	Very High
Fighting Illicit financial flows	6.8	13.6	22.7	40.9	15.9
Revenue collection	2.3	13.6	31.8	38.6	13.6
Fiscal sustainability	2.3	7	44.2	46.5	
Financial sector strengthening		4.7	48.8	41.9	4.7
Fighting corruption	4.6	11.4	29.6	38.6	
Social security and safety nets	4.7	25.6	30.2	34.9	4.7

Source: African Capacity Building Foundation (2015)

change mind-set and address other soft capacities. A key element for successful DRM starts with an effective and visionary, committed and accountable leadership that sets the right tone at the top. While there is need for positive social norms, values and practices conducive to DRM, the ability and willingness to learn from experience is equally important.

Moreover, institutional and human capacities are imperatives for scaling-up DRM. In addition to the rules and regulations, the capacity of institutions in the DRM chain must be reinforced to increase DRM. Rules and regulations encompasses sound public financial management which is integral to the process of improving DRM and ensuring that domestic resources are used to ensure inclusive and sustainable development. Besides, it is important to: (1) have legal system reforms aimed at law reform, especially where the laws are inadequate, or poorly functioning; (2) reduce crime and criminal activities of all kinds; (3) undertake reforms in the areas of taxation, banking and capital markets; (4) have flexible yet effective laws and regulations to access non-traditional sources of finance and curb IFFs; and (5) work more on tax reforms that will ensure tax harmonization and a move away from tax exemptions, concessions and holidays.

2.5.3 Capacity for DRM: Tax Effort Index

Table 2.5 shows that 27 out of 47 have a tax effort index below one and among the low-effort countries are several resource-rich

Table 2.5 Average tax effort, 1996–2013

Country	Average tax effort	Country	Average tax effort
Algeria	0.75	Madagascar	0.73
Angola	0.44	Malawi	1.21
Benin	1.14	Mali	0.92
Botswana	0.95	Mauritania	1.10
Burkina Faso	0.96	Mauritius	0.96
Burundi	1.14	Morocco	1.45
Cameroon	0.85	Mozambique	0.99
Cape Verde	1.21	Namibia	1.68
Central African Republic	0.69	Niger	0.82
Chad	0.39	Nigeria	0.47
Comoros	0.91	Rwanda	0.94
Congo	0.55	Senegal	1.19
Côte d'Ivoire	1.00	Seychelles	1.33
Dem Rep. Of Congo	0.52	Sierra Leone	0.70
Djibouti	1.52	South Africa	1.51
Egypt	1.08	Sudan	0.61
Ethiopia	0.82	Swaziland	1.81
Gabon	0.77	Tanzania	0.86
Gambia	0.95	Togo	1.08
Ghana	0.99	Tunisia	0.89
Guinea	1.13	Uganda	0.91
Kenya	1.21	Zambia	1.33
Liberia	1.02	Zimbabwe	1.59
Libya	0.21		

Source: African Capacity Building Foundation (2015)

countries such as Algeria, Angola, Chad and Nigeria. Resource-rich countries are probably focusing on the quantitative rise of resource revenues from the natural resource sector. Although they could increase their tax revenues from direct and indirect taxes, it is quite possible that the availability of resource rents is distorting the incentive to make more effort. There are also 20 countries that are already making significant tax effort and collecting more revenue than expected. This group includes both richer (such as South Africa and Morocco) and poorer (such as Liberia and Mauritania) countries.

2.5.4 Country Cases Studies: Success Stories and Challenges⁵

2.5.4.1 Countries' Initiatives and Achievements

A number of initiatives have been adopted to mobilize more domestic tax revenue. *First*, revenue services have been modernized (e.g. Ghana and Togo) by integrating the various revenue agencies into one coherent institution and by redesigning and improving upon the tax services' business processes and procedures. Moreover, African countries have expanded the use of ICT in tax collection. *Second*, new tax systems such as value-added tax (Ghana) and pay-as-you-earn tax (Zimbabwe) that are easy to use and administer have replaced cumbersome and ineffective tax systems. *Third*, greater efforts have been made to tax the mining industry. For example, the Zambian tax authority has been able to implement the Mineral Value Chain Monitoring Project (MVCMP) in order to enhance transparency and optimize revenue collection in the mining sector. However, in most countries including Zambia, due to the political power that the mining sector wields, the efforts to extract greater taxation from this sector have not materialized.

Efforts in terms of DRM in all countries are initiated with the purpose of strengthening the (1) *capacity for fiscal resource management*, (2) *capacity for domestically originated resource retention*, and (3) *capacity for financial resource development and use*. For instance, Ethiopia launched the second diaspora bond known as the 'Renaissance Dam Bond'. The bond issuance was aimed to secure financing for the Grand Renaissance Dam project. The Uganda Revenue Authority has implemented a series of anti-smuggling measures to curb tax evasion and avoidance, especially on imported goods entering and traded the country. Examples of such measures include: a 24-hour border patrol (by a paramilitary unit operated by the Uganda Revenue Authority) at the main border points

⁵ The country case studies were conducted in Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Madagascar, Mali, Morocco, South Africa, Togo, Uganda, Zambia and Zimbabwe.

of Busia, Malaba, Katuna and Entebbe International Airport, and the implementation of a Revenue Authority Digital Data Exchange (RADDEX) system to provide cargo details in a standardized electronic format—minimizing data errors and saving time.

Ghana is also embarked in the process of modernization of its revenue authority. In its second Strategic Plan (2015–2017), the Ghana Revenue Authority intends to pay attention to the mining, oil and gas, and the informal sectors. [Box 2.1](#) illustrates some of the initiatives undertaken in the country.

Box 2.1: The Ghana Revenue Authority Modernization Plan

The Ghana Revenue Authority (GRA) has developed a modernization plan which includes the deployment of a Geographic Information System to locate tax payers; the creation of a Post Clearance Unit in the Customs Division to promote compliance in the areas of valuation, origin tariff classification, drawback and exemption regimes; and the implementation of an Automation of Domestic Tax processes. Additionally, online registration and application platforms to simplify and improve efficiency and effectiveness tax services delivery is underway.

Other Initiatives by the GRA

In 2011 the GRA initiated moves in their tax revenue mobilization strategy in order to increase domestic revenue. Key among these initiatives are:

- Synergies arising from the strides made in the reform for integration and modernization e.g. joint tax audits; information sharing about taxpayers on liability to different taxes which is deterrent against taxpayers reporting different figures for different tax types etc.
- Clearance on permit, a facility which allows consignments to be removed from the port quickly and the documentation perfected later, and which became widely abused, was streamlined, resulting in about 80% drop in the use of the facility.
- The introduction of the Ghana Integrated Cargo Clearance System which helps track the location of goods at the ports.
- Deployment and widening of the coverage of the Valuation Assurance Programme.
- The establishment of the Rapid Deployment Force (RDF) by the Customs Division. The RDF acts on intelligence reports and clamps down on smugglers.
- Streamlining of tax exemptions to reduce tax evasion and to increase tax revenue.

- Effective implementation of initiatives announced in the 2011 budget including the airport tax.
- Increased investment activities including the establishment of new companies in the wake of the commencement of oil production in Ghana and the good performance of gold price on the world market also gave a boost to tax revenue.
- Tax education and engagement with stakeholders across the country resulting in improved voluntary compliance.

Source: Ghana Country Case Study⁶ from African Capacity Building Foundation (2015).

In Zimbabwe, since 2010, the amount raised from the AIDS Levy has constituted the bulk of all funding for HIV/AIDS and has become the main source of funding for the National AIDS Council to execute its mandate of coordinating and facilitating the national multi-sectoral response to HIV and AIDS. Zimbabwe introduced the Presumptive Tax in 2005, which targeted the transport business owners, hairdressing salons, informal traders, cross-border traders, restaurants, liquor-store, cottage industry and commercial waterborne vessels. These economic units/agents are expected to pay presumptive tax on a quarterly basis (Table 2.6).

In Zambia, from January 2013, the Government made it mandatory for all Ministries, Provinces and Revenue Collecting Statutory bodies to deposit all collections of fees and fines directly into the treasury bank account. This initiative has led to improved revenue collections in 2013; improved Public service delivery efficiency; improved transparency; and improved skill set for a number of officers that were trained in Internet banking to be able to deal with the accountability of the directly deposited amounts (see Box 2.2).

⁶The Ghana Country Case Study notes that progress has been made in the broad areas of reform and initiatives undertaken by the Ghana Revenue Authority (GRA). In particular, administrative processes and procedures to ensure tax payer compliance have improved, tax evasion has been reduced and DRM has been enhanced. However, the case study also indicates that the pace of progress needs to be increased and there are challenges (for example staff of GRA are not well paid, informal sector is a major constraint and incomes are under reported) that remain to be addressed.

Table 2.6 An example of presumptive tax in Zimbabwe

Description		Presumptive Tax (US\$ per quarter for each vehicle)
Omnibuses	8–14 passengers	150
	15–24 passengers	175
	25–36 passengers	300
	From 37 passengers and above	450
Taxi-Cabs	All	100
Driving	Class 4 vehicles	500
Schools	Class 1 and 2 vehicles	600
	More than 10 tonnes but less than 20 tonnes	1,000
	More than 20 tonnes	2,500
	10 tonnes or less but with combination of truck and trailers of more than 15 but less than 20 tonnes	2,500

Source: ZIMRA (2015)

Box 2.2: Direct Deposit of Fees in Zambia

From January 2013 the Government made it mandatory for all Ministries, Provinces and Revenue Collecting Statutory bodies to deposit all collections of fees and fines directly into the treasury bank account. This was because the Auditor General Reports had been revealing theft and misappropriation of funds depriving the Zambian citizenry of the much needed funds for development and access to social services.

This initiative has led to:

- Improved revenue collections in 2013: the envisaged budget collections from user fees and charges were K 283,709 (approximately US\$50,951) and the outturn was K 852,167 (approximately US\$153,041) resulting in an over performance of 200.4%.
- Improved public service delivery efficiency.
- Improved transparency: the initiative has been directly linked to reducing corruption and rent seeking behavior. The bribe index released in 2013 showed that the Passport office was amongst institutions whose rating has significantly improved.
- Improved skill set for a number of officers that were trained in internet banking to be able to deal with the accountability of the directly deposited amounts.

Source: *Zambia Case study from African Capacity Building Foundation* (2015).

2.5.4.2 Challenges Highlighted by the Country Case Studies

The most visible programs that African countries have pursued and where notable success has been recorded are in the fiscal resource mobilization area. Despite the noted success stories, efforts have been lopsided in favour of fiscal resource pooling while little or nothing is being done in terms of better managing the fiscal resource expenditure side. It is argued that far-reaching success will be achieved if resource pooling and expenditure are viewed as two sides of the same coin. Further a serious gap remains in terms of demonstrating the efficient use of fiscal resources for service delivery. There seems to have been no thought on the possible growth-stifling effect of the fiscal resources pooling effort that emphasizes almost exclusively raising tax rates and/or revenues. Furthermore, most glaring of the drawbacks in this area is the seeming lack of appreciation about the appropriateness of the overall (national) tax system countries have in place relative to the production (mix) structure of their economies.

Efforts at retention of domestically generated resources appear to be the least developed pillar of the DRM program in Africa. No country recorded any direct success worth reporting, not even South Africa which, among African countries, has the most sophisticated requisite institutional infrastructures for mitigating resource leakages by way of illicit financial outflows. Key among these requisite institutional infrastructures are effective legal systems, clear and effective national tax systems, and relatively efficient financial markets. Most African countries simply lack the wherewithal to provide the most basic of infrastructure or human resources to deal with IFFs.

It appears that most, if not all, African countries do not appreciate the important role financial resource mobilization should play for effective DRM. For instance, it is a well-developed and appropriately nuanced financial system (markets and institutions) that will effectively pool the available investable funds (savings) in the macro-economy as well as channel them to the most attractive production and development projects. Yet, apart from the three exemplary sample countries—Ethiopia, Kenya and Zambia—African countries have not made the kind of holistic and appropriate effort around the financial inclusion agenda. Such an agenda

would, in turn, support the new and novel effort at fostering fiscal resource mobilization (tax payer tracking and payment receipt mechanism), and spur on retention of resources that would otherwise go offshore in search of ‘financial safe havens’ and/or high investment returns.

The country case studies highlight a number of important constraints across the different countries. They are: the tax base is very narrow; the tax base is further eroded by high levels of capital flight; evasion and avoidance and proliferation of tax exemptions; tax authorities lack legitimacy and capacity (paying taxes is viewed as not being worthwhile because there does not seem to be tangible results from the ensuing public expenditure); tax administrations have weak capacity to efficiently and effectively collect taxes; the penetration of formal banking sector is relatively low (a large proportion of the population lacks direct access to the formal financial sector); the relatively poor business climate hinders levels of taxable profits; and countries lack the human, technical, legal and regulatory, and financial capacities to deal with IFFs.

2.6 Lessons and Policy Implications

The lessons and policy implications are presented under the key findings of overall capacity, capacities specific to domestic resources mobilization, tax effort and countries’ cases.

2.6.1 Overall Capacity

Overall capacity scores improved from 49.9 in 2014 (African Capacity Building Foundation 2014) to 52.0 in 2015. In 2015, only 8.9% of countries are now in the Low bracket, down from 13.6% in 2014. Countries with High capacity have seen an improvement in the average of their scores, and a higher percentage of countries are now in the Medium capacity bracket (African Capacity Building Foundation 2014). More resources for capacity development initiatives are required so that countries can improve their capacity development outcomes, an area that remains very weak. The ACBF can thus make an important difference by investing and providing

technical assistance for specific capacity building projects and programs to meet the needs of African member countries and non-state actors.

2.6.2 Capacities Specific to Domestic Resources Mobilization

The assessment of the capacity needs of countries shows that the majority of countries have acute needs for scaling-up DRM in almost all areas. Concerted efforts by countries and key stakeholders are needed in order to put in place mechanisms for addressing the challenges related to soft and societal capacities, as well as human and institutional capacities. The actions include (1) simplifying and rationalizing tax systems; (2) having a budget line on capacity development provided for in national budgets; (3) ensuring that revenue authorities have the capacity to engage with taxpayers to create awareness on their rights and obligations; (4) developing capacity to raise revenue from neglected sources such as small informal businesses/activities and real estate; (5) providing IT infrastructure, investing in finance data collection, and helping to set up tax registries; and (6) building the human, technical, legal and regulatory, and financial capacities to deal with IFFs.

2.6.3 Tax Effort Index

Results of a computed average tax effort index—the ratio of actual tax collection and taxable capacity—for the period 1996–2013 confirm this: 27 of 47 countries have low tax effort indices, and several of them are resource rich. Overall, several African countries have room for improvement—whether in savings and investment rates, tax-to-GDP ratios, the tax mix, tax effort, the disincentive effects of revenue from natural resources, tax performance indicators, or the nature and reach of financial systems. Too few countries are paying attention to the expenditure side—to whether taxation is leading to efficient service delivery. A credible fiscal pact between citizens and the state can work only if citizens can see their tax dollars being used effectively.

2.6.4 Country Cases

Experiences from the countries' case studies emphasizes on strengthening the (1) *capacity for fiscal resource management*, (2) *capacity for domestically originated resource retention*, and (3) *capacity for financial resource development and use*. A key element for effective *fiscal resource management* is that the efficacy and sustainability of a tax system derives its legitimacy from a clear connection between payment of tax and the provisioning of relevant beneficial economic and/or social infrastructure. At a more fundamental level of checking *leakage of resources*, which is commonplace in the mineral resources sectors of African countries, there needs to be a reliable systematic record keeping of the quantity of these resources. This kind of record keeping and dissemination can incentivize responsible governments to plan for the immediate and long term uses of these resources, and check multinational corporations' engagement with countries' mineral sectors. This may convince the citizenry of government's accountability and stewardship of this shared mineral wealth. This is why the Extractive Industries Transparency Initiative (EITI) can be a useful avenue for African countries that are yet to be signatories. For *financial resource mobilization*, saving is paramount. The on-going DRM efforts in African countries do not reflect this important maxim. Development agency personnel and African governments are often heard repeating the refrain that they need savings to invest and grow but the economies are not developed enough to offer meaningful incomes that would permit saving. There are significant savings across African countries that are yet to be mobilized.

2.7 Conclusion

Mobilizing and efficiently utilizing domestic resources is crucial for Africa to implement the post-2015 development agenda and African Union (AU) Agenda 2063 (African Union Commission 2015). Yet, despite encouraging achievements, African countries face various challenges, capacity being the most important one, as it prevents

them from effectively mobilizing domestic resources. The capacity gaps to generate savings and taxes from domestic resources and allocate them to economically and socially productive activities remain glaring. In particular, there are significant human, technical, legal, regulatory, and financial capacity challenges for financial inclusiveness, collection of tax in the agriculture and informal sectors, and stopping illicit financial flows.

Notwithstanding these challenges, with the right strategies, it is possible to build the capacity to scale-up DRM provided the key stakeholders play their roles effectively. Now that most countries are putting in place good policy environments and implementation processes, capacity remains and should be at the centre of all strategies and initiatives. It is therefore important to (1) tackle the capacity challenges through targeted DRM training and sensitization programs at all levels; (2) foster knowledge and experience sharing; and (3) build partnership for effective learning and implementation of DRM programs. Equally important is the need for key stakeholders to support the efforts of countries as well as regional and continental capacity development organizations in building the requisite capacity for scaling up DRM. The chapter submits that beside the rules, regulations and building of the required human capacity, it is imperative to build the soft and societal, and institutional capacities to increase DRM in Africa.

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3

Tax Buoyancy: A Comparative Study Between Kenya and South Africa

John Olukuru and Barrack Mandela

3.1 Introduction

South Africa and Kenya face significant fiscal challenges. The simple fact that fiscal deficits have been increasing in each and every financial year highlights this fact. This fiscal imbalance is as a result of the rapid expansion in expenditure and low revenue collection (Bayu 2015). The magnitude of government surplus or deficit is probably the single most important statistic measuring the impact of government fiscal policy in an economy. Figure 3.1 below shows the deficits the

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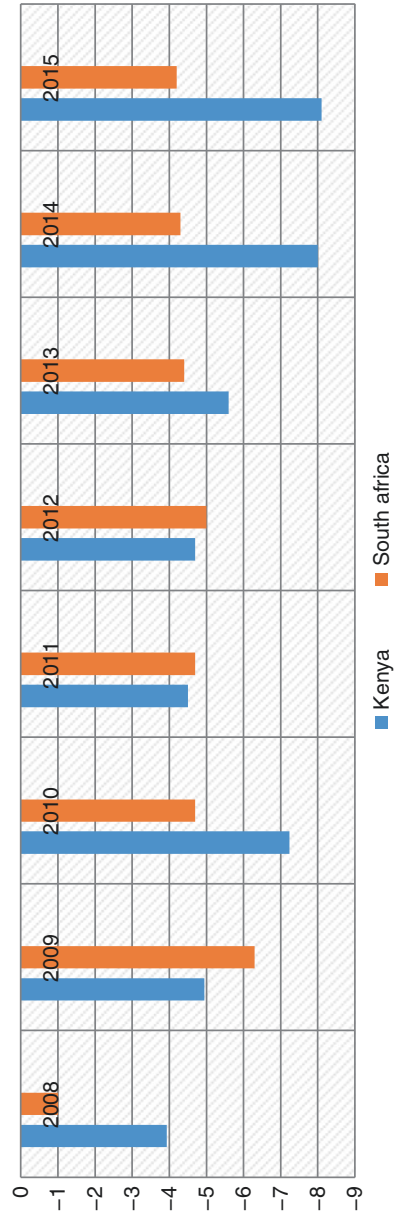


Fig. 3.1 Government deficit as a percentage of GDP

Source: Trading Economics

governments of South Africa and Kenya have been running for the past seven years.

Economies look to address fiscal deficits by raising more money through their tax systems, the importance of getting the structure of taxes right can only increase. The way in which these huge sums of money are raised matters enormously for economic efficiency and for fairness (Mirrlees et al. 2011). There has been economic growth in both South Africa and Kenya which means that national income has been on the rise. Figures 3.2 and 3.3 below show tax growth versus Gross Domestic Product (GDP) growth in Kenya and South Africa, respectively.

This however raises the question to what extent higher economic growth can help bring down fiscal deficits. From the revenue side of the budget, the answer depends on tax buoyancy. This is the measure of how tax revenues vary with changes in national income. The purpose of this research is to measure how tax revenues actually vary with changes in national income. A buoyancy of one would imply that a 1% change in GDP would change tax revenue also by 1%, thus the tax-to-GDP ratio would remain unchanged. A tax buoyancy exceeding one, however, would mean that tax revenue changes by more than the GDP. This potentially leads to reductions in the deficit ratio in cases where national income increases with economic growth.

3.2 Literature Review

Tax buoyancy is an indicator to measure efficiency and responsiveness of revenue mobilization in response to growth in the Gross domestic product or National income. A tax system is the legal system for assessing and collecting tax. A desirable property of a tax system is that buoyancy should be equal to or higher than unity. As a working rule, revenue growth should be roughly equal to the overall economic growth rate, unless a country wants to increase or to reduce the size of its government (Bird and Zolt 2008). Second this point is Jayawickrama (2008) who states that a unit tax buoyancy parameter is a necessary

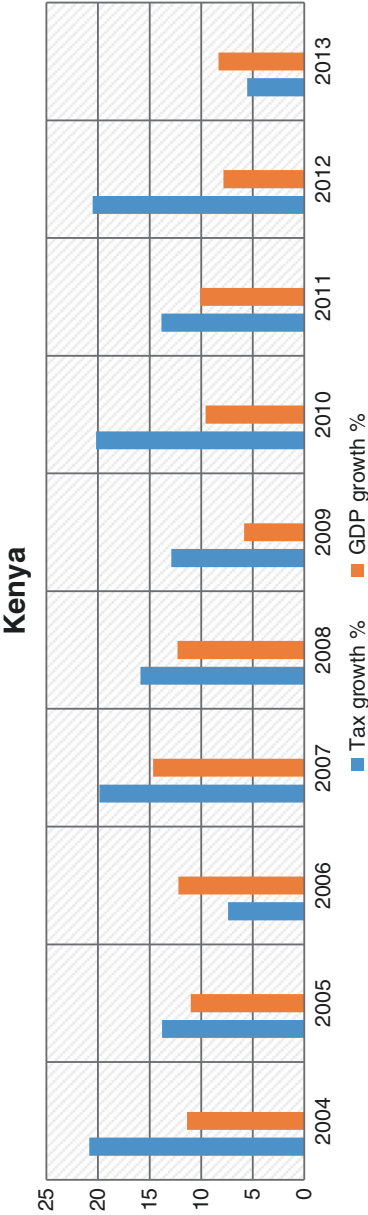


Fig. 3.2 Tax growth versus GDP growth for Kenya

Source: Kenyan government statistical abstract, World Bank and Trading Economics

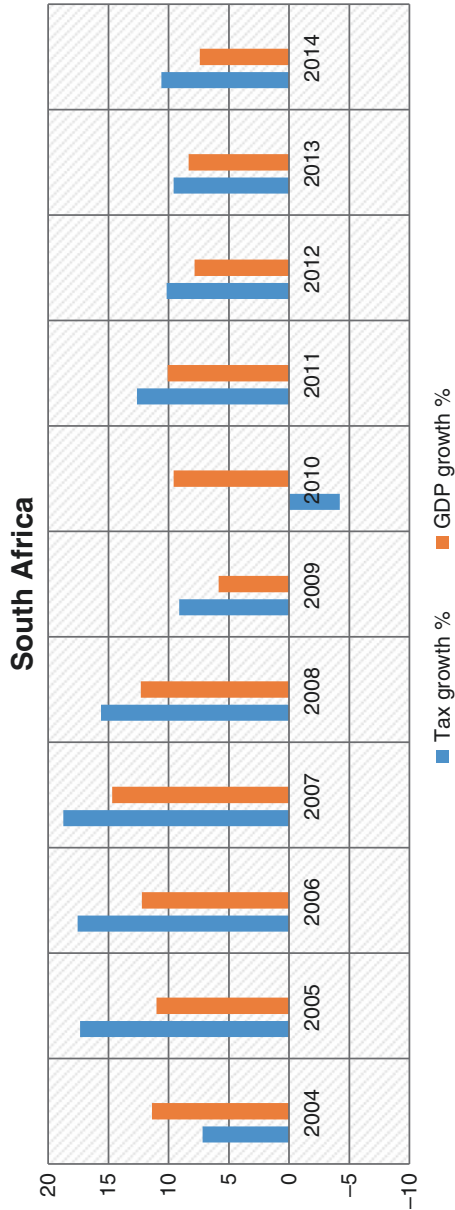


Fig. 3.3 Tax growth versus GDP growth for South Africa

Source: South Africa Reserve Bank, World Bank and Trading Economics

condition for resiliency, as it implies that the tax–income ratio remains constant over time. Such a property ensures that revenue growth keeps pace with that of GDP without frequent discretionary changes. It also imparts a built-in stability in the middle-tax system which ensures mitigation of cyclic variations in national income over the space of the business cycle.

Wagner's law stipulates that public expenditure is a natural consequence of economic growth. This statement goes hand in hand with reality since many developing countries in their attempt to spur economic growth have increased public expenditure. However, this has not been matched with revenue mobilization resulting in huge budget deficits. Most of these deficits are financed by debt instruments which possess a future economic burden to the incoming generations. Various efforts aimed at obtaining optimal fiscal policies with emphasis on the role of taxation as an instrument of economic development have been implemented. A possible explanation for low revenue collection despite the reforms undertaken as stated by (Osoro 1991) is that most of these reforms focused on tax structure rather than on tax administration geared towards generating more revenue from existing tax sources. Kenya for instance had the Tax Modernization Program which among other things hoped to enhance revenue collection, improve tax administration, reduce compliance and collection costs.

Shome (1988) states that the need to raise revenues and concurrently, tax revenues becomes imperative in the macro environment that many developing countries face today. This is indeed true since it is in a state's best interest to raise enough revenue to finance its activities which spur economic growth. Besides, according to (Bruce and Tuttle 2006) generating sufficient revenue to finance government service delivery is arguably the most important characteristic of state tax systems because revenue collection is the primary purpose for most taxation. According to (Bahl and Bird 2008) a good internal tax system provides not only revenue but is also an essential element in developing a capable state. Economic growth would mean more tax collection thus the pursuit of economic growth is central to many if not all economies. Generally, tax revenue comprises the major portion of central government budgetary revenues and thus the need to increase revenue is apparent in developing

countries. Tax policy choices are shaped by both economic structure and administrative capacity factors that constrain the options available (Bird and Zolt 2008). An economy's expansionary policy with an ambition to increase economic growth should be guided by the cost of running such a policy, particularly the net benefits. If the policy is being run at a net cost, it may not be sustainable in the long run as these costs may be too expensive for the economy to bear especially if the economy is developing or emerging.

Tanzi and Zee (2000) state that a tax policy study is concerned with the design of a tax system that is capable of financing the necessary level of public expenditure in not only the most efficient way but also the most equitable way possible. They go on to add that developing countries aiming to becoming integrated with the international economy must have a tax policy that plays a sensitive role in three ways. One is to raise enough revenue to finance essential expenditures without recourse to excessive public sector borrowing. The first point in relation to a developing economy whose public expenditure has grown resulting to a large deficit would have an impact on the public debt. Growing public expenditure generates a large fiscal deficit especially in the case of developing countries. These developing countries thus experience an ever increasing debt service which is a consequence of a growing public expenditure. A growing public debt has implications on the tax potential of a country as the debt has to be serviced. Level of taxation has to go up at the point where the interest on the debt exceeds net borrowing plus the possible reduction in non-interest expenditure. Two is raising the revenues in ways that are not only equitable but also minimize the disincentive effects on economic activities. Three is the tax policy should not deviate substantially from international norms.

One of the important implications of planning in a developing economy is to devise a fiscal policy for the provision of infrastructure and the promotion of public savings and investment (Jain 1969). Kenya and South Africa are pursuing infrastructural development as an important pillar of economic development. However, this is such an expensive yet necessary pursuit. Mawia and Nzomo (2013) state that the backdrop of such high expenditures has necessitated the need to raise more revenue when compared to other sources of resource mobilization such

as deficit financing and money creation. Despite the scope of such infrastructural expenditure being too high, a stable and buoyant tax system would allow for a country to cover its increasing financial commitments as its gross domestic product grows. If the tax revenue of a country is stable and buoyant, there is a high probability that its public expenditure needs will be adequately met over time.

Taxes are the most important elements responsive to government policy and in effect the major instrument for mobilizing the increments in national income for investment or expenditure by the state (Khan 1973). The level of tax revenue collected is a critical determinant of the quantity of real resources a government can mobilize for public initiatives. Tax revenue collection and economic development have a strong positive correlation. Anastassiou and Dritsaki (2005) complement what was stated by Khan (1973) by stating that tax policy is a necessary component of economic policies. This is especially true for every country that wants to sustain and strengthen its economy and grow internationally. A competitive tax structure would attract capital, specialized work and technology which are essential elements for maximizing economic growth. Economic growth comes at the expense of financing an ambitious yet reasonable fiscal budget. The ease of financing the budget of a state is determined by how much revenue in form of taxes the government has collected. Chaundry and Munir (2010) state that the economic resources available to a state are limited. Therefore, an increase in government expenditure normally means a reduction in private spending. One method of transferring resources from the private to the public sector is through taxation. However, there are other methods such as the creation of more money, to charge for the goods and services it provides or to borrow. Taxation has its limits as well, but they considerably exceed the amounts that can be raised by resorting to the printing press, charging consumers directly or borrowing. So while governments often use all four methods of raising resources, taxation is usually by far the most important source of government revenue.

There are several empirical works that have measured how tax revenues actually vary with changes in national income. Many of these papers have either adopted the error correction model or the Cobb-Douglas

function. Belinga et al. (2014) examined the tax buoyancy in Organisation for Economic Co-operation and Development (OECD) countries over two equal time periods: 1965–1988 and 1989–2012 using the Error Correction Model. They found that on average the long-run buoyancy was 1.06. The long-run buoyancy declined in the more recent periods compared to the 1965–1988 period. The coefficient is no longer significantly higher than one after 1989. This possibly reflects less progression in tax systems after the reforms in the late 1980s and early 1990s. Short-run buoyancy over the entire period equals 1.04 and is not statistically different from one. Before the late 1980s, the buoyancy coefficient was way below one but above one since then. However, both of the coefficients were not significant. The difference in short-run buoyancy between the two periods is statistically significant though, implying that the stabilization function of the tax system has strengthened in the more recent period. For the specific tax components, the long-run buoyancy corporate income tax was found to exceed one while its short-run buoyancy coefficient was 1.96 making it the best automatic stabilizer. For the social security contribution and goods and service tax, it is not significantly different from one, while it lies below one for the personal income tax, excises and property taxes. Short-run buoyancy of the social security contribution is significantly smaller than one while that of property tax is not significantly different from 0. Short-run buoyancy for the personal income tax and goods and service tax are not significantly different from one, although the higher point estimate for the personal income suggests that it is a better automatic stabilizer than the goods and service tax.

Bayu (2015) also applied the error correction model to determine the long-run and the short-run coefficients of buoyancy and also estimate how fast the short-run dynamics converge towards the long run. He went on to use the Johansen maximum likelihood approach to find the determinant of the buoyancy of gross tax revenue. The findings of Bayu's study showed that gross tax receipt grows at a slightly lower rate than GDP both in the short run and in the long run while the speed of adjustment is moderate about half of the disequilibrium adjusted per annum. Direct, domestic indirect and foreign trade taxes were found non-buoyant in the short run. While long-run results indicate only foreign

trade tax revenue was buoyant. Regarding the speed of adjustment parameter of short-run deviations, the speed is well pronounced for direct taxes than in the case of domestic indirect taxes and foreign trade taxes. In both cases, the speed of adjustments were a bit sluggish only about 46, 38 and 31% of the deviations from the long-run equilibrium values of direct, domestic indirect and foreign trade tax revenues were adjusted within one year. The result from the Johansson cointegration approach shade light on the statistical relationship between buoyancy of gross tax revenue and a set of explanatory variables including service, industry, import budget deficit and official-development assistance as a percentage of GDP. He summarized his findings by stating that the existing persistent budget deficits in Ethiopia suggest that the tax system is not revenue productive, and hence increasing revenue should be the main objective of tax policy. Any tax policy should strive at meeting the fiscal budget such that the deficits are reduced and debt financing is kept at a minimum. Bayu's finding is thus relevant to any developing economy which is finding it difficult to finance their fiscal expenditure.

Many of the papers that have measured tax buoyancy use the following Cobb-Douglas function to estimate it, $e^{\alpha}Y^{\beta}e^{\epsilon} = T$ where Y is gross domestic product, T is tax revenue, e is the natural number, β is estimated parameter which in this case is the measure of buoyancy and ϵ is the error term. (Jain 1969) used a slightly different Cobb-Douglas function to estimate tax buoyancy of the Indian tax structure. He used $Y = \alpha X^b$ where Y is tax revenue, α is a constant, b is the measure of buoyancy and X is national income. The results of his study showed that the overall Indian tax system was buoyant with an estimate of 1.858. On the tax categories, only income tax and excise tax were found to have a buoyancy estimate of less than unity. (Akbar and Ahmed 1997) used the Cobb-Douglas function to estimate buoyancy found that the overall tax system was not that buoyant as it has an estimate of 1.07. On the tax categories, only excise duty had a buoyancy estimate of less than unity. Other papers to use the Cobb-Douglas function to measure tax buoyancy are Twerefou et al. (2010) estimated that the overall tax system of Ghana is not buoyant and all the tax categories apart from personal income tax were also not buoyant as they all had an estimate of less than unity, (Mawia and Nzomoi 2013) estimated the tax buoyancy of Kenya to be 2.58 which means the tax

system is buoyant and (Wawire et al. 2014) who found that tax reforms in Kenya made the tax system more buoyant. (Ndedzu et al. 2013) also used the Cobb-Douglas function to estimate the buoyancy coefficient of the tax system. The results showed that Zimbabwe's overall tax system is not buoyant as its estimate of buoyancy is 0.708. When it comes to the tax components, only custom duty had an estimate of more than unity.

This research is therefore necessary as it seeks to answer how buoyant is Kenya's and South Africa's. It will employ the error correction model which will not only give a long-run estimate of buoyancy of the tax system but also the short-run estimate and the how fast it converges to the long-run estimate. All this estimates are necessary as policymakers need to know how buoyant the tax system is both in the short run and in the long run. As the economies pursue an expansionary fiscal policy which has led to increasing fiscal deficits, it is still in an economies interest to know by how much an increase in national income would increase tax revenue collection. This research seeks to find out how much tax revenues vary with changes in national income.

3.3 Data and Model Specification

This study aimed at establishing how buoyant the tax system in Kenya is between the years 1980 and 2014 and South Africa between the years 1972 and 2014. The study adopted a causal relationship design. A causal analysis is concerned with how one variable affects or is responsible for changes in another variable. The research used causal analysis since it helps in answering the question this research seeks to answer which is by how much do tax revenues change due to changes in national income.

3.3.1 Data Description

The research used secondary data from The World Bank, Federal Reserve Economic Data, International Monetary Fund and the central banks/reserve banks of Kenya and South Africa. Secondary data were used in this study because of the advantages it has over primary which

Table 3.1 Description of the variables that will be used in this study

Gross domestic product	It is the monetary value of all goods and services produced within a country's geographic borders over a specified period of time normally one financial year.
Tax revenue	Government income due to taxation.
Income tax	It is a type of tax that is levied on business profits and other forms of income.
Value added tax (VAT)	An indirect type of consumption tax that is placed on a product whenever value is added at any production stage and also at the final sale.
Import duty	A government tax on imports or exports which is collected by the customs authorities of a given country.
Excise duty	A tax levied on manufacture, sale, or use of goods that are locally produced.

include: data accessibility, feasibility of both longitudinal and international comparative studies and it is economical as it saves effort, expenses and also time (Table 3.1).

3.3.2 Model Specification

One of the most common and important empirical issues in applied public sector economics is to estimate the likely behaviour of tax revenue in relation to changes in national income. Tax buoyancy is generally measured by regressing the log of tax revenue on the log of GDP, sometimes with controls for other factors influencing revenue performance. The method this research employed mimics the one used by Belinga et al. (2014). It estimated the long-run and short-run buoyancies of OECD countries and how fast the short-run dynamics move towards the long-run dynamics. This method's superiority over the Cobb-Douglas function model is captured by the fact that it not only measures the long-run estimate of tax buoyancy but also the short-run estimate and how fast the short-run estimates converges with the long-run estimate. The superiority of the error correction model is the reason why this research used it. Other researchers who

employed the error correction model to estimate tax buoyancy of a given economy are Bruce and Tuttle (2006), Bayu (2015) and Jayawickrama (2008).

The starting point for the econometric specification was the following autoregressive distributed lag model. This model allows for a flexible dynamic relationship between tax revenue and GDP:

$$\ln Tax_t = \sum_{j=1}^p \phi_{ij} \ln Tax_{t-j} + \sum_{j=0}^q GDP_{t-j} + \epsilon_t \quad (3.1)$$

Where Tax_t is tax revenue collected in year t , and GDP_t is for that particular country's level of GDP, and ϵ_t is the error term. Equation (3.1) suggests that developments in tax revenue can be explained by a distributed lag of order p of the dependent variable, and a distributed lag of order q of GDP. The research involved taking a great precaution when choosing the number of lags since it addresses the possible issues of serial correlation, endogeneity and multicollinearity. Many lags will lead to a high probability of multicollinearity among the lagged variables and also reduces the degrees of freedom. If an equation with a lagged dependent variable as an independent variable has a serially correlated error term, then OLS estimates of the coefficients of that equation will be biased even in large samples implying that the OLS estimator will not be consistent. To try and avoid the problems of multicollinearity and serial correlation, the research used the Akaike Information Criterion to choose the optimal lag structure, that is, values for p and q , for each country and for each equation.

The study then subtracted the lag tax variables from both sides of Equation (3.1) which transformed that equation into a single error correction model of the form:

$$\Delta \ln Tax_t = \lambda_t (\ln Tax_{t-x} - \beta_i \ln GDP_t) + \theta_{i,0} \Delta \ln GDP_t + \mu_i + \epsilon_t \dots \quad (3.2)$$

Where $\beta_i = \frac{\theta_0 + \theta_x}{\lambda_t}$ and $\lambda_i = -(1 - \phi_x)$. From Equation (3.2), θ_0 measured the short-term buoyancy of the tax, which is the instantaneous effect of a change in GDP on tax revenue. The parameter β_i signifies the

long-run buoyancy. The parameter λ_i measured the speed of adjustment. The speed of adjustment is how fast the short-run values converge to its long-run equilibrium value. This research paid close attention to the parameters θ_o , β_i and λ_i as that's where the research's interest lies.

Equation (3.2) was used to estimate the short-run buoyancy, long-run buoyancy and speed of adjustment of both the aggregate tax revenues and the tax revenue categories: income tax, value added tax, import duty and excise duty.

3.4 Data Analysis and Presentation of Results

This study applied the error correction model tax for estimating buoyancy coefficients and speed of adjustment. To estimate parameters of the model, the equation was linearized by taking the logarithms of the variables in the model.

3.4.1 Stationarity

Unit root test results, as shown in Tables 3.2 and 3.3, for the ADF revealed that all the variables are unequivocally integrated of order one indicating that stationary is attained in first difference. In Kenya, only excise duty is an $I(0)$ while in South Africa import duty is an $I(0)$.

Table 3.2 Stationarity results for Kenya

Variable	P-value		Order of integration
	At level	First difference	
GDP	0.9992	0.0214	1(1)
Total tax	0.5815	0.0000	1(1)
VAT	0.4663	0.0002	1(1)
Excise duty	0.0019	–	1(0)
Import duty	0.3546	0.0000	1(1)
Income tax	0.8652	0.0002	1(1)

Table 3.3 Stationarity results for South Africa

Variable	P-value		Order of integration
	At level	First difference	
GDP	0.9680	0.0010	I(1)
Total tax	0.7694	0.0000	I(1)
VAT	0.3507	0.0004	I(1)
Excise duty	0.8427	0.0002	I(1)
Import duty	0.0151	–	I(0)
Income tax	0.8449	0.0000	I(1)

3.4.2 Johansen Cointegration Test Results

Cointegration tests were carried out to verify whether tax revenue or its components had a long-run relationship with GDP or not. Cointegration of any two variables means that the error terms would be stationary. Although the variables are individually $I(1)$, their linear combination cancels out the stochastic trends in these variables and as a result, such a regression would be meaningful and not spurious.

The results in [Appendix 3.1](#) show that in South Africa, tax revenue and all the tax components are cointegrated with GDP. The results in [Appendix 3.2](#) follow the same trend as the one for South Africa which shows that in Kenya all tax revenue components and the aggregate tax revenue are cointegrated with GDP.

3.4.3 Buoyancy Estimates

[Equation \(3.2\)](#) was used to estimate the long-run buoyancy estimate, short-run buoyancy coefficient and the speed of adjustment for the aggregate tax revenue and also the tax components for both Kenya and South Africa. The results are summarized in the [Tables 3.4](#) and [3.5](#) as follows:

The results suggested a significant long-run buoyancy coefficient for the total tax revenue of 1.77 in the case of South Africa while

Table 3.4 South Africa buoyancy and speed of adjustment results

	Total tax	VAT	Income tax	Excise	Import
Long-run buoyancy	1.77*** (0.09)	1.61 (0.17)	1.70*** (0.03)	1.16*** (0.23)	1.31*** (0.41)
Short-run buoyancy	1.82*** (0.33)	1.42 (0.92)	1.38*** (0.18)	1.23* (0.68)	-4.15 (4.17)
Speed of adjustment	-0.32** (0.11)	-0.07 (0.06)	-0.81*** (0.11)	-0.23* (0.10)	-0.78*** (0.15)

*** implies statistical significance at 1% while

** and * imply statistical significance at 5% and 10% respectively.

Table 3.5 Kenya buoyancy and speed of adjustment results

	Total tax	VAT	Income tax	Excise	Import
Long-run buoyancy	1.18* (0.68)	1.38*** (0.40)	2.69*** (0.96)	0.81** (0.39)	-0.84*** (0.29)
Short-run buoyancy	2.69*** (0.59)	0.88*** (0.31)	3.09** (1.24)	0.70* (0.36)	2.15 (1.52)
Speed of adjustment	-0.40*** (0.14)	-0.63*** (0.12)	-0.54*** (0.19)	-0.86*** (0.17)	-0.36** (0.15)

*** implies statistical significance at 1% while ** and * imply statistical significance at 5% and 10% respectively.

1.18 in the Kenyan case. When it comes to the short-run buoyancy coefficients, the results suggested a significant 1.82 coefficient in the case of South Africa while Kenya's coefficient is also a significant 2.69. The speed of adjustments for South Africa and Kenya is 32% and 40%, respectively. The results stated that both tax systems' of Kenya and South Africa are buoyant in the long run and short run. However, South Africa's tax system is more buoyant than Kenya in the long run suggesting that its pursuit of economic growth means more tax revenue collection to finance government activities in subsequent financial years. On the other hand, Kenya's tax system has a better automatic stabilizing capability at the aggregate level due to the higher short-run buoyancy coefficient and a higher speed of adjustment.

The results suggested that, in the case of South Africa, income tax is the best automatic stabilizer due to its significant buoyant coefficient both in the long run (1.70) and short run (1.38). The level of

convergence between the two is 81%. It points out that about 81% of the disequilibrium from the long-run path will be corrected in one year. The adjustment of the short-term buoyancy towards the long-term is therefore fast. VAT, on the other hand, does not fall far from income tax on the buoyancy dynamics. Its long-run buoyancy coefficient is 1.61 while its short-run buoyancy coefficient is 1.42. However, only 7% of the disequilibrium between the long- and short-run dynamics are corrected in one year. Excise duty has a long-term buoyancy estimate of 1.16 while the short-run estimate is 1.23. Only 23% of the disequilibrium is corrected within the fiscal year between the long- and short-term buoyancy estimate. The worst automatic stabilizer is import duty since it has the lowest short-run buoyancy coefficient. The results for import duty could be due to the fact that laptops, electric guitars and some other electronic products are not subject to this duty.

Kenya's best automatic stabilizer is income tax with a long-run and short-run buoyancy coefficient of 2.69 and 3.09, respectively, both of which are significant at the 1% level of significance. It is the best automatic stabilizer since it has the highest short-run buoyancy coefficient. The speed of adjustment is -0.54 suggesting that 54% of the disequilibrium between the long-run and the short-run buoyancy estimate is corrected within one year. Income tax performance in Kenya can be explained by the addition of rental income in the tax bracket, which has gone to increase the income tax base. VAT is the only other tax component that has a long-run buoyancy coefficient of above one (1.38). Its short-run buoyancy coefficient is however less than one (0.88) with 63% of the disequilibrium between the short- and long-run dynamics corrected within one year. Excise duty and import duty both have a buoyancy coefficient of less than one in the long run (0.81 and -0.84 , respectively). However, the short-run buoyancy coefficients of excise duty and import duty are 0.7 and 2.15, respectively. The results suggest that excise duty is the worst automatic stabilizer as it has the lowest short-run buoyancy coefficients among the tax components used in the study. However, import duty has a negative long-run buoyancy coefficient which can be attributed to the fact that Kenya has leakages when it comes to imports. This simply

means that so many of the imports are not subjected to import duty since they are not brought into the country through the proper channels. The results for short-run buoyancy coefficient of import duty are however subject to high standard errors and are also insignificant. In the case of excise duty, 86% of the disequilibrium between the short- and long-run dynamics are corrected in one year while only 36% of the disequilibrium is corrected in the case of import duty. The high speed of adjustment when it comes to excise duty can be attributed to the fact that excise taxes increase often so as to reduce alcohol and tobacco consumption.

The results shown in this research go partly hand in hand with those of (Twerefou et al. 2010) who estimated not only the tax buoyancy but also elasticity of the Ghanaian tax system. They found that the tax system is buoyant in the long run (1.08) but the short-run estimate is 0.74 with 34% of the disequilibrium between the long-run and the short-run estimate corrected in a year. Performance of the tax component showed that personal income tax and VAT are buoyant while excise duty having the lowest buoyancy estimate. Bayu (2015) however found that the Ethiopia's tax system was not buoyant both in the long run and short run, 0.89 and 0.65 with around half of the disequilibrium (50.3%) is corrected within a fiscal year. The research divided tax revenue to direct, indirect and taxes on foreign trade. Out of the three categories, only tax on foreign trade was buoyant (1.15) while direct and indirect taxes had a buoyancy coefficients of 0.67 and 0.89, respectively.

3.5 Conclusion and Recommendations

The results show that both Kenya and South Africa have a buoyant tax system implying that expansionary fiscal policies would yield higher tax revenue collections. Close attention should be paid to excise duty and import duty in Kenya and import duty in South Africa which perform poorly as tax components. South Africa and Kenya's trajectory to long-term growth is promising and their

pursuit of economic growth is worth the recognition they are receiving. Care should however be taken on how such pursuits are financed since debt and borrowing have long-term implications. The benefits of any choice of budget financing should outweigh the costs of such finances. Otherwise, the future generation will feel the pinch of today's financing decisions. A simple way of dealing with the cost of financing to the future generation is coming up with a buoyant tax system which will go a long way in reducing the fiscal deficits.

Persistent budget deficits in Kenya and South Africa suggest that the tax system is not revenue productive, and in such situations increasing revenue should be the main objective of tax policy. Broadening the tax base and bringing new tax payers into tax net, improving tax administration, eliminating tax distortions, eliminating some of the tax exemptions, creating economic environment that increases revenue and decreases overall budget deficit and foreign reliance are the timely fiscal policy issues that the study would like to remind concerned bodies based on the implications of the analyses.

Measures that the study recommends to ensure a broad tax base include: creating an enabling business environment for companies to flourish thus enhance the company tax base, identifying new items/sectors to bring into the tax net such as the large informal sector and raising rates on items with low excise duty such as alcoholic beverages and cigarettes so as to increase the yield of this tax while curbing the consumption of such commodities. It will also be vital to strengthen the capacity of the revenue agencies to register more eligible tax payers. With regard to personal income tax, in a bid to broaden the base, there is the need to not only reduce fringe benefits but also allowances. The government should also come up with policies to improve coverage by capturing the informal sector workers through effective monitoring of businesses particularly private ones and ensuring every worker is registered with the tax agencies. Finally, effective tax administration is needed to advance tax compliance, boost revenue collection and avert tax evasion which is a huge issue in Kenya and South Africa.

Appendices

Appendix 3.1 Johansen cointegration results for Kenya

Series	Hypothesized number of CE(s)	Eigenvalue	Trace statistic	0.05 Critical value	Number of cointegrating equations
Total tax and GDP	None	0.2732	13.1934	12.3209	1
	At most one	0.0106	0.4268	4.1299	
Excise and GDP	None	0.2631	17.7674	12.3209	2
	At most one	0.1297	5.5559	4.1299	
VAT and GDP	None	0.2481	12.3482	12.3209	1
	At most one	0.0232	0.9416	4.1299	
Import and GDP	None	0.2652	20.3942	12.3209	2
	At most one	0.1826	8.0651	4.1299	
Income and GDP	None	0.2932	14.3563	12.3209	1
	At most one	0.0117	0.4739	4.1299	

Appendix 3.2 Johansen cointegration results for South Africa

Series	Hypothesized number of CE(s)	Eigenvalue	Trace statistic	0.05 Critical value	Number of cointegrating equations
Total tax and GDP	None	0.3694	16.5948	12.3209	1
	At most one	0.0409	1.3781	4.1299	
Excise and GDP	None	0.3466	20.8163	12.3209	1
	At most one	0.1880	6.8728	4.1299	
VAT and GDP	None	0.3041	13.3091	12.3209	1
	At most one	0.0400	1.3473	4.1299	
Import and GDP	None	0.3528	16.7134	12.3209	1
	At most one	0.0688	2.3541	4.1299	
Income and GDP	None	0.3985	21.7406	12.3209	2
	At most one	0.1397	4.9654	4.1299	

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4

The Impact of Microfinance on Household Livelihoods: Evidence from Rural Eritrea

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4.1 Introduction

The relationship between financial sector development and economic growth has been a subject of continuous debate among economists and development practitioners. An extensive body of literature both at the theoretical and empirical level indicates disagreement over the finance-growth nexus (Patrick 1966; Levine 1997; Levine 2004; Eschenbach 2004; Ang 2008; Hassan et al. 2011). Questions related to causality such that whether financial sector development causes economic growth or

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economic growth generates a need for financial sector development has been a subject for empirical investigation. Earlier papers such as Schumpeter (1911) suggest that financial intermediation played a central role in improving productivity, accelerating technical change and economic growth through its effect on the allocation of savings to their best uses.

Hassan et al. (2011) in their studies on low- and middle-income countries found a positive relationship between financial development and economic growth. A study by Fung (2009, p. 56) proved the existence of conditional convergence between financial development and economic growth. Parallel growth was observed between the financial sector and per capita income in middle- and high-income countries mutually reinforcing to each other particularly in the early stages of economic development. In their studies on a sample of 13 transition economies, Garalova and Gaffeo (2014, p. 89) found that there exists a positive long-run relationship between financial deepening and real growth and the impact becomes high when the funds are allocated to the private sector.

Earlier studies, for example, by Robinson (1952) cited in Levine (1997, p. 688) found that finance does not cause growth, but rather, it responds to demands from economic activities in the real sector. More recent studies by Greenwood et al. (2013) using cross-country data found that financial intermediation contributes to economic growth via facilitating technological progress. Similar conclusion was also reached by (Goldsmith 1969; McKinnon 1973; Shaw 1973).

Financial institutions and markets offer a number of specialised functions to enhance efficiency in the conduct of economic activity. These specialised functions include mobilising and pooling of savings, allocating capital, providing information, monitoring and exerting corporate governance as well as facilitating exchange, diversification and management of risks (King and Levine 1993; Levine 1997; Stiglitz 1998; Levine 2004). With regard to the roles and benefits of the financial sector in developing countries, McKinnon (1973) and Shaw (1973) in their seminal paper gave theoretical foundations for the widespread adoption of financial sector liberalisation and reform measures required in developing countries in the 1980s. They attributed that

financial repression in the form of interest rate ceiling, high reserve requirement and other quantitative restrictions as the major causes for the low savings, credit rationing, low investment and thus poor growth rates. The relationship between financial development and long-run growth was also elaborated in the literature on endogenous growth theory. King and Levine (1993) following the Schumpeterian endogenous growth model argued that financial institutions by making resources available, allow entrepreneurs to initiate innovative activities which enhance productivity improvement and thus stimulate economic growth.

Policymakers and researchers have been exploring ways to improve financial markets in underdeveloped countries most often with unsatisfactory results. The main reason for such an outcome is attributed to the failure of financial markets due to imperfections in information. Information asymmetry in the credit market may result in adverse selection and moral hazard (Besley 1994, p. 35; Mishkin 2004, p. 174). Besley (1994, p. 31) indicates that the credit markets in rural areas of developing countries are characterised by collateral scarcity, non-codification and non-registration of land rights and underdeveloped complementary institutions such as absence of appropriate record of credit histories of borrowers, and absence of insurance arrangements that reduce in borrowers' income and assets which all contribute to enforcement problems during non-repayment or default by borrowers.

Microfinance institutions following the Grameen Bank model have been trying to solve the problems confronting formal financial institutions by adopting an innovative approach such as group lending. Group lending has been used as a mechanism by which the problems of adverse selection and moral hazards are mitigated by reducing the cost of information imperfections (Armendáriz and Morduch 2005; Stiglitz 1990, p. 359). Microfinance has multidimensional pathways by which it affects the livelihood of households in rural areas. Microfinancial resources in the form of credit and savings can augment the meagre resources of the poor and enable them to effectively participate in production, investment and consumption activities. Credit facilities enable the poor to tap financial resources beyond their own means and take advantage of profitable investment opportunities. It allows

households to accumulate and change the composition of their assets (physical, financial, human, social and natural), increase income earning sources and empower women. To the extent that financial institutions provide households with adequate financial resources at the right time and with appropriate terms and conditions, they can enable them not only protect against risks but also take advantage of opportunities by diversifying their economic activities.

Recognising the problem of market imperfections in the formal financial sector of developing countries, microfinance was introduced in the 1970s by Nobel Peace prize winner Professor Mohammed Yonus through the establishment of Grameen Bank in Bangladesh. Since then the provision of microfinancial resources has been advocated as an effective poverty alleviation and development tool. However, there are still debates whether microfinance really reduces poverty and contributes to improvement of livelihoods as envisaged in the literature without concurrent provision of basic social and infrastructural services (Sengupta and Aubuchon 2008; Ebimobewe et al. 2012; Morduch and Haley 2002). It is against this background that this study intends to present empirical evidence on the contribution of microfinancial resources on the livelihood of the targeted beneficiaries in rural Eritrea.

4.2 Background

Eritrea is a country located in the Horn of Africa. Its economy is predominantly agrarian with an estimated 70–80% of the population being dependent on the production of crops, livestock and fisheries for income, employment and food security (World Bank 1994). The contribution of agriculture to GDP is estimated to be around 18% from 2000 to 2010 (World Bank 2013). The manufacturing sector consists mainly of light industries and its contribution in terms of employment, value added and share of GDP is small. At present, the mining sector is taking the lead in the Eritrean economy and is expected to contribute to its growth and improvements in living standards. The service sector dominates Eritrea's economy with a share of 58.9% of GDP in 2011

and estimated to be 61.4% of GDP in 2013 (World Bank 2013). Growth in this sector was largely contributed by public administration, transport, storage and communications, as well as by wholesale and retail trade, restaurants and hotels.

The contemporary Eritrean formal financial sector is largely dominated by the banking sector and can be described as small, state-owned, underdeveloped and uncompetitive by the relevant financial sector development indicators and is providing rudimentary banking services to the economy (Seghid 2001; Making Finance Work for Africa 2014; Nyend and Okumu 2014; IMF 2003). At present, the financial sector comprises a central bank, two commercial banks, one development bank and one insurance company.

As shown in Fig. 4.1, the financial sector is characterised by higher money and quasi-money to GDP ratio. The declining trend in the ratio of private sector credit to GDP as shown in the figure implies that the sector lacks financial depth and is characterised by low credit intermediation. Besides the limited credit that flows to the private sector, the majority of the Eritrean poor does not have access to the formal financial

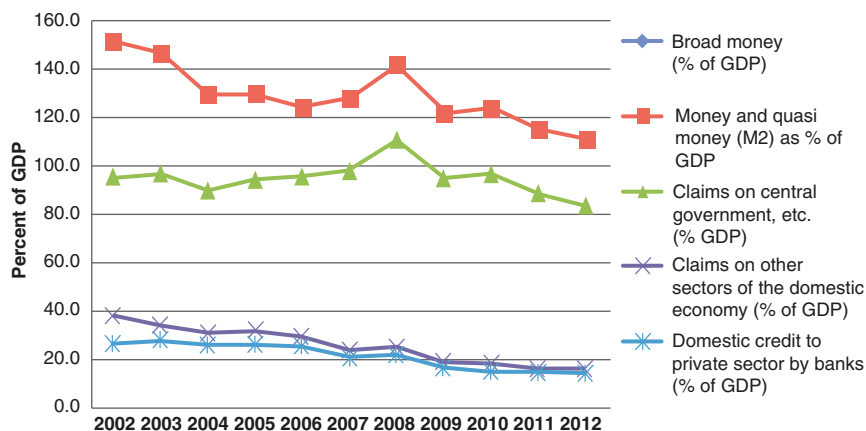


Fig. 4.1 Eritrea's selected financial development indicators

Source: World Development Indicators, World Bank

institutions for lack of collateral, documented credit history, accounting skills and financial literacy.

Since independence in 1991, the Eritrean economy has never enjoyed stability due to internal and external factors. Soon after independence, as a short-term strategy, the government formulated and prioritised immediate National Recovery and Rehabilitation Programme for Eritrea. As a long-term strategy, a Macro Policy was formulated in 1994 that lays down the building blocks for comprehensive and broad based economic and social development. Other policies such as the National Economic Policy Framework and Programme, 1998–2000; the Transitional Economic Growth and Poverty Reduction Strategy, 2001–2002; the Interim Poverty Reduction Strategy Paper, 2004; the Food Security Strategy Paper, 2004, communicate the government's long-term objectives of poverty reduction through rapid economic growth and accelerated human development. During the brief peace time of 1993–1997, the economy grew by 7.4%, inflation was kept below 5% and Eritrea had accumulated foreign reserves that cover seven months of imports (Government of Eritrea 2005).

However, the border war with Ethiopia that erupted in 1998 and ended in 2000 and the no-war-no-peace situation thereafter, has caused substantial displacement of the population, destroyed the socio-economic infrastructures in the areas affected by the war, and derailed the momentum of development witnessed during the brief peace time and aggravated the incidence of poverty. National poverty estimates by the National Statistics and Evaluation Office (2003)¹ and ERREC et al. (2003) show that when measured in terms of consumption poverty, 66% of the surveyed respondents were considered poor with substantial proportion (65%) of them were concentrated in rural areas.

The Saving and Microcredit Programme (SMCP) is the dominant microfinance institution in Eritrea. It was established in 1996 partly to fill the gap created by the inability of the formal financial sector to provide credit to low-income groups and partly to deliberately promote the private sector by encouraging the development and expansion of

¹ Data are for the most recent year available during the period specified.

micro and small enterprises and assist individuals and groups to increase their income generating ability and improve their earnings and food security. The SMCP uses group- and individual-based loan products to better serve the preferences of its customers. It employs a mix of loan products tailored to meet the needs of the target population. Currently, it offers six loan products each of which targeting various socio-economic groups of clients (Triodos Facet 2007; Saving and Microcredit Programme 2014). These are Micro Business Loan (MBL), Small Seasonal Agricultural Loan (SSAL), Oxen Loan (OL), Irrigated Agricultural Loan (IAL), Small Business Loan (SBL) and Employee Loan (EL). Three of these loan products (SSAL, OL, IAL) target the agricultural sector in rural areas. While MBL and SSAL are accessed on group basis; OL, IAL, SBL and EL are individually accessed loans.

Households participate in microfinance programmes in the expectation that borrowing will increase their income, smoothen consumption, enhance their food security, sustain self-employment, reduce the risk of vulnerability, increase savings, strengthen their asset possession and human capital formation, etc. Whether participation is in fact improving household livelihood, diversification and asset holdings in rural Eritrea has not been properly investigated and understood well. Thus far, no systematic and comprehensive study measuring the impact of the SMCP has been carried out at household level particularly in rural areas. Therefore, the present study was conducted taking this fact into account.

4.3 Methodology

4.3.1 Methodological Framework and Empirical Model

Whether a microfinance programme like the SMCP in Eritrea has beneficial impact on the livelihood of clients involves measuring the impact of the programme itself. Impact of a certain intervention is defined as the mean outcome difference between the group that has received a treatment and a group that has not (Gertler et al. 2011). The challenge of any impact evaluation methodology is to identify whether

the intervention brings the desired result and examine the level and nature of its impact on the intended beneficiaries. In doing so, the hurdle remains how to account for attribution, that is, isolating the effects of the programme or intervention from observable and unobservable factors as well as potential selection bias during the evaluation process (Khandker et al. 2010). Experimental and nonexperimental approaches to impact evaluation have their own distinct way of identifying programme impacts and accounting for selection bias.

Programmes that require ex post evaluation can be assessed using nonexperimental approach. Propensity score matching (PSM) model is one of these nonexperimental approaches which use cross-sectional data. This study applied a PSM model as it evaluates an ex post intervention based on cross-sectional survey data. The model classifies sample subjects into treated group and controlled group. Sample selection is purely dependent on observed characteristics. For every participant in the treated group, a match of nonparticipant in the controlled group will have to exist that shares comparable observable characteristics. The difference in mean outcomes between the treated and controlled group then is attributed to the programme's effect. The treated group is thus, the group of interest and the one we want to calculate the effect of the intervention programme.

The model is based on two assumptions. The first is the Conditional Independence Assumption (CIA), which says that once differences in observable characteristics (covariates) between the treated and comparison groups are controlled through regression, the difference in outcome is attributed to the effects of the programme (Bryson et al. 2002). This assumption ignores the presence of unobserved differences between the two groups which may affect outcomes. The second assumption is the Common Support Condition and requires that the propensity scores that show the probability of participation based on observed characteristics need to lie in the common support region for matching to take place. Those members of the controlled group whose propensity scores fall outside the common support would be dropped and excluded from the estimation of treatment effects.

One strength of the matching method is making explicit that a common support must exist in order for matching and subsequent

estimation of treatment effects to take place. Another advantage of PSM is that it reduces the curse of dimensionality. PSM also avoids ethical issues that are inherent in randomised control trial. Although PSM requires huge data, data generation is less costly relative to an experimental approach. Furthermore, matching methods are non-parametric indicating that no specific functional form assumption is required like for example, Ordinary Least Squares. Where there exist a credible common support, PSM enhances the comparison between treated and controlled groups, and reduces potential bias in estimating programme effects (Bryson et al. 2002, Khandker et al. 2010; Heinrich et al. 2010). However, PSM is not without limitation. The first drawback is that it is based on untestable assumption, particularly the CIA is untestable. Unlike randomised experiment, the PSM model only considers observable factors (covariates) in the process of selection and ignores unobserved variables as if they do not have any effect on selection and outcome variables. Furthermore, in the absence of sufficient overlap or common support, PSM may result in biased estimates (Bryson et al. 2002).

In this study, households who have been beneficiaries of the SMCP for more than three months were considered to be the treated group. Those households who have applied to join the programme and/or being in the programme for less than three months represented the comparison households.

Let us assume that the treatment assignment—‘D’ is a binary variable that determines if the household has received the treatment or not. Therefore,

$$D = \begin{cases} 1 - \text{if household is treated client of SMCP} \\ 0 - \text{if household is nontreated client of SMCP} \end{cases} \quad (4.1)$$

The PSM model uses a logit/probit regression to estimate the propensity scores based on observable characteristics which then determine the likelihood of the subject being assigned into the treated group. In this study, a vector of socio-economic and demographic variables as well as programme and village infrastructure-related factors that determine

the household's probability of being assigned to treated and controlled groups were included to represent the observed characteristics of the household.

The propensity score model as defined by Rosenbaum and Rubin (1983) is:

$$P(X) = Pr(D = 1|X_i) = E(D|X_i) \quad (4.2)$$

Caliendo and Kopeinig (2005) also define the propensity score as the probability of participating in a programme given observed characteristics X_i .

Once the propensity scores are estimated, matching from the pool of treated group and controlled group is made based on their propensity scores. The goal in the matching process is to find a match for each treated observation with similar characteristics from the controlled observation. After the matching, the next step is to calculate the treatment effect as follows,

$$Y = \begin{cases} Y_{i1} & \text{if } D = 1 \\ Y_{i0} & \text{if } D = 0 \end{cases} \quad (4.3)$$

Where Y_{i1} = outcome for the treated group when they receive the treatment

Y_{i0} = outcome for the controlled group when they do not receive the treatment

The true impact of a programme on a participant is given by Δi which shows the difference between Y_{i1} and Y_{i0} (Heinrich et al. 2010; Perry and Maloney 2007). It is expressed as;

$$\Delta i = Y_{i1} - Y_{i0} \quad (4.4)$$

In other words, Equation (4.4) can be rewritten to represent the true impact of an intervention.as

$$\gamma = E(Y_{i1}|D_i = 1) - E(Y_{i0}|D_i = 1) \quad (4.5)$$

However, the challenge in identifying the true impact is that a subject cannot be observed as a participant and nonparticipant at the same time

and therefore, the true impact cannot be observed. In equation 5, the true counterfactual outcome is represented by $E(Y_{i0}|D_i = 1)$. It shows the outcome of the participants had they not been participated (Dehejia and Wahba 2002; Heckman 1997). However, while $E(Y_{i1}|D_i = 1)^{E(Y_{i1}|D_i=1)}$ can be observed and measured, its true counterfactual $E(Y_{i0}|D_i = 1)$ is unobserved and cannot be measured directly since a subject cannot be observed in two mutually exclusive settings as participant and nonparticipant at the same time. Therefore, an alternative counterfactual has to be constructed through the formation of controlled group that resembles to the observed outcome of participants.

$$\gamma^* = E(Y_{i1}|D_i = 1) - E(Y_{j0}|D_j = 0) \quad (4.6)$$

Where ($i \neq j$) refer to subjects in the treatment and control groups, respectively, γ^* is an estimate of the true impact γ . Y_{i1} and Y_{j0} represent outcomes for household i and j , respectively, (Sarangi 2007; Coleman 2006). Equation (4.6) states that the difference between the average outcomes among the participants (treated group) and nonparticipants (controlled group) can be attributed to the impact of the programme.

Equation (4.6) can be rewritten as follows;

$$\begin{aligned} l\gamma^* &= E(Y_{i1}|D_i = 1) - E(Y_{j0}|D_j = 0) \\ &= E(Y_{i1}|D_i = 1) - E(Y_{i0}|D_i = 0) + [E(Y_{i0}|D_i = 1) - E(Y_{j0}|D_j = 0)] \\ &= \gamma + [E(Y_{i0}|D = 1) - E(Y_{j0}|D_j = 0)] \end{aligned} \quad (4.7)$$

where $[E(Y_{i0}|D_i = 1) - E(Y_{j0}|D_j = 0)]$ represents the selection bias.

Equation (4.7) indicates that γ and γ^* will be equal if the second term in the bracket is equal to zero which in other words means that the selection bias is zero. In the absence of the selection bias, the estimated and true impact of the programme becomes equal.

The PSM model makes use of a group average to estimate the impact of the programme (Heckman 1997). An approach widely used is the Average Treatment Effect on the Treated (ATT).²

Finally based on Heckman et al. (1998) and Dehejia and Wahba (2002), the empirical estimation of the treatment effect on the treated group is defined as:

$$ATT = \frac{1}{N_1} \sum_{i:D_i=1} \left[Y_{1,i} - \sum_{j:D_j=0} W_{ij} Y_{0,j} \right] \quad (4.8)$$

Where ATT = the average treatment effect on the treated

N_1 = the number of treated households in the sample

i = treated household i

j = untreated household j

$D_i = 1$ = household receiving the treatment

$D_j = 0$ = household not receiving the treatment

Y_1 = outcome when the household receives the treatment

Y_0 = outcome when the household do not receive the treatment

W_{ij} = weight assigned to each untreated household. The weight depends on the matching method used.

Equation (4.8) states that the outcome Y_1 on the treated household i will have a match on the comparison household j that has an outcome of Y_0 adjusted with an appropriate weight (W) and summing the difference of the outcomes between both groups and dividing by the number of treated households (N) in the sample gives the ATT group. According to Heckman et al. (1998), the weight attached to the comparison group differs depending on the type of matching estimators applied. Four matching estimators namely *nearest neighbour*, *radius*, *kernel* and *stratification* were applied to check robustness of the results.

²The ATT requires finding matches for the treated observation. The ATT is computed as the mean impact of the treatment variable on the treated.

4.3.2 Data Sources and Collection

The study uses cross-sectional survey data. In the absence of longitudinal or panel data, cross-sectional study design provides useful baseline assessment and can generate a generalisable results if the sample is based on the population. It is also easier, faster and cheaper relative to other designs. The survey was conducted from January to May 2014 in the rural areas of Gash-Barka and Debub regions in Eritrea. The household is served as a unit of analysis. The sample includes both treated and comparison households. A total of 500 households of whom 200 treated and 300 comparison households were selected through a combination of cluster and random sampling. The sampling procedure followed a two-to-three ratio of clients to no clients as applied by the Consultative Group to Assist the Poor, an independent policy and research centre dedicated to advancing financial access to the world's poor. Van de Ruit et al. (2001) also argues that the ratio of two treated households to three controlled households allows for greater diversity in the controlled households' sample and thus captures the diversity and makes matching possible. Data collection applied mainly quantitative instruments and some interviews with key informants. The questionnaire was designed in such a way to capture the necessary information on household socio-demographic variables, programme characteristics and village infrastructure related information.

4.4 Results and Discussion

4.4.1 Description of Observable Characteristics of Respondents

Table 4.1 shows the descriptive statistics of the observable characteristics (covariates) included in the propensity score model to estimate the propensity score and determine matching between the treated and controlled groups. The table reports the mean and standard deviation for the continuous variables and the distribution of the categorical and binary variables. It also reports the statistical test such as the probability

Table 4.1 Comparison of observable characteristics between treated and untreated subjects before matching

Variable	Control group (n = 300)	Treatment group (n = 200)	P-value	Standardised difference
Demographic variables				
Age (mean)	45.0 (13.92)	49.0 (13.85)	0.001***	0.297
Gender (male) (%)	41.67	51.0	0.040**	0.188
Marital Status (married) (%)	84.7	82.0	0.430	0.071
Household size (mean)	5.7 (2.33)	6.6 (2.60)	0.000***	0.364
Level of education (mean)	3.4 (3.45)	3.3 (3.08)	0.648	0.041
Socio-economic variables				
Land ownership (yes) (%)	84.0	87.0	0.335	0.085
Land size (mean)	1.4 (1.04)	1.8 (1.39)	0.005***	0.263
Ownership of irrigated land (yes) (%)	5.3	7.5	0.325	0.088
Livestock ownership (yes) (%)	80.7	77.5	0.391	0.078
Microenterprise ownership (yes) (%)	63.3	82.0	0.000***	0.427
Income source from permanent employment (%)	5.7	11.0	0.029	-0.193
Income source from temporary employment (%)	27.0	15.0	0.003***	0.283
Income source from remittance (%)	8.7	6.0	0.270	0.102
Entrepreneurial experience (mean)	6.7 (9.6)	12.4 (14.6)	0.000***	0.464
Exposure to negative events (%)	63.24	36.76	0.006***	0.250

Programme-related variables		
Loan size (First round)	14,066.67 (9,471.779)	11,150 (9,714.906)
Loan type (Group loan)	43.33	56.67
Perception of mandatory deposits (positive) (%)	93.3	86.5
Infrastructure-related variables		
Village access to electricity (yes)	71.63	28.37
Village access to roads (yes)	58.8	41.20
		0.304
		0.000***
		0.000***
		0.038**
		0.312
		0.103
		0.152

*Significant at 10%; **significant at 5%; ***significant at 1%

Source: Field survey data, 2014

value (P -value) for t -test in the case of continuous variables and Pearson Chi-squared in the case of the binary and categorical variables.

The observable characteristics (covariates) are grouped in four categories namely demographic variables, socio-economic variables, programme-related variables and infrastructure-related variables. The mean age of the sample was around 47 years and the treated households were a bit older than the comparison households and the difference was found to be statistically significant.

As far as gender (sex) of the respondents is concerned, male is taken as a reference category. Male respondents are higher in the treated group (51%) compared to the control group (41%). Gender was found to be strongly associated with participation in the SMCP as evaluated by Chi-squared P -value. The majority of the control households (84%) and those of the treated (82%) households were married. Similarly, household size for the sample was six and the treated households had bigger household size than the comparison ones and the difference is statistically significant as it appears in [Table 4.1](#). The average level of education for the treated and controlled group is 3.3 and 3.4 years of schooling, respectively, and no statistically significant difference was observed between both groups.

With regard to socio-economic characteristics, more than 80% of both groups own rain-fed land. Average land ownership ranges from 1.8 hectare for the treated group to 1.4 hectare for the control group and the mean difference between both groups is found to be statistically significant. This is not surprising given the fact that the survey was conducted in rural areas where agriculture is the primary source of livelihood. Note must also be made that land is owned by the government and thus citizens have only user right to land. Ownership of irrigated land is generally low in the study areas, although more of the treated group relative to the comparison group own irrigated land. In addition, it was found that no statistical association found between ownership of irrigated land and participation in SMCP.

The majority of the sample respondents (70–79%) own livestock and microenterprises. Microenterprise ownership was found to have strong association with participation in the SMCP. Microenterprises in a rural setting include mainly animal fattening, small retail shops, snack bars, hawking, small restaurants, traditional brewing, etc. On average, the sample respondents had nine years of entrepreneurial experience with

the treated group having more experience than the comparison ones and the mean difference was statistically significant as evaluated using *t*-test. As far as additional source of income is concerned, while more of the treated group (11%) responded that they earn income from permanent employment, more of the comparison group (27%) does so from temporary or casual employment. The association between income from permanent and casual employment with participation in the SMCP was found to be statistically significant as observed in the *P*-value of the Pearson Chi-squared. More of the control group (63%) felt that they experience/exposed to negative events such as drought compared to the treated group (37%) and the association between exposure to negative events and the treatment variable is statistically significant.

As far as factors related to the microfinance programme are concerned, group lending is selected as a reference category against individual lending. As shown in Table 4.1, the treated group dominates the control group as far as group lending is concerned. The type of loan available was also found to have strong association with household participation in the SMCP as observed from the *P*-value. The average loan size particularly the first round is higher for the control group compared to the treated ones and the mean difference is highly statistically significant using *t*-test. The SMCP authorities insist that, with the aim of instilling financial discipline and the culture of saving among clients, a certain portion of the loan needs to be deposited as part of the requirement to access micro-credit. More than 80% of the treated and comparison households evaluate the requirement for mandatory deposit as being fair.

The last column of Table 4.1 shows the absolute value of the standardised difference in observable covariates between the treated and control groups. According to Austin (2011), the standardised difference³

³ According Austin (2009), the standardised difference is defined as follows;
For continuous variables:

$$d = \frac{(\bar{X}_{treatment} - \bar{X}_{control})}{\sqrt{\frac{S^2_{treatment} + S^2_{control}}{2}}}$$

$$d = (\bar{X}_{treatment} - \bar{X}_{control}) / \sqrt{(S^2_{treatment} + S^2_{control})/2}$$

is a pooled standard deviation and compares the means of continuous variables and the distribution of the categorical or binary variables between both groups. Although there is no universal agreed threshold that indicates whether or not a serious imbalance exists in observed covariates, a standardised difference of less than 0.1 in absolute value could show a sufficient balance or comparability in the observable characteristics between both groups. In [Table 4.1](#), the standardised difference shows that significant imbalance before matching exists in those covariates such as age, gender, household size, land size, microenterprise ownership, income source from permanent and casual employment, entrepreneurial experience, exposure to negative events, loan size, loan type, perception of mandatory deposits and village access to electricity as the absolute value of standardised difference is greater than 0.1. Therefore, a balance diagnostics test has to be performed through a propensity score-matching method.

4.4.2 Covariate Balance Diagnostics

Balance diagnostics refers to check whether the distribution of the observed characteristics (covariates) is similar between the group that is exposed to a treatment and the group that does not receive the exposure. Balance diagnostics enable researchers to assess whether the propensity score model has been adequately specified. A propensity score model which is adequately specified is expected to test whether matching based on propensity scores has sufficiently removed systematic differences between the treated and untreated subjects (Austin 2009). One way to check whether the propensity score model is adequately specified and test whether it removed observed systematic differences between treated and untreated groups is through assessing the standardised differences in

For dichotomous variables:

$$d = \frac{(\hat{P}_{treatment} - \hat{P}_{control})}{\sqrt{\frac{\hat{P}_{treatment}(1 - \hat{P}_{treatment}) + \hat{P}_{control}(1 - \hat{P}_{control})}{2}}}$$

baseline covariates (observable characteristics) between the two groups before and after matching takes place (Austin 2011).

Table 4.1 shows the distribution of the observed characteristics of respondents before matching took place between the treated and untreated households. As reported in Table 4.1, significant imbalance exists in some observed variables between the treated and untreated households before matching takes place as the absolute value of standardised difference is greater than 0.1. Therefore, a balance diagnostics is performed in order to remove the systematic differences between both groups after matching as reported in Table 4.2.

In order to remove the observed systematic differences in covariates, subjects were stratified into quintiles based on their estimated propensity scores. Cochran (1968), Rosenbaum and Rubin (1984) argue that stratifying subjects into quintiles on the basis of their estimated propensity score eliminates approximately 90% of the bias due to measured confounders when estimating treatment effects. Increasing the number of strata such as into deciles also further reduces bias. As shown in Table 4.2, the standardised differences are now much smaller than before. All of them indicate a less than 0.1 standard deviation. Austin (2011) claims that 'within each propensity score stratum, treated and untreated subjects will have roughly similar values of the propensity score. Therefore, when the propensity score has been correctly specified, the distribution of measured baseline covariates will be approximately similar between treated and untreated subjects within the same stratum'.

4.4.3 Impact Estimation Using Propensity Score Matching Model

In this section, the impact of the treatment intervention (participation in the SMCP) is estimated using a PSM model. Impact assessment involves three broad variables. These are:

- **Independent variables:** The independent variables include demographic variables, socio-economic characteristics, SMCP (programme)

Table 4.2 Comparison of observable characteristics between treated and untreated subjects after matching based on propensity score

Variable	Mean in the treated group	Mean in the untreated group	Standardised difference
Demographic variables			
Age	49.37	48.88	0.035
Gender (male)	1.49	1.50	0.016
Marital Status (married)	0.82	0.82	0.003
Household size	6.62	6.54	0.031
Level of education	3.27	3.21	0.019
Socio-economic variables			
Land ownership	1.13	1.13	0.003
Land size	1.76	1.74	0.017
Ownership of irrigated land	1.93	1.93	0.032
Livestock ownership	1.23	1.22	0.005
Microenterprise ownership	1.18	1.19	0.015
Income source from permanent employment	1.89	1.89	0.012
Income source from temporary employment	1.85	1.83	0.029
Income source from remittance	1.94	1.94	0.005
Entrepreneurial experience	12.44	11.86	0.047
Exposure to negative events	1.28	1.27	0.044
Programme-related variables			
Loan size (First round)	11,150.00	11,183.91	0.004
Loan type (Group loan)	1.66	1.68	0.048
Perception of mandatory deposits	1.24	1.20	0.055
Infrastructure-related variables			
Village access to electricity	1.80	1.79	0.018
Village access to roads	1.08	1.08	0.014

variables- and village infrastructure-related characteristics as presented in [Table 4.1](#). These variables are econometrically controlled through the logit regression in order to assess the impact of the treatment variable on outcome variables. Variables that are expected to affect both participation and outcome are included in the independent variables.

- **Treatment variable:** Household participation in the SMCP is the treatment variable used to assess the impact of the programme on livelihood outcome indicators.
- **Outcome variables:** Outcome variables refer to the effects of the treatment variable after controlling for the observable explanatory variables. Six outcome variables are considered to represent livelihood outcomes due to participation in the SMCP as presented in [Table 4.4](#). These are: (1) profit generated from microenterprises; (2) food consumption expenditure; (3) non-food consumption expenditure; (4) value of livestock assets; (5) value of household assets; and (6) household voluntary savings.

4.4.3.1 Estimation of the Propensity Scores and Evaluating the Balancing Test Between Treated and Controlled Groups

The model estimates the propensity scores or the predicted probability of participating in the SMCP given observable pre-treatment characteristics of households as presented in [Table 4.1](#). As a first step, a logit regression was run to estimate the propensity scores and control the observable independent variables that could potentially affect participation and outcome. Lee (2013) argues that the balancing test is satisfied when all the relevant differences between the treated and controlled groups that affect outcome are captured and controlled in the observable explanatory variables so that potential outcomes are independent of treatment assignments. Controlling those variables through regression enables to attribute the difference in mean outcomes between the treated and controlled groups is due to the former's exposure to the treatment variable, that is, participation in the SMCP. Once the propensity scores are estimated, the next step is to check whether there exists sufficient overlap or common support in propensity scores between the two groups. The common support based on the scores tells us whether the two groups are comparable in terms of their observable characteristics and matching of outcomes is possible.

[Table 4.3](#) shows the distribution of the propensity scores. The common support region lies in the region of $[0.075, 0.994]$ and five blocks

were found to lie within the common support region. The mean propensity score was found to be 0.426 with a standard deviation of 0.232. In all the blocks, the balancing property is satisfied and this ensures that there is no significant difference between the mean propensity score for the treated and controlled observations in each block.

Table 4.3 compares the number of controlled and treated groups whose propensity scores lie in a certain range. The output in Table 4.3 shows that 35 comparison households were excluded from the matching procedure since their propensity scores lie outside the common support region. Furthermore, it appears that in each block the number of comparison households is different from the number of treated ones. This is because the procedure applies matching with replacement. According to Becker and Ichino (2002), matching with replacement allows a control observation to be used several times as a match with a treated observation.

The distribution of the propensity score for the treated and control group is displayed in histogram shown in Fig. 4.2. The propensity scores vary from 0.07 to 0.9 and the distribution of the scores for the treated and untreated groups is presented in Fig. 4.2. The red on the top shows the distribution of the propensity score for the treated group and the blue represents that of the untreated group. For the majority of the treated group (75%), the propensity score lies in the range 0.2–0.6. Whereas for almost 90% of the comparison group, the propensity score

Table 4.3 Distribution of propensity scores between treated and control groups for each block

Inferior of block of propensity scores	Treatment: Participation in SMCP		Total
	Controlled group	Treated group	
0.07	75	14	90
0.2	105	44	143
0.4	59	62	127
0.6	22	45	65
0.8	4	35	40
Total	265	200	465

Source: STATA output from filed survey data, 2014

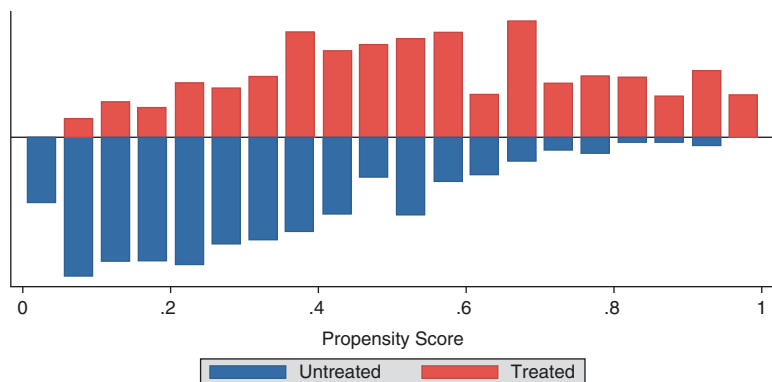


Fig. 4.2 Empirical distributions of propensity scores between treated and untreated groups

Source: Authors' calculation

falls in the range 0.07–0.4. The distribution shows that there is sufficient overlap between both groups and therefore reasonable matching can be made.

Once the necessary checks and tests of the propensity scores are confirmed and the comparison and treatment groups were proved to be in balance, the ATT, the t -statistic and bootstrapped standard errors for each of the matching estimator was computed for the selected livelihood indicators. Four matching methods were used to demonstrate the robustness of the results. The results of the different PSM methodologies on the relevant outcome indicators are reported in Table 4.4. As it appears in the table, the statistically significant values in the t -statistic offer strong evidence that the difference in livelihood outcomes between both groups did not occur by chance, but are attributable to their participation in the SMCP and the saving and microcredit programme provided thereof.

The ATT is estimated by matching treated and comparison households on the basis of their propensity scores. In all the matching algorithms, the treated households comprise 200 households. In the nearest neighbour matching, a random draw from the comparison households was made depending on the closet propensity score possible to the

Table 4.4 Estimation of ATT using propensity score matching

Outcome variable	Matching estimator	No of treated HH ¹	No of control HH	ATT ²	Bootstrapped standard error	t-statistic
Annual profit (in Nakfa)	Nearest	200	105	19,745.4	5441.9	3.628
	neighbour					
	Radius	200	265	22,380.8	4180.6	5.353
	($r = 0.1$)					
Asset value(in Nakfa)	Kernel	200	265	17,766.4	5115.0	3.473
	(bw = 0.01)					
	Stratification	200	265	17,858.3	4840.5	3.689
	Nearest	200	105	6,646.8	3314.4	2.005
	neighbour					
	Radius	200	265	6,951.0	2596.5	2.677
Livestock value (in Nakfa)	($r = 0.1$)					
	Kernel	200	265	7,979.0	2650.1	3.011
	(bw = 0.01)					
	Stratification	200	265	7,644.9	2951.5	2.590
	Nearest	200	105	47,356.0	14436.3	3.280
	neighbour					
Annual non-food expenditure (in Nakfa)	Radius	200	265	37,953.8	11042.0	3.437
	($r = 0.1$)					
	Kernel	200	265	42,001.2	12767.2	3.290
	(bw = 0.01)					
	Stratification	200	265	40,215.0	12539.0	3.207
	Nearest	200	105	18,220.6	3543.0	5.143
	neighbour					
	Radius	200	265	16,135.8	3212.2	5.023
	($r = 0.1$)					

Monthly food expenditure (in Nakfa)	Kernel ($bw = 0.01$)	200	265	16,699.8	3341.5	4.998
	Stratification	200	265	16,590.0	3150.8	5.265
	Nearest neighbour Radius ($r = 0.1$)	200	105	1,491.5	617.4	2.416
Annual saving (in Nakfa)	Kernel (0.01)	200	265	1,582.3	241.1	6.561
	Stratification	200	265	1,444.8	581.6	2.484
	Nearest neighbour Radius ($r = 0.1$)	200	105	1,107.9	587.0	1.888
	Kernel	200	265	3,093.0	1633.0	1.894
	Stratification	200	265	2,528.4	1353.3	1.868
	Nearest neighbour Radius ($r = 0.01$)	200	105	3,017.1	1257.5	2.399
	Kernel	200	265	3,157.2	1383.0	2.283
	Stratification	200	265			
	Nearest neighbour Radius ($r = 0.01$)	200	105			

¹Household;²Average treatment on the treated.Note: Official exchange rate: 1US\$ = 15 Nakfa
bw bandwidth

treated group and 105 households from the controlled group were selected for matching. This method does not impose the Common Support assumption.

In the radius matching, the caliper was imposed to be 0.1. The caliper was chosen at random but a smaller caliper is more likely to discard more of the sample units from both groups from the matching process. In the kernel matching, a bandwidth of 0.01 was imposed for estimating the kernel function and 265 control households were selected for matching based on their propensity scores. In stratification matching, five blocks or strata were formed as shown in [Table 4.3](#) with a total of 265 control households eligible for matching. The table presents quantitative outcome results based on bootstrapped standard errors.

The results of the different matching estimators suggest that participation in the SMCP brings a highly statistically significant average effect in almost all selected livelihood indicator variables for the treated households in rural Eritrea at 95% confidence interval ($t > 1.96$). The average annual profit generated from microenterprises was higher by an amount of 17,000–22,000 Nakfa (US\$1,133–1,466) across the four matching estimators. The average effect was found to be statistically significant as measured by the t -statistic. The average asset value held by the treated households was found significantly higher than the control households by an amount of 6,000–7,000 Nakfa (US\$400–466) in all the matching methods. Livestock assets owned by the treated households constitute the highest effect due to participation in SMCP across all matching methods relative to other outcome indicators. The average value of livestock for the treated households was higher than for those comparison households by an estimated amount of 37,000–47,000 Nakfa (US\$2,466–3,133) and it was highly significant. Participation in the SMCP has also proved to have a highly positive significant effect on food and non-food expenditure items. Annual expenditure on non-food items for the treated households was higher than for the nontreated ones by an amount of 16,000–18,000 Nakfa (US\$1,066–1,200) in all the matching estimators. Similarly, monthly average food expenditure was higher for the treated households by an amount of 1,000–1,500 Nakfa (US\$66–100) compared to the

control households and it was highly significant across the matching methods except in stratification matching. Annual average saving (voluntary) was also found to be higher for the treated households compared the control ones though the amount was insignificant for the nearest neighbour and radius matching methods.

4.4.3.2 Impact Outcomes on Selected Livelihood Indicators

Households that had participated in the SMCP reported to have achieved the following impact outcomes.

i. Impact on profits from microenterprises

As indicated from [Table 4.4](#), the average annual profit obtained from microenterprises was found to be significantly higher for the treated households compared to the controlled ones. One possible reason for which participation in SMCP significantly contributed to higher profits generated from off-farm and microenterprises for the treated group could be, because the borrowed funds may have been invested directly on income-generating activities or indirectly could have reduced the burden on such enterprises by smoothing household consumption. Consumption smoothing could have enabled households to avoid the sale of assets that generate future income. Not only that but it may also have enabled them to acquire assets that potentially open up opportunities for income-earning alternatives. Borrowing from SMCP could also have permitted treated clients to engage in trading activities particularly in small-scale trade that requires small funds, uses family labour, could be offered at relatively lower price and highly demanded by the local population. As argued by [FAO \(2000\)](#) and [Islam \(2009\)](#), the opportunities of investing in small off-farm microenterprises, the production effect of acquiring uninterrupted input supplies due to credit accessibility and the trade effect of microcredit could be the possible channels through which participating in the SMCP resulted in a significantly higher annual profit to the treated households compared to the untreated ones. Similar findings were obtained by ([Barnes et al. 2001](#); [De Mel et al. 2008](#); [Karlan and Zinman 2009](#); [Khandker and Samad 2013](#)).

ii. Impact on livestock and non-livestock assets

The asset possession of the treated group as measured by the value of livestock and household amenities as well as agricultural implements was found to be significantly higher than the control households as shown in Table 4.4. The finding could be corroborated by the possibility that households could have either directly used the microfinance resource to purchase household amenities and agricultural tools or indirectly the increased returns from microenterprise profit might have allowed to possess these assets. Similar findings on the effects of microfinance on household assets were documented by Adjei et al. (2009), Barnes et al. (2001) and Salia (2014). Salia (2014) found that, on aggregate, borrowers' households acquired more assets than non-borrowers on a study conducted in Tanzania.

Livestock ownership as measured by its current value was found to be significantly higher for the treated households than for the control ones across the matching methods (see Table 4.4). One possible explanation could be that borrowing from the SMCP could have enabled households to purchase new ones or add to the existing stock. Furthermore, the provision of financial resources might have contributed to the sustenance of existing livestock by purchasing forage for feed and other inputs such as animal medicine. Another possible justification may be related to the case that credit opportunities from the SMCP could have avoided the sale of livestock during the lean season by supplementing food consumption expenditure to the household. Crépon et al. (2011) in their evaluation of the impact of microcredit in rural Morocco found that access to credit has increased the stock of animals held, and sales of livestock.

In the absence of saving and insurance facilities in rural areas, microcredit may replace and serve as an insurance mechanism. The fungibility of credit gives households an intertemporal benefit by postponing the untimely and forced liquidation or sale of livestock during drought times. The SMCP offers a loan product that exclusively targets livestock. The loan fund is dedicated to the purchase of animal feed. Its objective is to avoid the stress of selling livestock at a lower price during drought where animal feed becomes excessively scarce. Islam (2009) refers to such insurance role as the timing effect of microcredit. In this case, the use of the SMCP services might have enabled rural households to become more resilient and capable of

effectively withstanding shocks without compromising their productive asset and animal stock.

iii. Impact on food and non-food consumption expenditures

Consumption expenditure is composed of spending on food and non-food items. The average consumption spending on food and non-food items for the treated households is significantly higher than for the comparison households, as shown in Table 4.4. Possible explanations for such result could be that the positive significant contribution of the treatment variable on profits and assets holdings (livestock and non-livestock) of the treated group might have contributed to the relatively higher consumption expenditure of the group itself. Consumption expenditure may have been financed from profits earned and/or from sale of assets particularly livestock assets. This is the indirect contribution of borrowing from the SMCP on consumption expenditure. Moreover, the amount borrowed may have also been directly spent on consumption. The assumption that credit is fungible, that is, it could be used for multiple purpose justifies this argument. This is consistent with findings of Hossain (2012), Khandker and Samad (2013), and Diro and Regasa (2014), who concluded that microcredit improved family consumption in Ethiopia and Bangladesh respectively.

Particularly when it comes to expenditure on food, the treated households may have used the financial resources to improve their farm productivity by purchasing seeds, fertiliser, pesticides, farming tools and other agricultural technologies that increase food production. This is the supply effect of microcredit. On the demand side, the borrowed funds may have been spent directly on purchasing food. During shocks such as drought, natural disaster, market fluctuations, livestock death or sickness, injury or death of household member (breadwinner), smoothing food consumption is accorded superior priority over accumulation of income or other assets. This is equivalent to the insurance role of microcredit (Islam 2009 and FAO 2000).

iv. Impact on household voluntary savings

Average annual saving though low in absolute terms was found to be significantly higher for the treated clients by an amount of 3,000 Nakfa (US\$200) measured using kernel and stratification methods. The

mandate of the SMCP was to extend small loans and accept voluntary savings which otherwise could not be made possible by the formal banking sector. However, the institution has not yet been able to collect voluntary savings from clients. Whether there exists the capacity to save among the client households remains an empirical question.

4.5 Conclusion

This study seeks to empirically assess and analyse the impact of microfinance on household livelihoods in rural Eritrea. The evidences confirm that the SMCP—a microfinance institution in Eritrea has significant impact on the livelihood of households in rural areas as measured by the average treatment effect on the treated group. The study was based on the assumption that credit is fungible. This means that client households might use the borrowed funds in multiple ways that best serve their interests. The significant impact found could be linked to this assumption. Microcredit enabled the treated group to diversify their livelihood strategy by engaging in non-farm microenterprises, strengthen and promote their livestock and household assets, maintain a stable consumption expenditure, improve food security as measured by average expenditure on food, manage shocks and risks, etc.

Overall, the results imply that the provision of microcredit not only improved livelihood but also introduced behavioural change and transformed the mode of living and way of thinking from pure agriculture to trade and commercial activities. Financial inclusion of rural areas through microfinance, among others, could have the potential to create opportunities and enable rural people to make the best use of their available resource such as labour, land and other local resources. It could motivate them to initiate self-employment activities, facilitate the culture of entrepreneurship and develop a sense of self-reliance and avoid dependence on aid. Improvements in rural livelihoods in turn could have the effect of reducing rural-urban migration and even reverse the trend as well as relieve the pressure in urban areas. It can also contribute to the transformation of rural areas from resource-dependent livelihoods to a diversified livelihood with a positive impact on

sustainable management of natural resources and the environment. Therefore, inclusive finance through sustainable provision of microfinancial resources in rural areas could promote inclusive development and socio-economic justice in developing countries.

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5

Reflections on Microfinance

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5.1 Introduction

In spite of the euphoric attitude among donors and policy-makers about the impact of microfinance, there is still limited understanding about the behaviour of microfinance institutions (MFIs) with respect to households and firms and the implications for inclusive finance and sustainable development. The vast body of literature, already surveyed by Morduch (1999b) and subsequently by Hartarska and Holtmann (2006) and

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Hermes and Lensink (2007), is relevant as a starting point. We build on that earlier work and consider recent research on microfinance in order to isolate some emerging theoretical and empirical issues.

The literature has established conditions under which, for instance, symmetric group loans do better than individual loans (Vigenina and Kritikos 2004; Rai and Sjöström 2004; Gangopadhyay et al. 2005; Karlan 2005; Chowdhury 2005; Bond and Rai 2008; Carpena et al. 2013; Giné et al. 2010), which group characteristics lead to higher repayment (Cassar et al. 2007; Ahlin and Townsend 2007b; Karlan 2007), or which contracts are optimal (Ahlin and Townsend 2007a; Daripa 2008; Madajewicz 2011). Through these innovative contracts, MFIs are generating high loan repayment rates in diverse environments. High repayment rates have however not translated into high profits (Cull et al. 2007).

Although these studies provide invaluable information on innovations on lending mechanisms and organization design, empirical work on the performance of MFIs over time is scarce largely because of significant data limitations. For instance, recent economic theory on joint liability contracts largely ignores the issue of microfinance profitability. Why are some MFIs more profitable in some regions than others? What general lessons can we draw from the experience of the last three decades?

Hence, this chapter reflects on key developments in microfinance and highlight the current state of knowledge as well as some promising ideas for future research.

5.2 Roots of Microfinance: What Can We Learn from History?

Although microfinance is less well developed in many emerging markets (Napier 2011), it is not a recent development. Examining the origins of microfinance offers an opportunity to explore the characteristics of organizations which were sustained over many decades (Armendáriz de Aghion and Morduch 2010).

The birth of microfinance in Europe dates back to tremendous increases in poverty in the sixteenth and seventeenth centuries. In

response, microfinance in a number of European countries evolved from informal beginnings as a type of banking with the poor. Almost from the onset, microfinance meant financial intermediation between micro-savings and micro-credit. Legal recognition, prudential regulation and mandatory supervision evolved in due course and led to a process of mainstreaming during the twentieth century when microfinance became part of the formal banking sector. Modern microfinance is a consequence of the frustrated development that resulted from subsidized rural credit in the fifties and sixties. Fälting et al. (2006) draw a parallel between the early development of the Swedish savings banks and microfinance. He demonstrates the ability to overcome information asymmetries and other risks connected to the business of banking by utilizing personal networks.

Proponents of Irish loan funds (*Kreditkassen*) attributed their origin to Dean Jonathan Swift a writer, who gave £500 in the 1720s to be on-lent to poor artisans of Dublin in loans of under £10 each (Seibel 2003). These institutions used peer monitoring to enforce repayments, in weekly instalments, of initially interest-free loans, from donated resources. Their structure enabled them to mitigate informational asymmetry allowing sufficient flexibility for the survival of the institutions even during the great famine (Hollis and Sweetman 2001). In a model of competing institutions and in the absence of formal credit records or physical collateral, their comparative advantage was in harnessing local information to do business. To curtail the rampant growth of the Community-Based Institutions (CBIs), commercial banks used their clout to halt the growth of the loan funds: through financial repression by prevailing upon the government to put a cap on interest rates in 1843 (Hollis and Sweetman 2001). The loan funds thus lost their competitive advantage, which caused their gradual decline during the second half of the nineteenth century, until they finally disappeared in the 50s. Their decline is a clear demonstration that the market in which they dominated was transitory, and they were unable to adapt.

Microfinance in Germany has three informal origins: Community-Based Savings Funds; and two movements of Savings and Credit Cooperatives; one which was rural and the other urban (Prinz 2002). Drawing from the lessons of early Irish CBIs, the first thrift society was established in Hamburg in 1778 and the first communal savings fund

(*Sparkasse*) in 1801. As the movement spread, the Prussian state responded with regulation, passing the first Prussian Savings Banks Decree in 1838 (Guinnane 2001; Seibel 2003).

Were there mechanisms in place to ensure stable members' savings over time in these rural settings? Prinz (2002) emphasizes the importance of personal relations and trust building among the villagers to the extent that even with the onset of competition at the turn of the century, cooperatives continued to enjoy stable levels of savings. Cooperatives devised a series of regional banks and auditing associations to which most cooperatives belonged. By 1910, the cooperatives grew to serve 2.5 million people accounting for 9% of the German banking market (Guinnane 2002) and by 1914, the number of rural cooperatives had increased to more than 15,000 and spread to northern Italy and many other countries (Guinnane 2001; Hollis and Sweetman 1998). Here, Seibel (2003) and Guinnane (2002) show how financial history shaped the need for appropriate legal frameworks in order to support the development of pro-poor financial systems.

Credit cooperatives were introduced into Ireland in 1894, modelled on the very successful credit cooperatives of rural Germany. They were however never successful in Ireland (Guinnane 2001; Banerjee et al. 1994). The Irish credit cooperatives never attracted as members the more prosperous locals who provided crucial monitoring and expertise in Germany. The Irish cooperative movement was also never able to develop the strong central auditing federations that supervised and certified German credit unions. This episode illustrates the difficulty of transplanting institutions from one social and economic context to another; the mechanism will not work everywhere. Attempts to replicate the Grameen Bank in the United States illustrate a perverse aspect of the success of joint-liability lending in developing countries. Indeed, Mullineux and Murinde (2014) point out that experiments with rural-cooperative-based banking in Africa have often been less successful than elsewhere.

Hence, CBIs and credit cooperatives were precursors to modern microfinance institutions. The variation in design and participation across settings presents an interesting case of endogenous institutional design and raises the question of how savings and credit products ought to be customized in different contexts.

5.3 Outreach

Self-selection into microfinance programs implies that carrying out rigorous impact studies between clients and non-clients is quite challenging. It is difficult to assume that the treatment and control groups are similar at the start of a microcredit program. Those who choose to borrow are different from those who chose not to borrow or are denied credit. Borrowers and non-borrowers may differ based on observable characteristics including health, education and pre-loan income. They may also differ on unobservable characteristics such as entrepreneurial skills. Failure to account for these characteristics could lead to overestimating or underestimating the impact of the loan (Tedeschi and Karlan 2010; Bauchet and Morduch 2010).

A vast amount of studies have been undertaken with the aim of establishing whether households who access microcredit have larger incomes, higher standards of living, more diversified income sources, as a direct result of the loans that they receive (Tedeschi 2008). Although studies have shown microfinance is an effective tool for development and poverty alleviation, the impact of microfinance initiatives remain highly contestable (Hulme 2005; Thorp et al. 2005). Critics of microfinance argue that it is displacing more effective anti-poverty measures or even contributing to over-borrowing and greater long-term poverty (Banerjee et al. 2015). Westover (2008) reviews empirical literature on the impact of microfinance and finds over 100 studies in the EBSCO data host. Of these studies, only six can be classified as rigorous, while the remainder are qualitative and/or case studies.

So far, Randomized Controlled Trials (RCT) have proved to be the best way to measure impact of microfinance programs and improve microfinance product designs (Karlan and Zinman 2009). The evidence from randomized experiments appears to be mixed where some results seem to suggest that effects are stronger for groups that are not targeted by MFIs. The most rigorous RCT on microfinance to date (Banerjee et al. 2015; Kaboski and Townsend 2011; Dupas and Robinson 2013; Karlan and Zinman 2010) have

found modest positive effects on business investment and outcomes but no impact (positive or negative) on broader measures of poverty and that include measures of health, education. These studies were however short-term and thus less likely to detect slower-to-develop impacts such as on poverty and health. Using randomized experiment to measure returns to capital for small businesses, de Mel et al. (2008) had earlier showed that the enterprises generated returns to capital ranging from 4.6 to 5.3% per month, or about 60% per year, depending on the estimation technique. These figures are well above the 16–24% market interest rates charged by banks and microfinance institutions.

Karlan and Morduch (2010) and Karlan and Valdivia (2011) show that the evidence so far indicates that finance interventions alone may not be as powerful as ‘finance coupled with other interventions such as training and healthcare’. A small but growing number of studies that integrate microfinance with other non-financial services seem to support the argument that MFI financial services have positive impacts beyond the direct financial benefit, such as integrating microfinance services with health (Leatherman et al. 2011; Hamid et al. 2011; Mohindra et al. 2008), health micro insurance (Rai and Ravi 2011), educational outcomes of clients’ children (Holland and Wang 2011; Shimamura and Lastarria-Cornhiel 2010), energy-microfinance intervention (Rao et al. 2009), micro lending for housing (Giusti and Estevez 2011) and nutritional status of children (Dunford and McNelly 2002).

Contrary to recent micro-evidence based on randomized evaluations pointing to no or weak effect on poverty, Menkhoff and Rungruxsirivorn (2011) use cross-sectional approach and finds that to a limited degree, village funds reach the target group of lower-income households better than formal financial institutions and provide loans to customers of informal financial institutions while at the same time, reduce credit constraints. Thus, village funds provide services in the intended direction.

Literature on intra-household bargaining finds that providing the female more power in the household in terms of an increase in female share of income, leads to an allocation of resources that reflect better preferences of the woman (Ashraf et al. 2010). This should lead to

greater investment in housing, education and better nutrition for children. Additionally, literature on household savings, and on informal savings devices has in particular emphasized motivations for a savings commitment device that could benefit those with spousal control issues (Anderson and Baland 2002; Gugerty 2007). Van Tassel (2004) posits that a key motivation behind borrowing capital for a woman is to raise her threat point in the household bargaining process, and this can sometimes lead to a decline in her husband's expected payoff. He also argues that in some circumstances, it is in the woman's personal interest to transfer control over her loan to her household partner. Whether these assertions are true or not, remains an empirical question.

Although Fletschner (2009) shows that compared to men, women are more likely to be credit constrained and that husbands may choose not to intermediate capital to their wives even when they are able to do so; it is not clear in theory that transfers of income alone to women can improve their status in the household. Johnson (2005) for instance shows that static evaluations of the impact on empowerment, whether by outsiders or the participants themselves, distract from the dynamics of the circumstances women face. Marginal increases in income given to women may be bargained over in the same way as the existing income, and are therefore not guaranteed to lead to gains in bargaining power. But Rai and Ravi (2011) shows that women who do not borrow are disempowered relative to those who do.

5.4 Microfinance Mechanism

MFIs employ a diversity of approaches. The existing literature on microfinance focuses almost entirely on group lending, while hardly paying attention to other approaches. Joint liability is not the only mechanism that differentiates microfinance contract from standard loan contracts (Jain and Mansuri 2003; Tedeschi 2006; Chowdhury 2005, 2007; Bond and Rai 2008). There is a wide degree of combination among the MFIs that use dynamic incentives, collateral substitutes and regular repayment schedules to ensure high repayments. Wydick et al. (2011), for example, use an innovative approach by looking into

the role played by social networks in determining access to microfinance loans. Their empirical analysis shows that a household's access to credit is closely related to membership of a church network. Therefore, identifying the role of each component is important in determining where the largest payoff to innovation lies.

One question here is: *Why are repayment rates of group-based organizations so good?*

Literature on joint liability builds on contract theory literature from the early 1990s that include, but are not limited to Holmström and Milgrom (1990), Varian (1990) and Arnott and Stiglitz (1991). This strand postulates when a principal should contract with a group of agents and which would encourage side-contracts between them as opposed to contracting individually with each agent. In this section, outline three main theoretical strands of literature on asymmetric information facing MFIs in their attempts to lend efficiently.

In an ideal world, projects undertaken by both risky and safe borrowers should be financed which renders the outcome as inefficient (Armendáriz de Aghion and Morduch 2004). Theoretical literature motivates collateral as a mechanism that mitigates adverse selection (Berger et al. 2011). But by easing collateral requirements, MFIs are able to reach the poor or groups who need to harness resources to finance small-scale investments. Although Berger et al. (2011) find that observably riskier borrowers are more likely to pledge collateral, adverse selection occurs because only borrowers know whether their project is of high or low quality while the MFIs do not. The problem emanates from the fact that MFI is unable to distinguish between inherently risky and safe borrowers in its pool of loan applicants; if it could, it would charge a high interest rate to the risky borrower and a lower one to the safe borrower. Using a game theoretic model to analyse a market for microfinance where all projects are either of high or low quality, Amitrajeet and Beladi (2010) show that a credible signalling device such as self-financing can be used to mitigate adverse selection related problems that routinely plague interactions between poor borrowers in developing countries and MFIs. Their study however derives a model with only two types of business projects and no allowance is made for repeated interactions between borrowers and MFIs. Gangopadhyay and

Lensink (2009) build on previous work on joint liability borrowing to show how contracts can mitigate adverse selection. Ghatak (2000) and Armendáriz de Aghion and Gollier (2000) argue that allowing borrowers to voluntarily form their own groups helps micro-lenders overcome an adverse selection. It is argued that group lending can solve adverse selection problem by taking advantage of information that the locals have of each other's type and which is unavailable to the lender, by sorting themselves into high- and low-risk groups. This assortative matching can only occur if the borrowers form themselves into groups, rather than being assembled by the MFIs.

Guttman (2008), Chowdhury (2007), Laffont (2003) and Laffont and N'Guessan (2000) however differ from these previous studies. Laffont and N'Guessan (2000), for example, obtain assortative matching only when side payments are not allowed between agents. Therefore, self-sorting is not robust to collusive behaviour when transfers are allowed between colluding partners, contrary to Ghatak (1999, 2000) and Van Tassel (1999) who obtains assortative matching even when side-payments are allowed. Guttman (2008) contrasts these previous studies by contending that positive assortative matching may not hold if earlier models are extended to incorporate dynamic incentives. This theoretical postulation is an extension of Chowdhury (2007) who identifies conditions under which such a static approach may or may not generate the correct results particularly regarding the nature of group formation and establish that, for the appropriate parameter configurations, there is homogenous group-formation so that the lender can ascertain the identity of a group without lending to all its members, thus screening out bad borrowers partially. His analysis identifies conditions under which the traditional Ghatak (1999, 2000) and Van Tassel (1999) results may or may not go through in a dynamic framework; sequential financing is essential since, in its absence, borrowers may collude among themselves.

Gangopadhyay et al. (2005) show that the joint liability lending contracts derived in Ghatak (2000) violate an *ex post* incentive—compatibility constraint that the amount of joint liability cannot exceed that of individual liability. They conclude that by harnessing local information, joint liability lending can improve efficiency compared to standard debt contracts in the presence of asymmetric information about

borrower types. However, a competing argument advanced by Daripa (2008) shows that it is possible to implement a mechanism using a simple budget-balanced transfer based on the transfer prices participation in investment and which separates investors and non-investors. Along the same vein, Bhole and Ogden (2010) shows that if, the amount that a successful borrower owes for his defaulting partner is optimally determined, and the penalty is allowed to vary across group members, then even in the absence of any social sanctions or cross-reporting, expected borrower welfare is strictly higher with group lending. Group lending is feasible for a greater range of opportunity cost of capital.

What happens when monitoring costs in which all types are necessarily pooled under individual lending? Eijkel et al. (2011) show that monitoring efforts differ between group members due to free-riding and that a group leader supplies more monitoring effort than in the benchmark case. Daripa (2008) constructs a simple budget balanced mechanism which does not rely on peer information or monitoring, but eliminates the inefficiency by pricing the participation of the lower types in investment through a transfer from higher types to lower types. Following Chowdhury (2005), he derives a two-stage game and solves Nash equilibrium. He emphasizes on the need for local credit organization and concludes that it is possible to construct a mechanism that implements the efficient outcome even if each borrower knows only his own type and effort, and peer monitoring is not possible. Consistent with Armendáriz de Aghion and Morduch (2010); Chowdhury (2005, 2007); Daripa (2008) show that such partial monitoring extends the scope of the mechanism as long as the cost of monitoring is not too high.

When would we expect co-signed loans to be used instead of group loans? Bond and Rai (2008) builds on Besley and Coate's (1995) model to demonstrate how socially sanctioned punishments can be used to enforce repayment. They show that if one of the individuals does not have an investment opportunity, then there would be no point in lending to both and so co-signed loans is the best option.

In terms of dynamic incentives, although first attributed to Besley and Coate (1995), ensuring repayment incentives through refinancing is also modelled in the context of microfinance by theorists including

Khandker (2005), Hulme and Mosley (1996), Ray (1998), Morduch (1999b), Ghatak (1999, 2000), Van Tassel (1999) and Armendáriz de Aghion and Morduch (2010), who using a two-period model, show that repayment of the first loan is induced with the promise of a second loan but in these two-period models, the borrower always defaults on the second loan.

In terms of repayment schedules, even though theory suggests that a more flexible repayment schedule would potentially improve repayment capacity, microfinance practitioners on the other hand argue that the fiscal discipline imposed by this tightly structured or frequent repayment is vital in preventing loan default (Jain 1999; Morduch 1999b; Jain and Mansuri 2003; Armendáriz de Aghion and Morduch 2010).

What sustains instalment loan repayment structure? One argument advanced by Jain and Mansuri (2003) is the existence of the informal credit market. The instalment repayment plan allows the MFI to make use of the superior monitoring capability of the informal lender in constraining strategic behaviour by the borrower. Armendáriz de Aghion and Morduch (2010) similarly argue that frequent repayment schedules help borrowers who have difficulty in holding on to income, by taking the money out of the house soon after it is earned. On the contrary Jain and Mansuri (2003) and Morduch (1999b) show that although group meetings help in eliciting information on problematic borrowers or projects from their group members, there are transactions costs of making the repayments at weekly meetings of the members at each collection point. Additionally, the optimal lending contract must provide additional repayment incentives to counter borrower run (Bond and Rai 2008).

Another core question is: *Joint versus individual liability*? The basic empirical question of the relative merits of group versus individual liability has remained unanswered for many reasons of endogeneity. Thus, research on group versus individual liability lending has not provided researchers, policymakers and institutions the evidence needed to determine the relative merits of the two methodologies. Abeysekera et al. (2015), for example, develop a conceptual model that identifies the factors that facilitate co-production between Counsellors and Owner

Managers. They also identify co-production outcomes relating to medium and small enterprises and MFIs concerned in which microfinance policy makers can use to formulate strategies that offer many benefits to both MFIs and owner managers.

Recent approach to overcome endogeneity problem is to employ field experiments. This has the advantage of allowing for many contract structures to be tested all at once, in the same setting. Feigenberg et al. (2013) provide the first experimental evidence on the economic returns to social interaction in the context of microfinance. They find that group lending is successful in achieving low rates of default without collateral not only because it harnesses existing social capital, as has been emphasized in the literature, but also because it builds new social capital among participants. Their findings are consistent with Giné et al. (2010), Cassar et al. (2007) and Abbink et al. (2006). Berhane et al. (2009) show that successful repayment rates in group lending need not arise only under risk homogeneity but can also arise under risk heterogeneity. On the contrary, Pellegrina (2011) shows that joint liability contract may be less conducive to building up fixed assets due to lending mechanisms such as short regular repayment schedules. These lending mechanisms may push borrowers more toward investments in projects with short-term revenues.

Does joint-liability improve repayment relative to individual debt contract? Vigenina and Kritikos (2004) analyse incentive mechanism of individual micro-lending contracts relative to joint-liability loan contracts and estimate both an ordered Logit model and Tobit model of borrowers' repayment performance. They find that in the individual contract there are three elements; the demand for non-conventional collateral, a screening procedure which combines new with traditional elements, and dynamic incentives, which ensure high repayment rates of up to 100%.

Hence, some questions remain unresolved. For example, does group lending lead to excessive monitoring and pressure to undertake safe projects? Put differently, what happens when monitoring costs rise so fast making the borrowers' reach their participation constraint and decide against joining a peer group? How does this affect group size and the choice of monitoring structures? Are successes or failures of peer monitoring in any way related to the distribution of risk

among participant borrowers, to the size of the peer group, or to the structure of monitoring?

5.5 Competition in Microfinance

Literature on microfinance competition is quite recent. Our starting point is the seminal work by Petersen and Rajan (1995) which alludes that small business loan creditors in the United States are less likely to provide loans to credit-constrained firms in more competitive markets because creditors find it harder to internalize the benefits of assisting firms. Arguably, competition weakens the long-term relationship between a lender and his clients, thus reducing the lender's incentives to provide insurance in response to shocks. To reinforce this argument, Villas-Boas and Schmidt-Mohr (1999) and Navajas et al. (2003) predict that creditors may screen credit applicants more intensively in competitive markets and most will go after the most profitable customers.

Turning to the effect of competition on repayment rates, Marquez (2002) observes that competition lowers the screening ability of the incumbent bank, thus increasing the share of low quality borrowers among clients. Both circumstances lead to lower repayment rates. Hoff and Stiglitz (1998), Kranton and Swamy (1999), Van Tassel (2002) and McIntosh and Wydick (2005) have each examined theoretically how competition between unregulated lenders might lead to possible adverse effects on borrower welfare, while Hoff and Stiglitz (1998) show that dynamic incentives are weakened by new market entrants.

In terms of impact on client behaviour, McIntosh and Wydick (2005) show that when competition eliminates rents on profitable borrowers, it is likely to yield a new equilibrium in which poor borrowers are worse off. But collusive behaviour between client-maximizing MFIs can result in the maximum number of borrowers reached by MFIs, and the most evenly distributed benefits among borrowers. Navajas et al. (2003) apply a variant of Conning's (1999) model to lenders in Bolivia. While their study examines the client sorting process that may take place under competition, it

additionally models interactions between lenders in terms of strategic behaviour and multiple contracting by borrowers when more than one lender exists in the market. One of the limitations of Navajas et al. (2003) model is that competition is likely to have spurred lending technologies to be improved and lending costs lowered, an effect that is likely important in practice but is not captured in their model.

Although our theoretical analysis shows negative impact of competition on breadth of outreach, the few empirical results are controversial. For example, Hisako (2009) shows that MFIs cope with the negative impact of competition not by reducing financial outcomes but outreach. They also show that the more experience MFIs have, the less wide outreach is reduced by competition. It is plausible that the older MFIs take advantage of market power and technological progress and therefore become less vulnerable to the changing competitive environments. McIntosh et al. (2005) and McIntosh (2008) show that competition does not have a significant impact on the breadth of outreach. Previously, Olivares-Polanco (2005) used cross-sectional data of 28 MFIs in Latin America and demonstrated that competition affects outreach adversely.

On interest rates and credit rationing, the question is: Does competition result in lower interest rates to microcredit customers? Despite the assumed logic that interest rates on micro loans would fall with increased microfinance competition, rates have remained high (Armendáriz de Aghion and Morduch 2010). Indeed, Porteous (2006) observes that, in some countries where microfinance is considered competitive, interest rates on microloans have remained stubbornly high. For example, in Bangladesh, annual effective interest rates on loans have averaged 29% for many years, despite competition among hundreds of MFIs. McIntosh and Wydick (2005), observes that price competition in microfinance generally follows other competitive strategies than the accepted model of market development.

Does competition alter MFIs lending preferences? Park et al. (2003) test whether competition affects the effort and lending decisions of the incumbent, the effects of competition on deposit growth, loan portfolio composition, repayment rates and other effort

measures. They find positive effects of competition on effort and financial performance.

Overall, the literature surveyed above leads us to the following research questions. Has the level of competition amongst micro lenders become excessive? Are the rising arrears the natural consequence of creditors being forced by competition and market saturation to recruit more marginal and risky groups or due to changes of behaviour of existing clienteles? How are borrowers in different target groups being differentially affected? How does competition affect non-profits behaviour and does it cause non-profits to become more commercial in orientation? Does competition alter organizational structures? Does it cause non-profits to become less focused on their charitable missions? To what extent does it lead to commercialization of non-profits activities? Does competition result in lower interest rates to microcredit customers as postulated by McIntosh and Wydick (2005) or is the Uganda case unique? Does competition lead to larger loan sizes and less depth of outreach? Some theorists have argued that excessive competition amongst lenders may be weakening borrower discipline and raising arrears. What form of equilibrium market structures emerge?

5.6 Microfinance Performance

A large number of microfinance programs still depend directly or indirectly on donor subsidies to meet the high lending costs (Morduch 1999a, 1999b; Schreiner 2002, 2003; Hardy et al. 2003; Khalily 2004; Armendáriz de Aghion and Morduch 2010). Non-Governmental Organisations (NGOs) type of MFIs tends to receive more subsidies (Cull et al. 2009). In recent years, donors and policymakers have increasingly utilized Sustainability Dependent Index (SDI). Although calculations based on SDI to determine financial sustainability is useful, it nevertheless has some drawbacks. First, it assumes that a rise in lending rates automatically translates to higher profitability. This, however, need not be the case since higher lending rates could lead to lower profits due to adverse selection and moral hazard effects (Morduch 1999a;

Cull et al. 2007). SDIs do not indicate to what extent subsidies are justified. Measuring the impact of subsidies is strongly limited by data availability while the methodology adopted for computing subsidies differs across MFIs.

In terms of *sustainability*, *self-sufficiency* is seen as an appropriate mechanism for achieving the long-term viability of the microfinance sector. Only 5% of all MFIs are currently operationally sustainable (Hudon and Traca 2011). First, available resources and subsidies are too small to provide microfinance to all who might benefit from it. Second, a focus on self-sufficiency can lead to decreased costs through increased efficiency (Morduch 1999a). Armendáriz de Aghion and Morduch (2010) argues that sustainability does not imply profitability and similarly profitability neither guarantees access to commercial finance, nor does lack of profitability foreclose such access. The importance of being financially self-sufficient can best be illustrated by referring to pioneer institutions. Hollis and Sweetman (1998) for example compare six micro credit organizations of nineteenth-century Europe, to identify institutional designs that were prerequisites to financial sustainability. They established that organizations that relied on charitable funding were more fragile and tended to lose their focus more quickly than those that obtained funds from depositors. Empirical evidence on sustainability include Cull et al. (2007) who examine outreach financial sustainability trade off and Ahlin et al. (2011) who examines the impact of macroeconomic context on MFI operational self-sustainability. While Ahlin et al. (2011) show that environmental context matters for MFI operational sustainability, Cull et al. (2007) conclude that MFIs can expand outreach while at the same time remaining financially sustainable. Both studies nevertheless fail to control for endogeneity.

What about subsidies? In order to increase breadth and depth of outreach, socially-motivated MFIs take advantage of external subsidies and cross-subsidies. Cross-subsidy is the use of gains from profitable borrowers to subsidize loans to unprofitable borrowers (McIntosh and Wydick 2005). The poor tend to have higher default rates since they are more susceptible to external shocks. On the other hand, the wealthy generally take larger loans, which is more profitable for MFIs through scale economies. Therefore, socially motivated MFIs use the gains from

wealthier borrowers to subsidize loans to poorer borrowers. Thus, cross-subsidies and external subsidies from donors enable socially motivated MFIs to lend to unprofitable poorer borrowers, thereby increasing their wide outreach.

But, do *subsidies lower the cost of capital*? Conventional wisdom suggests that a fall in the cost of funds to any group in a money market should lower the cost of credit to all through general equilibrium effects. If raising interest rates implies losing clients or decreasing social impacts, subsidies may be justifiable, provided social benefits are commensurate and institutional efficiency can be maintained (Armendáriz de Aghion and Morduch 2010). We lack enough information, particularly across different countries and settings, to predict confidently what will happen to access to credit if interest rate caps are put in place.

Does raising interest rates exacerbate agency problems as reflected by lower loan repayment rates and less profitability? The seminal contribution in this strand of literature is due to Stiglitz and Weiss (1981); more recent contributions by Cull et al. (2007) test the Stiglitz and Weiss hypothesis to the effect that raising interest rates undermines portfolio quality due to adverse selection and moral hazard. Their findings attest to the possibility of raising interest rates without undermining repayment rates thus achieving both profit and substantial outreach to poorer populations, while staying true to initial social missions even when aggressively pursuing commercial goals. However, raising interest rates to very high levels does not ensure greater profitability.

Subsidies may help MFIs push towards their ‘double bottom line’ of social and financial results (Copestake 2007). If MFIs are forced by competition to lower their costs and prices or increase their loan size, subsidies may therefore be a way to avoid mission drift. Some donors may however favour equity investments in shareholders firms when, for example, they aim at attracting new private investors (Mersland 2009). However, sound evaluations pose difficult statistical issues and many evaluations stress the banking side (Schreiner 2002, 2003; Morduch 1999b).

Makame and Murinde (2007) investigate the effectiveness of micro-finance subsidies using Grameen Bank between 1983 and 2004. They

utilize Subsidy Dependence Index Subsidy Dependence Ratio and Subsidy per Member. Their findings indicate that the bank's efficiency has been continuously improving, suggesting that there is no mission drift owing to effective utilization of subsidies.

In terms of *costs and benefits of subsidies*, using microfinance ratings data from two leading rating agencies, Hudon and Traca (2011) find evidence for a positive relationship between the subsidy intensity and the efficiency of MFIs. They nevertheless show that there is a threshold effect, meaning that if the subsidy intensity goes beyond a certain level, efficiency is compromised. Thus subsidizing MFIs may impact positively on MFI efficiency, but only up to a certain maximum level. Caudill et al. (2009) find that lower total subsidies and lower subsidy per loan are associated with higher cost reduction over time. Similarly, Hudon (2010) finds that subsidies have little impact on the quality of management.

While it might be that a dollar used to subsidize an existing microfinance program helps poor households more than other uses, it might also be that the microfinance program would ultimately help more people if it was not subsidized. Referring to his earlier study Khandker (2005) contends that if subsidies are unchanged, it is no longer true that it costs society 91 cents for every dollar of benefit to clients. Instead, 91 cents only buys 58 cents of benefit (Armendáriz de Aghion and Morduch 2010). Simple cost benefit analysis fails to capture dynamics of subsidies and fail to provide insight about all of the relevant issues.

Pursuit of commercialization has been a contestable debate. Hoque et al. (2011) employ Tobit and two-stage least-squares regression panel data regressions for six-year period 2003–2008. Their results indicate that leverage decreases the relative level of outreach to the very poor. Additionally, increased use of commercial debt and equity financing lowers productivity for client-maximizing MFIs through lower conversion of savers to borrowers or the yield rate. The implications of their results are that mission drift experienced by MFIs due to commercialization is a wrong turn for the industry. Biekpe and Kiweu (2009) explore the possibility of a linkage between microfinance and capital markets and conclude that the three most

important considerations for lending evaluation are transparency in financial reporting, sound financial management and previous history of borrowing. Cull et al. (2009) and Guérin et al. (2012) show that profit-maximizing investors would have limited interest in most of the institutions that are focusing on social mission. They conclude that these institutions charge their customers the highest fees but also face particularly high transaction costs, in part due to small transaction sizes. Galema and Lensink (2009), finds that MFIs that employ standard individual loans contracts mainly provide financial benefits, while those focusing on group loans provide more social benefits to investors. When they exclude Africa and South Asia, they find that MFIs that offer group loans also offer financial benefits. On the contrary, Montgomery and Weiss (2011) findings suggest that commercially-oriented MFIs and the millennium development goals are not incompatible, given a supportive environment. Additionally Cull and Spreng (2011) shows that the profitability of National Microfinance Bank in Tanzania has improved after the privatization of a large state-owned bank and lending has slowly grown, while the share of non-performing loans remains low. Liverpool-Tasie and Winter-Nelson (2010) similarly shows that microfinance has positive effects on both consumption and asset growth as well as on the use of improved technology. Clearly the debate remains inconclusive, which calls for rigorous empirical studies.

What about the *sustainability-outreach trade off debate so far*? Most MFIs aim at achieving twin goals. One aim is to contribute to development which involves reaching more clients and the extreme poor population strata which so far remains the main outreach frontier of microfinance (Johnson et al. 2006; Helms 2006). The second goal is to increase outreach in a way that simultaneously achieves financial sustainability. From a policy perspective it is imperative to ascertain whether there is a trade-off between sustainability and outreach. Arguably financial sustainability paradigm is built on the premise of being able to cover the cost of lending money out of the income generated from the outstanding loan portfolio and to reduce these costs as much as possible through increased efficiency and which subsequently leads to higher profitability (Morduch 1999a). But on the

contrary financial sustainability remains an unresolved problem (Khalily 2004) and a large number of MFIs depend directly or indirectly on donor subsidies (Hardy et al. 2003; Armendáriz de Aghion and Morduch 2010).

Empirical evidence adduced so far shows mixed results (for a review see Hermes and Lensink 2011). Ngo et al. (2014) investigate the link between scale of operation, sustainability and efficiency of MFIs. They conclude that large MFIs can achieve higher efficiency, profitability, sustainability and outreach (breadth and depth). They, however, find no evidence of trade-off between the breadth of outreach and efficiency and larger loan sizes are associated with higher loan costs. Thus, MFIs need to choose an optimal scale to realize higher efficiency and profitability from economies of scale. Using data for 435 MFI for the period 1997–2007, Hermes et al. (2011) provide new evidence on the existence of the trade-off between sustainability and outreach. They find strong evidence that outreach is negatively related to efficiency of MFIs. Consistent with this finding, McKillop et al. (2011) show that higher outreach aimed at addressing financial inclusion goals, may nevertheless lead to rising bad debts and loan arrears. Mersland and Strøm (2010) and Mersland and Strøm (2009), conclude that an increase in average profit and average cost tends to increase average loan and other drift measures. Cull et al. (2007) and Olivares-Polanco (2005) findings are consistent with earlier studies, which though had used less rigorous techniques and/or smaller datasets, confirms the existence of a trade-off between sustainability and outreach. In sharp contrast, Makame and Murinde (2007) find strong evidence that both outreach and sustainability can be simultaneously achieved by efficient MFIs. Clearly this issue remains inconclusive.

Although there is a vast literature evaluating MFI success and failure, studies on microfinance profitability are scant. Much of the applied economics literature in this area addresses the social worth of MFIs (see for instance Navajas et al. 2003; Navajas et al. 2000; Bruett 2005), measuring the impact of village-level microfinance institutions (Kaboski and Townsend 2011), the impact of microcredit on the poor (Roodman and Morduch 2014; Mohindra et al. 2008), costs and benefits of subsidies (Armendáriz de Aghion and Morduch 2010),

correlations for MFIs and commercial banks (Krauss and Walter 2009), microfinance and mission drift (Armendáriz de Aghion and Szafarz 2011; Hishigsuren 2007; Copestake 2007), impact analysis (Hartarska and Nadolnyak 2008b), efficiency of MFIs (Gutiérrez-Nieto et al. 2007), competition between MFIs and traditional banks (Cull et al. 2014), women and repayment in microfinance (D'Espallier et al. 2011), microfinance commercialization (Galema and Lensink 2009), microfinance plus (Lensink and Mersland 2009), which microfinance institutions are becoming more cost-effective with time (Caudill et al. 2009), and social efficiency in microfinance institutions (Gutiérrez-Nieto et al. 2007).

There are also other relevant studies but whose main focus is on firm level specifics such as management techniques, organizational structure and contract design. These include Kyereboah-Coleman and Osei (2008) on the role of governance on outreach and profitability of microfinance institutions; Mersland and Strøm (2009), Arun and Annim (2010) on MFI performance and governance; Hartarska (2009), on the impact of outside control in MFI performance; Hartarska (2005) on the relation between managers' experience and compensation schemes on MFI-performance; Mersland and Strøm (2008) on MFI ownership structure and performance; Cull et al. (2007), Mersland and Strøm (2010), Makame and Murinde (2007) on determinants of MFI outreach-sustainability trade off; Cull and Spreng (2011) on the performance regulation-competition and financing trade off and D'Espallier et al. (2013) on gender bias and microfinance performance.

What about profitability and microfinance regulation? Prudential regulation and supervision of MFIs has become increasingly important since several of the largest MFIs have started to mobilize public deposits and especially from the relatively poor people (Hartarska and Nadolnyak 2007). Protection of these deposits is therefore a policy relevant issue. That notwithstanding, MFIs regulation raise costs of lending for MFIs and the question is whether this affects profitability (Cull et al. 2011). The need for sector-specific regulations along with prudential reforms which may facilitate an environment that allows MFIs to mobilize savings and also reduce the problems in enforcing normal banking regulations has been highlighted by Arun (2005).

Although Seibel (2003) and Guinnane (2002) draw attention to how history justifies the need for appropriate legal frameworks in order to support the development of pro-poor financial systems, recent evidence shows mixed results.

Using data from 245 of the world's largest MFIs, Cull et al. (2011) test whether MFIs are able to maintain profitability in the face of the additional costs of complying with supervision. Their OLS regressions show that supervision is negatively associated with profitability. Upon controlling for the non-random assignment of supervision via treatment effects and instrumental variables regressions, they confirm that supervision is not significantly associated with profitability. Their finding is consistent with the argument that profit-oriented MFIs absorb the cost of supervision by curtailing outreach. Along the same vein, Tchakoute-Tchuigoua (2010) investigates whether there a difference in performance by the legal status of Mifsud concludes that the performance of commercial MFIs is better than that of NGOs but only when portfolio quality is used as the proxy of measuring performance. Glass et al. (2010) show that that 68% of Irish credit unions do not incur an extra opportunity cost in meeting regulatory guidance on bad debt, which perhaps explains their good performance. Mersland and Strøm (2009), concludes that regulation does not have a significant impact on financial performance. Hartarska and Nadolnyak (2007) arrive at similar conclusion after controlling for the endogeneity of regulation. These studies underscore the importance of taking into account the trade-offs.

What about profitability and microfinance competition? Literature on the link between microfinance competition and profitability is scant. Most of this work has focused on interactions between lenders and borrowers, or among the lenders themselves. For example, McIntosh and Wydick (2005) point out that increased competition between lenders can impede a lender's ability to cross subsidize between poor and less poor borrowers. They also show that such competition exacerbates asymmetric information problems over borrower indebtedness and causes more borrowers to seek additional debt, hence create a negative externality that leads to worse equilibrium loan contracts for all borrowers. Muriu (2016a, 2016b) seeks to uncover the extent of

microfinance competition in Africa. Estimation results shows evidence of persistence of excess profit from one year to the next. It is plausible that if there is a shock to profitability level in the current year, about 30% of the effect will persist into the following year. The finding is consistent with literature that considers persistence of profitability as a signal of barriers to competition (e.g. impediments to competition or informational asymmetry).

What about *profitability and governance of micro finance institutions*? Both policy makers and practitioners of microfinance are increasingly stressing on the need for improved corporate governance to enhance MFIs' survival and growth. Indeed, the Centre for the Study of Financial Innovation (2008) report identifies corporate governance as a principal risk facing microfinance. This control mechanism is important because managers and funders are likely to have divergent priorities and missions. MFI managers may for instance focus on fulfilling the objectives of the MFI but they may additionally have preferences for non-pecuniary rewards which subsequently lead to the so called agency problem in the corporate governance literature.

MFIs board has several major stakeholders represented who include donors, equity investors, management and employees and creditors while some MFIs have included clients on their boards (Mitchell et al. 1997; Campion 1998). The board controls the managerial power thereby reducing organizational inefficiencies (Andrés-Alonso et al. 2009). Donors or their representatives in the board of directors and other governance bodies can lead to a better control of the opportunistic behaviour of the manager (Hartarska 2005). But the relative power balance or otherwise of these various stakeholders affects MFIs sustainability (Mersland 2011). Hence, the traditional board governance may be less effective in not-for-profit MFIs. Donors on the other hand may prefer outreach to sustainability, while private investors prefer sustainability.

Evidence on the impact of corporate governance on MFIs performance is scant and consistency in findings within and across studies is rare. Hartarska (2009) uses a database of 108 MFIs operating in over 30 countries and analyses their performance by adopting an empirical approach usually employed in cross-country banking research on the impact of market forces and regulation on performance. MFI

performance is measured by sustainability and modelled as a function of external audit, microfinance rating and regulatory status and controls for MFI and country-specific characteristics. The author finds that some rating agencies may play a disciplining role which subsequently affects performance.

To explore the effect of traditional governance mechanisms such as board composition and size, managerial incentives, ownership type and regulation, Mersland and Strøm (2009) use a global dataset including 278 rated MFIs from 60 countries; Mersland and Strøm (2008) investigates whether the transformation of NGO's type of MFIs is superior to shareholder owned MFIs in performance; Kyereboah-Coleman and Osei, (2008) utilizes a panel of 52 MFIs and examine how selected governance indicators impact on performance measures of outreach and profitability in MFIs; Hartarska (2005) uses different datasets spanning 46–144 observations from East European MFIs. These studies have difficulties in identifying significant governance influence and both conclude that governance matters, but the traditional governance mechanisms seem to matter less in MFIs relative to firms in advanced markets. They call for better data and the study of alternative governance mechanisms in order to better understand the effect of corporate governance in the microfinance sector. Additionally, MFIs differ from regular corporate entities in that they encounter horizontal agency problems between themselves and their clients while at the same time donor-funded MFIs face agency costs in their relationships with donors (Adams and Mehran 2003).

Turning to external governance, Arun and Annim (2010), investigate the effect of external governance structure and functioning on the outreach and financial objectives of MFIs. Contrary to corporate governance studies, external governance indicators fail to cause changes in the profitability of MFIs. This confirms Hartarska (2009) who examine the effects of external governance mechanisms on MFIs' performance, and conclude that regulatory involvement and financial statement transparency do not impact on performance, while some but not all rating agencies may play a disciplining role.

What about *profitability and capital structure*? While there is a vast literature on the optimal capital structure of corporate firms, the application of the Modigliani and Miller (1958) theorem and other corporate finance theorems to microfinance institutions is not straight-forward. There have been no systematic empirical studies for a large group of MFIs that provide robust evidence of how variations in funding affect MFIs profitability. Existing research places the evolution of MFI funding sources within the context of an institutional life cycle theory of MFI development (Helms 2006). Using data on outreach and default rate as the dependent variables, Kyereboah-Coleman (2007) investigate the impact of capital structure on the performance of microfinance institutions by estimating a random and fixed effects linear model. Here no attempt has been made to control for reverse causality from performance to capital structure (endogeneity) or to employ other capital structure measures (such as gearing) besides controlling for other firm level specific factors.

MFIs have two broad funding options beyond debt which include deposits (if regulation allows) and equity (commercialization). Several key trends have therefore emerged; the tendency towards increased leveraging of capital, the rise in accepting public deposits as more MFIs get regulated and a shift away from subsidized donor money towards commercial funding (Armendáriz de Aghion and Morduch 2010; Hartarska and Nadolnyak 2008a). These changes mark a general shift towards capital structures typical of retail profit seeking conventional banks. There are implications for the MFIs capital structure since the presence of debt exerts pressure on the management to ensure profitability in order to honour debt obligations.

What about *profitability and country institutional context*? The insights from institutional theory (e.g., North 1990) explain that formal institutions are a crystallization of informal ones and that both co-evolve through the operation of organizations. Practices, rules, and the moral environment which sustain trust are determined at least in part, if not largely, by the cultural endowment of societies as they have developed over their particular histories (Platteau 1994).

Existing literature on institutions is limited in two ways: first, institutions are seen in very broad terms as relating to certain political or economic rules of behaviour (e.g., protection against expropriation risk or government anti-diversion policies (Acemoglu et al. 2001) or country's openness (Hall and Jones 1999) or bureaucratic efficiency (Mauro 1995). Second, it concentrates on the impact that institutions have on growth. Thus, most of the existing studies are concerned with the impact on GDP per capita (Acemoglu et al. 2001; Aghion et al. 2005) or output per worker (Clague et al. 1999; Hall and Jones 1999).

Although a well-functioning government is known to influence the performance of the financial sector, there is little evidence linking well-functioning institutions to financial intermediaries' outcomes. Kaufmann and Kraay (2002) for example, show that if citizens believe that the courts are inefficient or the police are corrupt, they are unlikely to avail themselves of their services. Enterprises similarly base their investment decisions on their perceived view of the investment climate and the government's performance.

Some research questions remain. Does increased interest rate push borrowers towards riskier but more profitable technologies? Does it reduce equilibrium credit demand and thus limit scale economies? How will the existence of a subsidized program affect the profitability of both formal and informal institutions operating nearby? Will reducing subsidies make credit too costly? Household surveys with disaggregated production data can be used to address these questions through estimates of profit functions, again with an eye to the responsiveness to capital availability and capital costs.

In summary, as MFIs begin to wean themselves from a reliance on subsidies and adopt the practices of good banking they will be compelled to further innovate and lower costs. Profits are viewed as being not only acceptable, but also quite essential because profits are expected to attract private investment to the industry. This suggests that commercial micro-finance lenders ought to achieve much better leverage on their equity than subsidized micro lenders, allowing them to greatly multiply the scale of outreach that is achieved from each extra dollar contributed by donors to equity in the sector. Governance mechanisms of MFIs in mature markets do not generally have much influence on the performance of the MFIs.

Thus, there is a need for a different and more original approach to identify and better understand the governance mechanisms that can enhance MFIs' long-term survival. The microfinance literature would benefit from better knowledge of a broader set of governance mechanisms that account for agency costs stemming from multiple stakeholders. There is therefore a need to transform from a not-for-profit NGO ownership structure to a for-profit shareholder-owned MFI while at the same time undertaking reforms geared towards progressive establishment of legal and regulatory framework for microfinance, improvement in governance of indigenous financial systems (Ledgerwood and White 2006). Table 5.1 summarizes the main findings on microfinance performance and direction of impact.

Table 5.1 Summary of empirical findings on performance and direction of impact

Variable	Return on assets	Operational self-sustainability	Financial self-sustainability
Size	Arun and Annim (2010).	Mersland and Strøm (2009).	Cull et al. (2011). Insignificant
	Insignificant	+	
	Cull et al. (2011).	Hartarska and Nadolnyak (2007).	Cull et al. (2014). Insignificant
	Insignificant	+	
	Cull et al. (2014).	Cull et al. (2007).	Cull et al. (2007).
	+	+	+
	Mersland and Strøm (2009).	Hartarska (2005).	
		Insignificant	
	+		
	Hartarska (2009).		
Efficiency	+		
	Kyereboah-Coleman and Osei (2008).		
	+		
	Cull et al. (2007).		
	+		
	Hartarska (2005).		
	Insignificant		
	Arun and Annim (2010).	D'Espallier et al. (2013).	Cull et al. (2011).
	-	-	-

(continued)

Table 5.1 (continued)

Variable	Return on assets	Operational self-sustainability	Financial self-sustainability
	Cull et al. (2011). –		Cull et al. (2011). –
	D’Espallier et al. (2013). –		
	Cull et al. (2014). –		
Age (years)	Arun and Annim (2010). +	Ahlin et al. (2011). +	
	D’Espallier et al. (2013). Insignificant	D’Espallier et al. (2013). Insignificant	Cull et al. (2011). Insignificant
	Cull et al. (2014). –	Cull, Demirgüç-Kunt and Morduch (2007). Insignificant	Cull et al. (2014). Insignificant
	Cull et al. (2011). Insignificant	Hartarska and Nadolnyak (2007). +	
	Cull et al. (2007). +	Hartarska (2005). Insignificant	Cull et al. (2007). +
	Hartarska (2005). Insignificant	Mersland and Strøm (2009). –	
	Mersland and Strøm (2009). Insignificant		
	Hartarska (2009). +		
	Kyereboah-Coleman and Osei (2008). –		
Competition	Mersland and Strøm (2009). Insignificant	Hartarska and Nadolnyak (2007). Insignificant	
		Mersland and Strøm (2009). Insignificant	

Table 5.1 (continued)

Variable	Return on assets	Operational self-sustainability	Financial self-sustainability
Capital	Hartarska (2009). Insignificant	Hartarska and Nadolnyak (2007). +	
Portfolio at risk	Arun and Annim (2010). – Mersland and Strøm (2009). Insignificant Hartarska (2009). Insignificant	Mersland and Strøm (2009). +	
Village banking lending contract	Cull et al. (2011). Insignificant Cull et al. (2014). Insignificant Cull et al. (2007). Insignificant	Cull et al. (2007). Insignificant	Cull et al. (2011). + Cull et al. (2014). + Cull et al. (2007). Insignificant
Solidarity group lending	Cull, Demirgüç-Kunt and Morduch (2011). Insignificant Cull et al. (2014). Insignificant Cull et al. (2007). Insignificant	Cull, Demirgüç-Kunt and Morduch (2007). Insignificant	Cull et al. (2011). Insignificant Cull et al. (2014). Insignificant Cull et al. (2007). Insignificant
Individual loan contracts	Mersland and Strøm (2009). Insignificant	Mersland and Strøm (2009). Insignificant	
Regulated	Arun and Annim (2010). + Tchakoute-Tchuigoua (2010). Insignificant Mersland and Strøm (2009). Insignificant	Mersland and Strøm (2009). Insignificant Hartarska and Nadolnyak (2007). Insignificant	Cull et al. (2011). Insignificant
Outreach depth (Average loan size)	Arun and Annim (2010). – Cull et al. (2007). Insignificant	Ahlin et al. (2011). + Cull et al. (2007). Insignificant	Cull et al. (2007). Insignificant

(continued)

Table 5.1 (continued)

Variable	Return on assets	Operational self-sustainability	Financial self-sustainability
Portfolio to assets ratio	Cull et al. (2007). + Kyereboah-Coleman and Osei (2008). +	Cull et al. (2007). Insignificant	Cull et al. (2007). +
For-profit legal status	Tchakoute-Tchuigoua (2010). Insignificant Tchakoute-Tchuigoua (2010). +	Cull et al. (2007). Insignificant	Cull et al. (2007). Insignificant
Board size	Cull et al. (2007). Insignificant Mersland and Strøm (2009). Insignificant Kyereboah-Coleman and Osei (2008). +	Mersland and Strøm (2009). Insignificant	
Board	independence	Kyereboah-Coleman and Osei (2008). +	
Property rights	Arun and Annim (2010). Insignificant	Hartarska and Nadolnyak (2007). Insignificant	
Voice and Accountability		Arun and Annim (2010). –	
Enforcement of Contract	Arun and Annim (2010). +		
Credit Information	Arun and Annim (2010). Insignificant		
Economic freedom		Hartarska and Nadolnyak (2007). Insignificant	

Table 5.1 (continued)

Variable	Return on assets	Operational self-sustainability	Financial self-sustainability
Informal sector size	Hartarska (2009). Insignificant	Hartarska and Nadolnyak (2007). +	
Private credit/GDP		Ahlin et al. (2011). Insignificant	
Inflation	Cull et al. (2014). Insignificant	Hartarska and Nadolnyak (2007). +	Cull et al. (2014). Insignificant
	Hartarska (2005). Insignificant	Hartarska, (2005). –	
GDP	Cull et al. (2014). +	Ahlin et al. (2011). Insignificant	Cull et al. (2014). +
Rural population growth (%)	Cull et al. (2014). Insignificant		Cull et al. (2014). Insignificant
KKM index	Cull et al. (2014). Insignificant		Cull et al. (2014). Insignificant
Eastern Europe and Central Asia region	Cull et al. (2014). Insignificant	Cull et al. (2007). +	Cull et al. (2014). Insignificant
Africa	Cull et al. (2007). +		Cull et al. (2007). Insignificant
	Cull et al. (2014). Insignificant		Cull et al. (2014). Insignificant
	Cull et al. (2007). +	Cull et al. (2007). +	Cull et al. (2007). Insignificant
South Asia	Cull et al. (2014). –	Cull et al. (2007). Insignificant	Cull et al. (2007). Insignificant
	Cull et al. (2007). Insignificant		
East Asia and Pacific	Cull et al. (2014). Insignificant	Cull et al. (2007). Insignificant	Cull et al. (2014). Insignificant
	Cull et al. (2007). Insignificant		Cull et al. (2007). Insignificant
Middle-East and North Africa	Cull et al. (2014). Insignificant	Cull et al. (2007). Insignificant	Cull et al. (2014). Insignificant
	Cull et al. (2007). +		Cull et al. (2007). Insignificant

5.7 Legal, Regulatory and Governance Issues in Microfinance

The multiplicity of pathways adapted by the MFIs calls for systems of checks and balances aimed at streamlining the operations of MFIs (Arun and Annim 2010). Prudential regulation and supervision have become increasingly important since several of the largest MFIs now mobilize public deposits from the relatively poor people (Hartarska and Nadolnyak 2007).

The question is: *To regulate or not to regulate?* The need for regulation of economic activities is justified in the economic literature as a policy instrument to minimize the effects of market failures (Majone 1996). In financial markets, information asymmetries can result in the exploitation of information advantages by agents to the detriment of principals. Forster et al. (2010) point on the importance of MFI regulation. Arun (2005) stresses on the need for sector-specific regulations along with prudential reforms which may facilitate an environment which allows microfinance institutions to mobilize savings and also reduce the problems in enforcing normal banking regulations.

In a study of 12 regulated MFIs in Latin America Theodore and Loubiere (2002) established that the benefits of regulation exceeded the cost. Indeed, the experience of for example Caja de Ahorro Prestamo Los Andes in Bolivia, Banco ADEMI in the Dominican Republic and Finansol in Colombia has been well documented but policy recommendations based on these case studies on Latin America may not be universally appropriate because, the successful transformation may depend on the enabling environment in the individual country (Hartarska and Nadolnyak 2007). The experiences of Indonesia and Philippines show that the availability of legal charter with lower capital requirements has brought private rural banks into the microfinance sector. In Bangladesh, many poor people lost their savings due to the incompetence or fraud of unregulated and little known institutions (Wright 2000; Rezart 2010). The cost-effective mechanism may be appropriate for relatively smaller MFIs or those who are in the infant stages of growth. However, as Kirkpatrick and Maimbo (2002) evidence,

the likelihood of succeeding in the context of diversified operations and objectives is limited. Moreover, failure of one MFI is likely to have an impact on the depositors' willingness to entrust their funds with other MFIs, and the failure of a credit-only MFI can cause repayment failure in other MFIs. Unsupervised deposit-taking institutions are therefore risky.

Critics of MFI regulation often refer to the experience of the development banks which shows that government involvement may not always be appropriate. Regulator's involvement in regulating credit, such as India's Integrated Rural Development Program and Philippines's targeted credit programmes in the early 1980s, not only failed to achieve its objectives but also undermined the development of rural financial markets and led to adverse income redistribution (Adams et al. 1984). Traditional informal credit markets are affected by the presence of formal MFIs, hence underscoring the importance of a better understanding of the impact of regulation of MFIs on the overall rural credit market (Sarmishta 2002).

Further arguments against regulation in microfinance, are based on the small size of operations of microfinance and the premise that the cost of developing and implementing regulations exceed the benefits accruing from it. Steel and Andah (2003) for instance, found that supervision of MFIs in Ghana is costly relative to their potential impact on the system. Moreover, subjecting all MFIs to prudential regulation and supervision would impose a heavy burden on central banks and/or other supervisory agencies.

Can microfinance self-regulate? The risks associated with self-regulation are twofold. First, it allows organizations to be vulnerable to political pressure. Second, it tends to be vulnerable to whichever institutions have the strongest voice, whether due to size, financing or local influence (Mudenda 2002). Since 1996, the Association of MFIs in South Africa has applied self-regulation to pre-empt inappropriate regulation and improvement of refinance facilities for the members. But the South African experience demonstrates that self-regulation neither protects depositors nor safeguards the financial system, perhaps due to conflict of interests between various institutions (Gugerty and Kremer 2008).

In terms of the *extension of bank regulation to MFI regulation*, regulation in the microfinance sector can be achieved through the existing legal and regulatory framework in the mainstream banking but most of the bank legislations are inappropriate in the context of MFIs. In Zambia for instance, the Banking and Financial Act (1995) fixes separate minimum capital requirements depending on the nature of institutions such as non-bank institutions, in addition to a risk weighted capital adequacy ratio of 10% applied to all these institutions on a sliding scale which incorporates the size, profitability, diversification and other relevant characteristics (Meagher and Wilkinson 2001). This scheme however does not include microfinance institutions which explain the definitional rigidities in the formal system which confirms Jansson and Wenner (1997) who found that the general principles of financial regulation are not entirely appropriate for MFIs in Latin America and Caribbean countries. Additionally, differences in the organizational and operating characteristics of the various types of MFIs leave them vulnerable to certain risks.

Perhaps, what is required is a special regulatory agency. Although the regulatory agency maintains legal responsibility of the supervised institutions, it can delegate regular monitoring and on-site inspections to another agency. For example, Bank Rakyat uses its rural branch offices to supervise a large number of tiny municipal banks (Badan Kredit Desas). In Peru, Bank Superintendent has delegated day-to-day oversight to a federation of municipal savings and loan institutions which assists the monitoring process, with the technical assistance of a German consulting firm (Berenbach and Churchill 1997).

The tiered approach has benefited the development of sustainable microfinance in the Philippines and Ghana by clearly identifying pathways for microfinance institutions to become legitimate institutions and gain access to financial resources from commercial markets (Gallardo 2002). In Ghana, although the tiered approach has led to the growth of different types of microfinance institutions, it has also permitted the easy entry of institutions with weak management and internal controls (Steel and Andah 2003). If the tiers are not defined properly, this could lead to regulatory arbitrage, overlap and ambiguity (Staschen 2003). There is a strong perception that regulation in a tiered approach must incorporate

the basic features of the sector such as management capacities, nature of clients and volume of transaction. The regulatory approaches must also consider diversity among institutional types and be consistent with overall financial sector framework (Berenbach and Churchill 1997).

Both policy makers and practitioners of microfinance are increasingly stressing on the need for improved corporate governance to enhance MFIs' survival and growth. Efficiency of the board on the other hand may be influenced by the board size, with larger boards being less effective than smaller boards because when the board gets too big, free riding by some directors may become an issue (Jensen and Murphy 1990). This hypothesis has been confirmed by studies on both large corporate boards and boards of small firms (Eisenberg et al. 1998). For not-for-profit firms, O'Regan and Oster (2005), shows that monitoring by the board declines with firm size, but fundraising increases with size.

Mersland and Strøm (2009) use a global dataset including 278 rated MFIs from 60 countries to explore the effect of traditional governance mechanisms such as board composition and size, managerial incentives, ownership type and regulation; Hartarska (2009) examine the effects of external governance mechanisms on MFIs' performance; Kyereboah-Coleman and Osei (2008) utilizes a panel of 52 MFIs while Hartarska (2005) uses different datasets spanning 46–144 observations from East European MFIs. These studies have difficulties in identifying significant governance influence and both conclude that governance matters, but the traditional governance mechanisms seem to matter less in MFIs relative to firms in advanced markets. One shortcoming of these studies however, is that they do not in their analysis adequately take into account the fact that most MFIs do not intend to be shareholder owned, have multiple goals, and do not have an inherent profit motive.

Regarding savings regulation, two empirical issues emerge; first, do safer, regulated savings make a difference to individuals when choosing how or whether to save? Secondly, how does mobilization of savings affect the larger relationship between the MFI and the client? Is there a need to regulate MFIs and if so, what activities should be regulated and who should regulate MFI operations? Are there mechanisms other than regulation, which would achieve the intended objectives more cost-effectively? What are the likely direct and indirect costs of compliance

with each alternative? Should Central Bank be the regulator of the industry, or should the government establish another regulatory body to oversee the operations of the MFIs? The answers to these questions have implications for the decision on whether to regulate, as well as the scope and design of any regulatory regime.

With respect to governance of MFIs, studies are needed on how donor monitoring, apex organizations and mismatches in the maturity of liabilities and assets influence management behaviour and MFI performance. Should MFI clients be allowed on the board? Does performance based compensation of managers improve MFI performance as postulated by the not-for-profit literature? Do MFIs with underpaid managers achieve less outreach?

Overall, there is no single prototype of regulatory framework that can be applied universally. The approach to regulation of microfinance institutions is country-specific in nature; one that takes into account the different types of MFIs, the products they offer, and the markets they service. We have also established that the regulatory ability of local regimes is generally low. Under such conditions, issues such as closeness to the clients and mutual trust are paramount. There is therefore a need for closer engagement between government and MFIs in developing required regulatory legislations.

5.8 Conclusion

In conclusion, there are at least five important messages that derive directly from our reflections on the theoretical and empirical work on microfinance. First, notwithstanding the euphoric attitude among donors, governments and policy-makers about the expected impact of microfinance, there is still limited understanding of the behaviour of MFIs with respect to households and firms and the implications for inclusive finance and sustainable development. Second, the history of microfinance in Europe, especially in Germany and Ireland, and attempts to replicate the Grameen Bank in the USA, illustrate the difficulty of transplanting institutions from one social and economic context to another; a lot of adaptations must be undertaken

for microfinance to engender financial inclusion. Third, self-selection into microfinance programs implies that carrying out rigorous impact studies between clients and non-clients is quite challenging; however, evidence from RCT work seems to suggest that women participants are more successful in achieving desired microfinance targets. Fourth, MFIs employ a diversity of approaches, including group lending, with some mechanisms requiring a high degree of monitoring. It is not clear whether a universally superior mechanism exists, which can mainstream gender and fragile states in order to engender financial inclusion and Sustainable Development Goals. Fifth, the prudential regulation and supervision have become increasingly important since several of the largest MFIs now mobilize public deposits from the relatively poor people; the challenge now is to evolve an efficient regulatory mechanism for MFIs without adversely affecting the viability of the industry.

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6

A Chameleon Called Debt Relief: Aid Modality Equivalence of Official Debt Relief to Poor Countries

Danny Cassimon and Dennis Essers

6.1 Introduction

During the past three decades, external public debt relief has presented itself, *de facto*, as an important form of development assistance bestowed (or financed) by official creditors.¹ In 1988, the Paris Club, an informal

¹This notwithstanding the fact that early debt restructuring and relief efforts by creditors had no developmental orientation (but primarily aimed at avoiding developing country default) and in spite of the arguments advanced by the OECD and other organisations that debt relief should, *de jure*, not be considered 'core' development aid (see, for example, Gurría and Manning 2007; Benn et al. 2010).

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grouping of bilateral creditors, decided to grant low-income countries common debt rescheduling terms that included an element of debt reduction (the so-called ‘Toronto-terms’; see further). A more comprehensive debt relief scheme involving debt owed to multilateral institutions and private creditors was devised in 1996, with the start of the Heavily Indebted Poor Countries (HIPC) Initiative, and extended in 2005, when the HIPC’s successor, the Multilateral Debt Relief Initiative (MDRI), was launched. Recently, more ad-hoc debt relief has been granted to countries outside these major international initiatives, including through debt-for-development swaps, a technique borrowed from commercial debt swaps popular in the 1980s and early 1990s.

This chapter critically reviews past external debt relief practice from a novel angle, that is, along its similarities with other types of aid. Although, intuitively, debt relief is most easily thought of as a kind of budget support (since it frees up resources in the government budget otherwise spent on servicing debt), we show that such an analogy is often incorrect. Instead, we argue that debt relief is a true chameleon; over time it has mimicked various, distinct forms of aid, ranging from old-style project aid, over balance of payment (BoP) aid in support of structural adjustment, up to sector budget support (SBS) and even multi-year general budget support (GBS). The exact ‘colour’ of the chameleon depends on the conditionality embedded in the relief operation, such as the degree of earmarking of freed-up funds, and the alignment with recipient country policies and systems, as well as on its budgetary resource effects. Similar to a chameleon, debt relief has often taken on a colour close to that of its environment, that is, the dominant mode of aid delivery at a given point in time. We believe that looking at debt relief from an aid modality perspective as proposed in the chapter helps one better understanding debt relief’s mixed performance track record and sheds new light on a number of related policy-relevant themes.

The chapter is structured as follows. [Section 6.2](#) lays out the conceptual framework we will use to study debt relief, focussing on two dimensions: first, the different forms of ‘strings attached’ to aid (and debt relief) interventions (that is, conditionality) and their degree of alignment; and second, the cash flow equivalence between debt relief and aid. A third subsection then applies this framework to classify three generations of debt relief (pre-HIPC, HIPC and beyond-HIPC)

according to their resemblance with different aid modalities. These constitute the different guises of the chameleon called debt relief. [Section 6.3](#) demonstrates the value added of the chapter's aid modality perspective. First, we show the parallels between the nature of particular debt relief interventions and the results of various evaluation studies on the effectiveness at output level, effectiveness at outcome level and relevance of debt relief. In a second subsection, we point to debt relief-aid policy tensions laid bare by the chapter's conceptual framework, when debt relief acts as disguised budget support.

6.2 Debt Relief as Seen from an Aid Modality Perspective

It can be argued that official debt relief is just another aid instrument at the disposal of donors-creditors (Berlage et al. [2003](#)). However, what is generally less well-understood is the fact that not all debt relief by bilateral and multilateral donors is homogeneous. The main purpose of the current chapter is to show that debt relief can take many forms and shows striking similarities with several other modalities of development aid; hence our characterisation of debt relief as a chameleon. Before our classification of three decades of debt relief, we introduce a number of concepts we need to point out debt relief's similarities with different aid modalities, in the spheres of aid conditionality and alignment, and of cash flow effects.

6.2.1 Conditionality and Alignment

Conditionality is, in essence, what distinguishes aid from other hard currency recipient country resources, such as those coming from oil (or other) exports, since it reduces the available policy space to use such resources freely (see Collier [2006](#)).² By attaching conditionality to their

² In engaging with the debate around scaling up aid to Africa, Collier ([2006](#)) compares different forms of aid, *including* debt relief (next to technical assistance, projects and BoP support), to oil and other resource rents received by African governments. Our analysis is complementary to his,

aid, donors attempt to influence, in a direct way, the utilisation of funds (through earmarking; see further), or, more indirectly, try to change recipient country behaviour, using either *ex ante* (by stimulating good behaviour), or *ex post* (by rewarding good behaviour and/or punishing bad behaviour) incentives. As we will point out below, this also applies to debt relief interventions.

Donors' conditionality preferences have evolved over time, gradually moving away from strict ring-fencing of funds for particular aid projects to a more subtle 'nudging' of the recipient country through policy dialogue on poverty reduction and good governance (see Koeberle et al. 2005). This shift in donor thinking has led to the emergence in the late 1990s and early 2000s of what has been labelled the 'new aid paradigm' or 'new aid agenda', centred around the need for low-income aid recipient countries to develop home-grown Poverty Reduction Strategy Papers (PRSPs) (see, e.g. White 2001; Killick 2004; Molenaers and Renard 2009). PRSPs set out a country's medium-term macro-economic, structural and social policies and programmes aimed at growth and poverty reduction (as well as the associated financial plans) and are prepared in a supposedly consultative manner by the government, domestic stakeholders and external development partners.

Evidently, in concert with changes in conditionality sets, decades of development assistance have also altered policymakers' visions on best practices in aid delivery. Mostly would now agree that 'old-style' project aid, whereby donors take the lead in deciding on and micro-monitoring every single dollar they provide, is neither an effective nor a sustainable form of aid. Also the Structural Adjustment Programmes of the 1980s and early 1990s accompanying the BoP support of the Bretton Woods institutions have been largely discredited for their dogmatic, one-size-fits-all macro-economic policy prescriptions (enshrined in the Washington Consensus) and tunnel vision on economic growth (for a self-critical report, see Dollar and Pritchett 1998).

in the sense that we attempt to tease out the similarities *between* debt relief and other forms of aid. Unlike Collier, however, we do not conceptualise debt relief as a uniform category.

Conversely, donor pledges in recent years, most notably the Paris Declaration on Aid Effectiveness (2005), Accra Agenda for Action (2008) and Busan Global Partnership for Effective Development Cooperation (2011), indicate increased attention to policy and system alignment. 'Policy alignment' signifies that donors commit themselves to base their support on developing countries' national development strategies, while 'system alignment' refers to aid's use of a recipient country's own institutions and systems for decision-making, implementation and monitoring and evaluation (M&E) where these are deemed effective and accountable (see OECD 2008, 2011).

These alignment principles can accommodate diverse modes of aid delivery, including 'new-style' projects that continue to earmark funds to specific purposes but are better in line with recipients' policies and systems than their old-style predecessors. Following the logic of the Paris Declaration and the new aid agenda, however, the dominant aid modality should progressively evolve to budget support, both SBS and GBS. These latter aid forms are per definition sector- or non-earmarked; donors pool their funds with regular government (tax) revenues, and leave it to existing country systems to spend resources according to sector/national priorities, based on mutual trust and regular policy dialogue between donor and recipient. In principle, when both donor and recipient are committed to development, budget support should be superior to other aid delivery modes, say project aid (Cordella and Dell'Arricia 2007).

All this is not to say that the transition towards newer (and supposedly more effective) aid modalities is complete (or will ever be complete, for that matter).³ Monitoring surveys on aid effectiveness commitments show some progress but also that the set goals have been missed, often by a wide margin. On policy alignment, it is estimated that 66% of aid

³ In the last few years, the practice of some donors (even those that were initially leading proponents of the new aid agenda and its emphasis on budget support) shows a tendency towards stricter earmarking and control of aid (see for example, Independent Commission for Aid Impact 2012). One reason may be the dire fiscal situation these donors find themselves in today, increasing the need to better demonstrate what has been achieved with tax payers' money (and inducing a shift towards aid instruments that yield more easily identifiable results).

to governments was reported on-budget in 2015 (against a target of 85%). Also system alignment is far from accomplished: about 50% of aid does not use countries' own public financial management and procurement systems and still more than 20% of aid is tied, that is, geographically restricted as to where it can be spent (usually on goods and services supplied by the donor country) (OECD 2016). Different aid modalities, in and out of line with donors' stated preferences, coexist.

As we will show, the chameleon called debt relief often mimics the aid modalities that are considered best practice at the time. But, similar to traditional aid, disparate debt relief modalities may exist side by side. Before categorising different debt relief interventions, however, let us first examine the cash flow equivalence between debt relief and aid, another important dimension on which the appearance of the chameleon depends. To be sure, many of the effects one may expect from debt relief are closely linked to the actual budgetary resources freed up by such an intervention.

6.2.2 Cash Flow Equivalence Between Debt Relief and Aid

A traditional aid intervention increases the international purchasing power of the recipient country: new aid constitutes an inflow of foreign currency, in a BoP sense at the minimum, and, if granted to the country's government, also in a fiscal sense. In theory, debt relief brings about an equivalent net cash flow effect, as foreign currency *outflows*, under the form of debt service payments, do no longer occur.

The nominal amount of debt cancelled is, however, not necessarily a good indicator of this net cash flow effect of debt relief (and therefore of its equivalence to new aid inflows), for a number of reasons. Similarly, nominal debt relief figures may not give a realistic approximation of the additional resources that become available in the recipient government budget, often referred to as 'fiscal space' (Heller 2005).

First, net (budgetary) cash flow gains from debt relief only gradually materialise over time, that is, at the pace of the contractual debt

service payments cancelled. To compare debt relief and aid inflows properly, one should use the 'present value' (PV) of debt relief. This concept takes into account the time value of money, discounting future payments at an appropriate discount rate (usually a market-based interest rate). The PV of debt relief is then the sum of all discounted future contractual debt service payments cancelled. Whenever the debt concerned carries a below-market interest rate, and/or the repayments are due over a large time span (as in the case of concessional loans), the PV of debt relief will be markedly lower than its nominal value. Moreover, even an intervention that yields considerable debt relief in PV terms may have limited debt service relief consequences in the short term if all original repayments would have taken place in the more distant future.

Second, the simple PV of debt relief discards the possibility that debt would not have been fully serviced in the absence of the relief operation, which is a problematic assumption for countries with debt servicing difficulties. If not all debt would have been serviced, the eventual cash flow effect of debt reduction is, at least partly, illusive. Only the debt service that would have been paid to the creditor in the counterfactual, no-debt-relief scenario generates real fiscal space. This brings us to the concept of the 'economic value' (EV) of debt relief, which can be expressed as follows (Renard and Cassimon 2001):

$$EV = \sum_{t=0}^n \frac{S_t(1-d)}{(1+i)^t}$$

whereby:

EV: economic value of debt relief, representing the direct (budgetary) benefit of debt relief, comparable to a new aid inflow;

S_t: contractual debt service (principal plus interest) in year *t*, from the present year 0 to the year *n* in which the final repayment would have been made;

d: percentage of future non-payment in the counterfactual situation, that is, the percentage of default by the debtor in the absence of the debt relief intervention;

i: discount rate from the debtor country's perspective, that is, the interest rate at which the country could bring the debt service payments forward in time.

The bottom line is that, in order to equate the cash flow impact of debt relief with that of the aid intervention it mimics, say, GBS, one has to consider the EV rather than nominal debt relief. Take the extreme case where debt relief's EV is zero; then even a debt relief intervention that imitates GBS (with respect to conditionality and alignment), may be completely fictitious, pure 'wind' from a cash flow perspective, as distinct from 'oil' (in a Collier 2006 sense) as possible.

A third issue is that debt relief operations may lead to the crowding out of other, potentially more effective aid interventions. Often it is assumed that debt relief comes on top of all other forms of donor support. However, full additionality should not be taken as the default; substitution of donor effort may well be at play.⁴ The degree of additionality is indeed one of the crucial elements in assessing debt relief operations (see further).⁵

The literature on debt relief also considers the possibility that certain relief operations could have beneficial (cash flow and other) effects beyond the simple cancellation of debt service, which would give such debt relief an edge over new aid inflows. According to 'debt overhang' theory, a country burdened by large outstanding debts has no incentive to engage in reforms that attract private (domestic and foreign) investment since any economic progress will benefit the country's creditors

⁴ In fact, the OECD's Development Assistance Committee (DAC) aid accounting rules leave the door open for such substitution. In some instances, donors have been allowed to bring in the full nominal value of debt relief as Official Development Assistance (ODA), the main benchmark for donor generosity used by the DAC. To avoid double counting, for relief on debt titles previously qualified as ODA, only the interest component of the debt forgiven may be recorded as new ODA. However, since principal repayments on concessional loans are recorded as negative ODA in DAC statistics, debt relief also cancels these future negative entries, leading to higher net ODA over time. For more on the complex matter of aid accounting and its applications to debt relief we refer to Renard and Cassimon (2001). It should be noted that, at the moment of writing, the ODA concept and aid accounting rules were being thoroughly revised by the DAC.

⁵ Independently from whether or not debt relief is additional to overall aid budgets, donors may decide to reallocate their traditional aid between more-indebted and less-indebted countries because of debt relief, which could have important distributional consequences (Gunter et al. 2008).

first (through increased debt service); hence, economic growth will be dim and the debt burden will increase further (Krugman 1988; Bulow and Rogoff 1991; Deshpande 1997). If we take this theory at face value, eliminating the overhang through sufficiently large debt stock relief has the potential to break that vicious circle and catalyse investment. Related to this, if debt relief leads to the avoidance of a formal default, an event which could make the debtor country lose access to particular (private) sources of finance for several years to come, it removes important negative externalities for that country (even if the immediate cash flow effect of such relief would be nihil).

Furthermore, it has been suggested that, in order to avoid an accumulation of arrears (and ultimately, default), donors tend to target their transfers to countries with the most severe debt obligations, not taking into account policy quality or development needs in those (and other) countries. Such practice is referred to as 'defensive lending' (Birdsall et al. 2003) or, in case transfers are mainly in grant form, 'defensive granting' (Marchesi and Missale 2013). In theory at least, larger, comprehensive debt relief packages would make it possible to put an end to this and restore selectivity in donors' aid portfolio.

Having introduced the necessary elements to compare debt relief with other, more traditional aid, we can now get to know the chameleon in its various guises.

6.2.3 A Chameleon Called Debt Relief

For the purposes of our analysis, we consider three, partly overlapping 'generations' of external debt relief: the pre-HIPC era (1); the HIPC Initiative itself; (2) initiatives that go beyond HIPC; and (3). Also, we differentiate between the relief given on debt owed to official/public creditors, that is, (Paris Club) bilateral donors and multilateral institutions such as the IMF, The World Bank and regional development banks, and on debt owed to commercial/private creditors. Table 6.1 summarises the discussion contained in the following subsections.

Table 6.1 A chameleon called debt relief

Generation of debt relief (per creditor type)	IMF programme?	Type of earmarking	Explicit link to development or poverty reduction?		System-aligned?	Other conditions?	So debt relief looks very much like ...	Aid cash flow equivalence
			Yes/No	Policy-aligned?				
Official creditors								
(1) Pre-HIPC Paris Club debt relief								
Debt service/stock relief	Yes	Non-earmarked	No	–	–	None	BoP support	Close to zero
Debt-for-development swaps (first wave)	No	Micro-earmarked	Yes	Typically not	No	None	Old-style project aid	Close to zero
(2) HIPC Initiative Original (1996)	Yes	Non-earmarked	No	–	–	Triggers	BoP support	Partial
Enhanced (1999)	Yes	Non-earmarked	Yes	Yes, with PRSP (NDS)	Yes, but ...	Triggers	In principle GBS	Partial
(3a) Additional bilateral debt relief	Yes	Non-earmarked	Yes	Yes, with PRSP (NDS)	Yes	None	GBS	Close to nominal value
Of which C2D	Yes	Macro-earmarked	Yes	Largely with PRSP	Yes	None	(Multi-)sector SBS	Close to nominal value
(3b) MDRI	Yes	Non-earmarked	Yes	Yes, with PRSP (NDS)	Yes	None	GBS	Close to nominal value
(3c) Debt-for-development swaps (second wave)	No	Micro-earmarking	Yes	No/Yes	No/Yes	None	Old-style project aid/New-style project aid	Case-specific

**Commercial
creditors**(1) Pre-HIPC debt
relief

London Club debt relief

Debt swaps

Large debt
exchanges (for
example, Brady
bonds)IDA Debt Reduction
Facility

(2) HIPC Initiative

Yes

Yes

Non-earmarked

Yes

Yes, with
PRSP
(NDS)Yes,
but ...

Triggers

In principle GBS

Partial

Secondary
market
valueClose to
zeroClose to
zeroSecondary
market
value

Partial

Notes: HIPC = Heavily Indebted Poor Country; MDRI = Multilateral Debt Relief Initiative; PRSP = Poverty Reduction Strategy Paper; NDS = National Development Strategy; BoP = balance of payments; GBS = general budget support; SBS = sector budget support; C2D = Contrats de Désendettement et de Développement; IDA = International Development Association.

6.2.3.1 Debt Relief Before the HIPC Initiative

In the 1970s and early 1980s, official creditors' main motivation in assisting debtor countries with bridging periods of debt repayment problems (mostly due to a commodity price boom and bust, accompanying the oil crisis and a global recession) was to avoid imminent default and thus to increase chances of recuperating the whole of claims they held. Organised in the Paris Club, these creditors adopted an ad hoc perspective on debt relief, rescheduling debt service on a short-term, case-by-case basis (Cosio-Pascal 2008).⁶ The debt crises of the 1980s saw ever more countries turn to the Paris Club for debt restructuring, often several times in a row. By the mid-1980s, it became increasingly clear that repeated short-term debt service rescheduling would not solve the deeper-rooted problem of unsustainable debt stocks which many of the poorest developing countries continued to accumulate.

Following a G-7 summit in Toronto, Paris Club creditors in 1988 decided on a menu of restructuring options for the non-Official Development Assistance (ODA) debt of low-income countries. These Toronto terms allowed for a debt *reduction* (rather than *rescheduling*) by up to 33% in PV terms, either through lowering principal repayments or by setting a below-market interest rate on the consolidated debt.⁷ The percentage PV reduction of non-ODA debt was raised to 50% when the London terms supplanted the Toronto terms in 1991.⁸ The London

⁶ Non-concessional, non-ODA loans (such as officially guaranteed export credits) were rescheduled at market-determined interest rates, whereas for ODA loans typically concessional interest rates (at least) as favourable as the original rates on these loans were used. Technically speaking, rescheduling at market interest rates yields no genuine debt *relief*, not in nominal terms and not in PV terms. Some individual Paris Club creditors complemented ad hoc agreements on non-ODA debt with forgiving all or part of their ODA loans to low-income countries (Gamarra et al. 2009).

⁷ The menu also included a third ('commercial' or no-debt reduction) option whereby the debt claims would be spread out over a longer (25-year) repayment period, but at a market interest rate. The three-option menu was a compromise solution to proposals made by France, the UK and the US, respectively (Daseking and Powell 1999).

⁸ In 1990 the UK had made a bolder, more progressive proposal for a new debt restructuring approach, including, among other elements, a 67% PV debt reduction. These so-called 'Trinidad terms' were not withheld by the Paris Club at the time, but would serve as an inspiration for later rescheduling terms (Daseking and Powell 1999).

terms also contained a clause with the possibility of debt stock reduction three or four years after the initial agreement, given that countries maintained good relations with their creditors and stayed current on IMF programmes (Vilanova and Martin 2001).

Another G-7 meeting paved the way for the introduction end 1994 of the Naples terms, which augmented debt reduction to a maximum of 67%. Besides another increase in concessionality, the Naples terms also broadened the stock approach to debt relief for those countries that could convince their creditors that they would no longer need further debt rescheduling upon receiving such a debt stock treatment (Gamarra et al. 2009).

In addition, by 1990, the Paris Club had prompted a new Houston terms debt treatment, introducing a number of enhancements with respect to the earlier classic terms (but no debt reduction) for lower- and middle-income countries.

As listed in Table 6.1, all of the pre-HIPC debt service (and later, debt stock) relief in the Paris Club, be it under classic, Toronto, London, Naples or Houston terms, or just ad hoc arrangements, had essentially no other conditionality attached than the need for recipient countries to have an active IMF programme in place (and to show sufficient progress on that programme). There was no particular earmarking, and certainly not to development or poverty reduction spending; understandably, as avoiding default and maximising repayment, and not the provision of development finance, was the Paris Club's main goal. As such, this type of debt relief very much behaved like the typical BoP-cum-structural adjustment support granted by the IMF and The World Bank in the 1980s and early 1990s.

Evaluating the cash flow effects resulting from particular debt relief interventions is always a daunting task, since it requires estimating a counterfactual, that is, the share of debt obligations that would have been repaid in the absence of the intervention (or $[1 - d]$ in the EV formula we presented above). For the purpose of this chapter, it suffices to say that most of the pre-HIPC debt service and stock relief, especially with respect to low-income countries, involved obligations that would not have been honoured in the first place (in other words, d was close to one). Much of the debt forgiven in pre-HIPC Paris Club deals was

already in arrears; the agreements made were therefore primarily accounting exercises with very limited cash flow impact.⁹ The fact that the median debtor country turning to the Paris Club between 1970 and end 1996 did so four times, is testimony to the severity of debt servicing problems (and therefore to the likelihood of default).¹⁰

Another sort of pre-HIPC debt relief by official creditors is that provided through so-called ‘debt-for-development swaps’. Since the inception of London and Houston terms, Paris Club menus offered the possibility of converting, on a voluntary and bilateral basis, ODA debt or part of non-ODA debt into commitments by the debtor country for ‘counterpart’ local currency investments with social, commercial or environmental finality. This debt swap provision built further on the debt-for-equity and debt-for-nature swaps that had been conducted from the mid-1980s onwards with claims of commercial creditors that were traded on the secondary market (Moye 2001; Ruiz 2007; Buckley 2011a).

Most pre-HIPC debt swaps in themselves did not formally require the debtor’s engagement in an IMF programme.¹¹ On the other hand, there was often a more explicit link to development or poverty reduction, accomplished by very strict *micro*-earmarking of the local currency funds released through the debt swap to specific aid projects. These funds were typically placed into counterpart accounts, outside the debtor government budget and bypassing existing public institutions and systems. Resource allocation was also regularly donor-imposed, rather than following national development priorities. For example, in the swap deals between France and a number of francophone African debtor countries following the 1992 Libreville Debt Initiative, all projects to be funded by swaps needed separate approval by the *Agence Française de Développement* (Gamarra et al. 2009). In this respect, early debt-for-development swaps

⁹ Again, this is not to say that these deals were of no benefit to the debtor countries in question. As highlighted before, avoiding (or postponing) formal default by short-term rescheduling may have eliminated important negative externalities.

¹⁰ A full list of Paris Club deals is available from <http://www.clubdeparis.org>.

¹¹ Evidently, as Paris Club consolidation agreements were conditional on having an active IMF programme, so were the debt swaps conducted under such agreements (albeit only indirectly).

very much resemble old-style project aid, exhibiting low levels of policy and system alignment. As with pre-HIPC debt service and stock relief, many of the swapped debt titles would probably not have been paid in absence of the swap operation. Hence, the expected cash flow effects are again near-zero.¹²

During much of the 1970s and 1980s, relief on external debt owed to commercial creditors followed a pattern similar to that of official creditor debt relief. First, the London Club, a special bank advisory committee whose composition reflected the size of individual banks' exposure to the non-performing loans in question, would reschedule principal repayments over a short period.

Around the same time, a secondary market for the discounted commercial debt of developing countries started to gain ground (see Buckley 2011b). In this market, investors could purchase debt titles at reduced prices and redeem them with the debtor country in exchange for local currency to be used for buying shares in national companies. This debt-for-equity technique later served as a blueprint for debt-for-nature swaps, in which environmental Non-Governmental Organisations (NGOs) such as Conservation International and the World Wildlife Fund acquired commercial debt, trading below par, and swapped it for local currency counterpart funds supporting in-country environmental projects (Deacon and Murphy 1997). As indicated above, it were such operations that later inspired debt-for-development swaps with official debt.

When the idea that solutions to developing countries' debt crises would require more than just postponing repayment or swapping small amounts of debt permeated the minds of policymakers, this also affected their view on how debt owed to commercial creditors should be dealt with, moving from piecemeal to more comprehensive debt restructuring. Most notably, from 1989 onwards, commercial creditor banks were coerced by a 'combination of legal manoeuvring and pressure' (Krugman 1994, p. 710) to take part in the Brady plan (named after

¹² The cash flow effect of swaps could even be *negative* in some years, to the extent that the required (local currency) counterpart funds exceeded the debt service cancelled.

the then US Treasury Secretary, Nicholas Brady), an exchange mechanism devised to support 'voluntary' debt stock and service reduction operations. Participating creditors were given a choice of possible debt-reducing instruments (somewhat akin to the options in Paris Club menus): an exchange of the original loans for bonds with reduced principal; exchanges at par with lower interest rates; and a new money option (that is, the refinancing of old loans topped up with additional money) (Claessens and Diwan 1994; Vásquez 1996).¹³ Interestingly, a number of Brady deals with oil-exporting countries contained contingency clauses allowing the holders of discounted bonds to recapture a portion of the debt reduction in case the export price of oil would rise above a predetermined threshold (which would improve the debtor country's debt servicing capacity). Strikingly, such explicit 'recap' clauses have never featured in official creditor debt relief.

1989 also saw the creation of the International Development Association's Debt Reduction Facility (IDA-DRF). Under this World Bank-sponsored facility, low-income debtor governments were typically given grants to buy back any remaining debts from their commercial creditors at large discounts on the secondary market, thereby effectively eliminating these obligations. From 2004 on, the IDA-DRF has been explicitly linked to commercial creditor debt relief under the HIPC Initiative.

How can we interpret these forms of private creditor debt relief from the perspective of our framework in Table 6.1? Unlike most official pre-HIPC operations, the majority of commercial operations did not formally require the debtor's engagement in an IMF (or any other medium-term adjustment) programme, with the notable exception of IDA-DRF buybacks. Early London Club debt service reschedulings came with no further conditionalities or earmarking; so unlike any traditional aid intervention, they would be, in theory at least, very similar to freely usable resources such as oil revenues. However, London Club reschedulings were generally conducted at (near-)market

¹³ In more recent years there have been many other Brady-like commercial bond exchanges (see Das et al. 2012 for an overview).

terms, leading to little or no real debt relief (cf. note 6). Also, like pre-HIPC Paris Club debt service restructuring operations, much of the debt involved would probably not have been serviced anyway, in the absence of London Club agreements. Hence, the expected cash flow effects were near-zero.

Analogous to official debt-for-development swaps, the small debt swap operations using commercial debt titles bought on the secondary market applied very strict micro-earmarking of the counterpart local currency funds to specific (often conservation-oriented) projects favoured by NGO investors, which makes them again interchangeable with old-style project aid. The fact that secondary markets were active and that debt could be bought at highly reduced prices in those markets, ostensibly seems to indicate that 'bargain' deals were available, at prices closely reflecting the EV of the debt for the debtor. However, as Bulow and Rogoff (1988) showed most convincingly, these secondary market prices reflected the 'average' value of debt, not the lower ('marginal') value of small amounts of debt relief, as those debt titles relieved would, most likely, not have been repaid. So yet again, the cash flow effects of these swap deals were close to zero and, counter-intuitively, debtor countries (or third parties financing these deals) were *overpaying* commercial creditors.

According to Bulow and Rogoff's logic, buybacks and debt exchange operations need to cover a larger part of (ideally all) outstanding debt to assure that observed secondary market prices are appropriate proxies for the EV of debt (relief). The Brady bond deals, as well as more recent large-scale debt exchanges, adhere to this principle. Typically, the Brady deals did not explicitly stipulate an active IMF programme, meaning the debt relief embedded would come close to being oil. In case a particular deal would entail an IMF programme (as some deals indeed did), debt relief bears closer resemblance to BoP support. As mentioned earlier, some deals included specific conditionalities by which future debt payments were made partly contingent on outcomes. Cash flow impacts of the Brady and similar operations are near the observed secondary market value of the debt concerned.

Finally, pre-HIPC IDA-DRF debt relief, due to its medium-term adjustment programme conditionality, is also equivalent to BoP

support, with cash flow effects approximated by the secondary market price of debt (as these were typically also larger operations).

6.2.3.2 Debt Relief Under the HIPC Initiative

Whereas by the mid-1990s, the existing debt relief mechanisms seemed to have eased the debt problems of most middle-income countries, the economic prospects of a fair number of low-income countries bearing heavy external debt burdens continued to look bleak. One reason was the increasing share of debt owed to multilateral institutions by these latter countries, debt titles which had been kept out of all traditional debt relief initiatives up till then (Easterly 2002). In response to this situation, in September 1996, The World Bank and the IMF jointly launched the HIPC Initiative, aimed at committing the international community to bring back to manageable levels the debt burdens of particular highly indebted poor countries with a proven track record of strong policy performance and exhibiting a willingness for macroeconomic and structural reform (see Boote and Thugge 1997). The Paris Club signed in on the new approach and in November 1996 agreed on new Lyon terms for eligible HIPCs, increasing relief to a maximum of 80% of the PV of non-ODA debt.¹⁴

The HIPC Initiative's objective was to engage in a comprehensive, one-off debt relief effort that would launch even the most-indebted poor countries on a path of economic growth and would free them for good from further debt rescheduling and reduction negotiations. Countries, at least those that could only borrow from the World Bank's International Development Association (IDA), were selected on the basis of their 'unsustainable levels' of debt, defined in terms of debt service-to-exports and debt stock-to-exports ratios above 20–25% and 200–250% in PV,

¹⁴ From this point onwards, international debt relief got on two distinct tracks: one for HIPCs, which would be broadened and deepened in the subsequent years, and one for non-HIPCs, which would largely be a continuation of pre-1996 practices. We will focus our attention to the first track.

respectively (that is, after all other traditional relief mechanisms, such as Naples terms treatment, had been exhausted).¹⁵

After having successfully implemented reforms through IMF- and IDA-supported programmes for three years, eligible HIPC countries would reach their 'decision point' at which the IMF and World Bank would decide on the amount of debt relief needed (through a debt sustainability analysis). Another three-year period of programme implementation would then be followed by the HIPC attaining its 'completion point', conditional upon meeting country-specific 'triggers' (in areas ranging from macroeconomic stability, over public financial management improvement and debt data collection, to health and education sector reforms), and would result in full and irrevocable debt stock relief. This final debt reduction would entail the participation of the Paris Club, other bilateral creditors, commercial creditors and multilateral institutions to come (ideally) to an equitable sharing of the costs involved (Boote and Thugge 1997).¹⁶

In September 1999, after a thorough review and consultation process (and under the mounting pressure of civil society organisations such as the Jubilee 2000 movement; see Roodman 2010), the World Bank and the IMF reinvigorated an *Enhanced* HIPC Initiative which was meant to avoid some of the flaws of the original initiative (see Gautam 2003). Four modifications stand out.

First, threshold indicators were lowered, most drastically to a PV debt stock-to-exports ratio of 150%, in order to bring more countries into the initiative and provide deeper debt relief for those already previously eligible. To assist in this respect, Paris Club creditors again augmented maximum levels of non-ODA debt cancellation in November 1999, with Cologne terms of up to 90% PV relief (or more if necessary) substituting the earlier Lyon terms for HIPCs. Second, a 'floating'

¹⁵ In April 1997 eligibility for the HIPC Initiative was broadened to countries with a PV debt-to-fiscal revenue ratio of 280% or more (Gautam 2003). For a critical review of the analytical and empirical underpinnings of the HIPC debt sustainability targets, see Hjertholm (2003).

¹⁶ Multilateral institutions have been partly reimbursed by their member (creditor) countries for the debt service forgone. Other financing of multilateral debt relief has come from proceeds of the revaluation of gold (IMF) and profits of lending to middle-income countries (World Bank) (Cosio-Pascal 2008).

completion point was introduced (replacing the fixed three-year interim period), to be reached upon the fulfilment of pre-agreed structural reforms and social sector objectives. Third, the enhanced framework opened up the possibility of providing (discretionary) interim debt relief between decision and completion point.

Fourth, and arguably most important, was the establishment of a more explicit link between debt relief and poverty alleviation by means of making debtor countries' process under the HIPC Initiative conditional on the preparation and following up of their PRSPs (see before). The preparation of a PRSP (or at least an interim version thereof) became a condition to reach decision point. Attainment of the HIPC completion point further required countries to adopt a full PRSP and implement its strategies satisfactorily for minimum one year. PRSP conditionality originating in the HIPC Initiative was very much in accordance with the increasing international attention towards poverty reduction at the turn of the millennium and the PRSP soon became a centrepiece in the IMF and the World Bank's overall concessional lending framework.

As of October 2016, debt cancellation under the HIPC Initiative has been approved for 36 countries (30 of which are Sub-Saharan African); all of which have already passed completion point. Another three 'pre-decision-point' countries (Eritrea, Somalia and Sudan) are considered potentially eligible in the future, based on income and indebtedness criteria. According to the latest available estimates (and assuming full participation of all creditors), total HIPC debt relief for the 36 post-completion-point HIPCs would amount to around US\$76 billion in nominal terms and US\$58 billion in end-2014 PV terms (IMF and World Bank 2016). The Paris Club and the largest multilateral creditors (IMF, IDA and the African Development Bank), which together account for the lion share of the calculated cost of the HIPC Initiative, have fulfilled almost all of their HIPC debt relief commitments. Contributions by non-Paris Club bilateral creditors, commercial creditors and a group of smaller multilateral creditors are more erratic and not always well-documented.

Turning back to our framework (Table 6.1), in the absence of any explicit link to a development or poverty reduction agenda (but *with* IMF

programme conditionality and country-specific triggers attached), debt relief under the original HIPC Initiative clearly shares features with the more traditional BoP support, as did pre-HIPC debt service and stock relief in the Paris Club. This changed when the HIPC Initiative was enhanced in 1999, complementing standard conditionalities with requirements linked to a recipient country-owned PRSP (or similar national development strategy documents). HIPC debt relief is, at least in principle, *non*-earmarked, not tied to financing specific, predetermined activities. It is 'deliberately fungible': funds from HIPC debt relief are pooled with the budget and, since 1999, to be spent on the government's priorities as put forward in its national development plans. We prefer to label this as non-earmarked use, thereby highlighting the (full) alignment of such debt relief with recipient development priorities, and government systems of planning, implementation and M&E.

However, even within the enhanced HIPC Initiative non-earmarking has not always been a matter of course. In some countries, particularly those whose public financial management systems were deemed to be of doubtful quality, HIPC (usually interim) debt relief has relied on stricter forms of earmarking, in principle only as a temporary solution. Sometimes so-called 'institutional poverty funds' have been used, off-budget vehicles having all the characteristics of what we would label micro-earmarking. In other instances, donors have relied on intermediate types of earmarking, such as 'virtual fund mechanisms' in which HIPC relief and the accompanying poverty reduction expenditures were integrated into the budget, but tracked by means of separate budget lines (IMF and IDA 2001). If non-earmarking is complete, and policy and system alignment are satisfied, the debt relief chameleon behaves much like GBS, albeit in a somewhat disguised way (see further).

HIPC debt relief is expected to generate cash flows that are at least partially real (unlike most pre-HIPC Paris Club deals), due to its greater concessionality and, importantly, the participation of multilateral creditors such as the IMF, the World Bank and the African Development Bank. The latter enjoy a preferred creditor status, which implies that there is a greater probability that their claims would have been redeemed in the absence of the HIPC process.

6.2.3.3 Debt Relief Beyond the HIPC Initiative

Over the years, most Paris Club creditors have voluntarily decided to go beyond their commitments under the HIPC Initiative, delivering full (100%) relief on the eligible debts owed by HIPCs at completion point. This has put pressure on multilateral institutions to follow suit. In the wake of the 2005 G-8 summit in Gleneagles, the IMF, IDA and African Development Fund settled on supplementing the HIPC Initiative with the Multilateral Debt Relief Initiative (MDRI), in which all remaining claims (disbursed before a certain cut-off date) of these three creditors would be forgiven for post-completion-point HIPCs. Unlike the HIPC Initiative, the MDRI does not prescribe parallel debt relief by bilateral creditors (Paris Club or not), commercial creditors or multilateral institutions other than the three mentioned.¹⁷ Additional debt relief by non-Paris Club and commercial creditors beyond the HIPC Initiative remains very much ad hoc. Total debt relief committed under the MDRI has been estimated at over US\$50 billion in nominal value or US\$35 billion in end-2011 PV for the 36 post-completion-point HIPCs (IMF and World Bank 2016).

Typically, Paris Club creditors have not attached extra conditionalities when topping up HIPC debt relief, which makes these additional operations again similar to GBS. One exception that deserves mentioning here is the French *Contrats de Désendettement et de Développement* (C2D) mechanism. For the additional debt relief, it provides to HIPCs, France has reverted back to limiting (re-earmarking) the use of freed-up funds to a set of jointly determined activities in several sectors, that is, *macro-* or *multi-sector* earmarking. In principle, the activities spelled out in a C2D are aligned with PRSP priorities, but generally they are confined to a more limited number of sectors (Fall Gueye et al. 2007, Box 5). As such, this specific form of debt relief no longer mimics GBS, but rather (multi-sector) SBS, at best. Multilateral relief under the

¹⁷ In 2007 the Inter-American Development Bank settled on providing MDRI-like debt relief to the five Latin-American HIPCs. Also the EU decided to top up its HIPC commitments with extra debt relief on the European Development Fund's Special Loans, but only for eligible least-developed countries.

MDRI is also GBS-like, as it is granted quasi-automatically, without any further conditionality or earmarking, the moment HIPC's fulfil the necessary conditions to reach completion point.

Since these additional relief operations take place *after* debt sustainability has already been attained by means of the HIPC Initiative, the claims to which they apply can be assumed to have been fully serviced otherwise. Hence, the cash flow effects of beyond-HIPC relief are close to the full PV of debt, nothing like pre-HIPC and HIPC relief. Indeed, in IMF documents the MDRI has been described, above all, as an effort to support the progress of HIPC's towards the Millennium Development Goals (MDGs) by freeing-up additional donor resources, more so than as a mechanism to improve countries' debt situation.

Meanwhile, the Paris Club also sought a more tailored response to the debt situation of middle-income countries and other non-HIPC's. Under the Evian approach, adopted in 2003, Paris Club creditors agreed to take into account issues of debt sustainability of non-HIPC's. In case of solvency problems, the required debt relief would be determined on an ad hoc basis and executed through a multi-year three-stage process.¹⁸

The debt of non-HIPC's (and non-eligible debt titles of HIPC's) has furthermore been subject to a new wave of bilateral debt-for-development swap operations between Paris Club members and their debtors. These include, among other, debt-for-nature swaps enacted under the US Tropical Forest Conservation Act, debt-for-health swaps under the Debt2Health Scheme of the Global Fund to Fight AIDS, Tuberculosis and Malaria and a number of debt-for-education swaps.

The nature of the conditionality sets attached, including strict micro-earmarking, and the often limited degree of alignment of debt-for-development swaps give them an appearance close to old-style project aid, quite like their predecessors (and unlike other forms of beyond-HIPC relief). Recent Spanish swaps, for example, have created separate (local currency) counterpart trust funds, managed and administered by

¹⁸ There are few cases where the Evian approach principles have been applied explicitly (Cosio-Pascal 2008). In the large-scale Paris Club debt treatments of Iraq (2004) and Nigeria (2005), for example, political considerations seem to have played a much more prominent role.

bi-national committees consisting of both Spanish and debtor country members (generally people working in the ministries of finance and/or planning, national treasuries and/or ambassadors). These are clear instances of parallel project implementation structures, with no consideration of the quality of recipient countries' own systems. Only if debt-for-development swaps are designed to be policy- and system-aligned, they are similar to what could be branded 'new-style' project aid, a practice more consistent with the new aid agenda. The cash flow equivalence between debt swaps and new aid is very much case-specific, depending on the type of underlying debt and the size and timing of the expected counterpart payments (see Cassimon et al. 2008; 2011 for particular debt swap case studies).

6.3 Insights for Debt Relief Policy

In this section, we demonstrate how the chapter's aid modality equivalence view on debt relief may provide new, policy-relevant insights. We limit ourselves to two areas. First, we show it allows one to better understand debt relief's mixed performance record, evident from the literature, by linking up different sorts of debt relief (the 'colour' of the chameleon if you will) with research evidence on debt relief effectiveness and relevance. Second, we zoom in on instances where debt relief mimics GBS and briefly dwell on the dilemmas that this may pose to policymakers.

6.3.1 Assessing the Chameleon

The empirical evaluation literature on international debt relief is relatively large but still much more limited than the body of theoretical analysis. Focus is almost exclusively on HIPC's due to the paucity and fragmented nature of data on the amounts of debt relief granted outside the HIPC framework. Moreover, reviews of the more recent MDRI debt cancellation have only recently emerged as relief figures became available with a considerable lag.

This subsection briefly summarises the available (sometimes tentative) evidence from cross-country studies. Following the evaluation logframe

developed by Dijkstra (2003), we distinguish between, first, debt relief *effectiveness at output level*, in other words the extent to which the inputs of donors' financial contributions to debt relief, policy dialogue and other conditionalities translate into outputs such as reduced debt stocks, diminished debt servicing, net fiscal space increases and improved governance; second, *effectiveness at outcome level*, or the degree to which inputs through outputs lead to outcomes such as improved debt sustainability, debt overhang elimination, better aid selectivity and augmented pro-poor spending; and third, *relevance*, the scope for economic growth and poverty reduction impacts by means of the aforementioned inputs, outputs and outcomes.¹⁹

Judging by Dijkstra's (2003) own analysis of eight debtor countries, international debt relief during the 1990s performed rather poorly along these dimensions of effectiveness at output level, effectiveness at outcome level and relevance; for most countries, there were no noticeable improvements in debt sustainability, growth, public spending or social indicators.²⁰ For a sample of low-income African countries over 1984–1993, Hernández and Katada (1996) also find that, unlike aid grants, bilateral ODA debt relief (from 1989 onwards) did not have any significant (positive or negative) effect on the import capacity of these countries, reportedly because it failed to free up resources in itself but was compensated by new multilateral lending and grants of bilateral donors.

In hindsight, the dismal performance of pre-HIPC and early HIPC debt relief during the 1990s should not come as a surprise, we argue, having noted that these sorts of debt relief very much resembled old-style project aid and BoP support disbursed during the heydays of structural adjustment, with limited cash flow effects to make things worse. Indeed, both project aid and structural adjustment support have been heavily

¹⁹ Dijkstra herself uses the term 'efficiency' for what we indicate with 'effectiveness at output level'. Because in the evaluation literature 'efficiency' generally refers to achieving certain goals with the lowest possible use of resources, we think it is somewhat of a misnomer in this context.

²⁰ To our knowledge, there are no noteworthy comprehensive empirical studies dealing with pre-1990 debt relief. Both limited data availability and the fact that debt relief did not feature as a priority issue on the international agenda at that time could explain this.

criticised, even by donor organisations themselves, for failing to bring about the promised development results. Debt relief that imitates these forms of aid (and moreover, delivers almost no direct resource gains), can not be expected to perform better.

Empirical evidence on international debt relief into the new millennium looks, in some aspects, more encouraging.

6.3.1.1 Debt Relief Effectiveness at Output Level

First and foremost, there seems to be convincing proof of debt relief effectiveness at output level. When the MDRI will be fully executed, total external debt stocks of the current 36 post-completion point HIPCs will be about 90% lower in PV terms than before traditional (pre-HIPC) debt relief. Debt service payments of these same countries have come down by more than 2 percentage points of GDP, on average, between 2001 and 2013. Both outputs are to be ascribed primarily to the enhanced HIPC Initiative and MDRI (IMF and World Bank 2016).

In addition, Cassimon and Van Campenhout (2007, 2008) show that HIPC debt relief (up to the mid-2000s) has reduced domestic borrowing and increased government recurrent primary spending for different samples of HIPCs. In fact, they find that the fiscal response effects of HIPC debt (service) relief are most similar to those of programme grants, such as SBS and GBS. This corresponds well with our earlier analysis.

On the crucial question of additionality, Powell and Bird (2010) aver that in Sub-Saharan Africa the donor community has treated post-2000 debt relief as a complement of, rather than as a substitute for other aid interventions. Dömeland and Kharas (2009) are more reticent in their claims; they argue that there are no significant differences between the resources received by HIPCs and non-HIPCs but that the HIPC Initiative may have simply prevented a decline in net transfers to HIPCs. The available evidence thus seems to suggest that HIPC and beyond-HIPC debt relief have created *real* fiscal space (compared to a situation where there had been no such debt relief, at the minimum).

Several studies have also found recent debt relief to be positively associated with improvements in recipient countries' governance quality

(Depetris Chauvin and Kraay 2007; Freytag and Pehnelt 2009), although causality is difficult to establish (Presbitero 2009).

6.3.1.2 Debt Relief Effectiveness at Outcome Level

Second, with respect to the effectiveness at outcome level of debt relief, Beddies et al. (2009) indicate that, at end 2007, post-completion HIPC had a rosier debt outlook and lower risk of debt distress than other HIPC and low-income non-HIPCs. The global financial and economic crisis did not translate directly into new systemic debt sustainability problems for HIPCs (IMF and World Bank 2010). Battaile et al. (2015) find that African HIPC debt levels have risen in the post-crisis years; but apart from a few cases of explosive debt dynamics (often linked to large commercial borrowing), the increase has been relatively modest, helped by rapid growth, high commodity prices and large non-debt (Foreign Direct Investment) inflows.

Cassimon and Van Campenhout (2007, 2008) uncover a positive trend in HIPC government investment in the years following debt forgiveness (albeit with a lag), in accordance with debt overhang theory. A more recent study, which extends the study period up to 2011, confirms the positive results HIPC debt relief has had on public investment, but fails to find an equally strong impact for the MDRI (Cassimon et al. 2015). More indirect evidence supporting the argument that concerted debt relief can eliminate debt overhang comes from Raddatz (2011); he employs an event study analysis to show that stock market prices of South African multinationals with subsidiaries in African HIPCs react positively to announcements about major debt relief initiatives. Conform expectations, the price effects are greater for announcements about the MDRI and enhanced HIPC (that provide deeper and broader relief) than for news on the original HIPC Initiative. Other commentators, however, have questioned the supposedly positive impact of HIPC debt relief on investment through debt overhang elimination (Depetris Chauvin and Kraay 2005; Presbitero 2009; Johansson 2010).

Claessens et al. (2009) show that over time, and especially since 1999, bilateral donor aid has on the whole become more responsive to recipient countries' policy and institutional quality and less to high

multilateral and bilateral debts; the latter also holds for individual aid recipient countries once they reach decision point under the enhanced HIPC Initiative, suggesting a decrease in defensive lending following (or in anticipation of) large-scale debt relief.

Has debt relief led to increased pro-poor spending? IMF and World Bank (2016) allege that over the 2001–2013 period poverty-reducing expenditures by post-decision point HIPC countries (as defined in their respective PRSPs) have risen by approximately 2 percentage points of GDP, about the same as the decline in debt service over that period. There is however great heterogeneity of such expenditures at the country level, with some ex-HIPCs seriously lagging behind (see also Presbitero 2009). Moreover, most econometric studies find the effect of HIPC debt relief on government spending in the education and health sector not to be significant when controlling for other factors (Depetris Chauvin and Kraay 2005; Crespo Cuaresma and Vincelette 2008; Schmid 2009), or to be significant only when accompanied by positive institutional change (Dessy and Vencatachellum 2007). So, whereas in the past decade, government spending on poverty reduction purposes has definitely increased for some, if not most HIPCs, debt relief may not have played an important (direct) role therein.

6.3.1.3 Debt Relief Relevance

Third and last, on debt relief relevance, in other words its potential to eventually generate economic growth and reduce poverty in recipient countries, the verdict is still out. Taken together, the results of Depetris Chauvin and Kraay (2005), Presbitero (2009) and Johansson (2010) seem to suggest that a debt relief-growth nexus, if it exists, is certainly not omnipresent and may exhibit non-linear characteristics.

Probably, even more difficult to identify is a causal link between debt relief and poverty reduction. Looking at post-completion-point HIPCs' performance on the MDGs, it appears that many of them have missed the goals set for 2015, with the poorest achievements in the education and health related sectors (IMF and World Bank 2016). That said, and in spite of their sobering conclusions on public expenditures, Crespo

Cuaresma and Vincelette (2008) and Schmid (2009) do find seemingly robust evidence of HIPC debt relief lowering primary schooling drop-outs and reducing infant mortality rates, respectively. HIPC conditionality, which induces economic and political reforms and strengthens the links between debt relief, poverty reduction and social service delivery, is advanced as a possible explanatory factor. Indeed, based on micro-level data, Welander (2016) finds that infant mortality in HIPCs went down at decision point (when policy reforms were agreed upon), but observes no additional effect at completion point (when full debt relief is granted).

In view of all the above, one could cautiously conclude that the chameleon called debt relief has changed its colour for the better. In contrast with pre-HIPC and early HIPC debt relief, more recent operations under the enhanced HIPC Initiative and MDRI have, on average, succeeded in making debt stocks and service sustainable, in generating fiscal space and, possibly, in augmenting public investment. We argue that at least part of the differences in assessment can be attributed to debt relief's equivalence with certain aid modalities, in terms of conditionality sets and cash flow effects. The direct impact of HIPC/MDRI relief on governance, pro-poor spending and, ultimately, growth and poverty reduction in Africa and elsewhere is perhaps more elusive (which is not very different from what evaluations of direct budget support find; see, for example, IDD and Associates 2006). Rigorous empirical study of these and other potential effects of debt relief should be seen as an ongoing research programme. Nevertheless, one needs to remember to keep 'expectations . . . modest and time horizons long' (Moss 2006, p. 293).

6.3.2 Debt Relief as Disguised Budget Support

Rather than being stand-alone aid modalities, enhanced HIPC debt relief, additional bilateral relief to HIPCs and MDRI assistance are, in principle, very similar to GBS. Earlier we have argued that especially the latter two, bilateral 'topping up' and the MDRI, which both provide relief beyond what is strictly needed to achieve debt sustainability, can be expected to increase the pool of non-earmarked budgetary resources available to recipient country governments. Just like GBS, these initiatives are, together

with donor-recipient policy dialogue, part of a broader package, aimed at assisting countries with the implementation of their PRSPs. We believe understanding the close similarities between particular forms of debt relief and GBS is important for policy, even if (and perhaps, exactly because) the conclusions of such an exercise could make some donors feel uneasy.²¹

For countries that in the past qualified for both substantial amounts of GBS and GBS-like debt relief, for example, ‘donor darlings’ Mozambique, Rwanda and Uganda, this debt relief became a (disguised) supplement to the genuine (undisguised) GBS they received, with the additional bonus that it was all in grant form. To make things more complicated, the supplementary debt relief is *de facto multi-year* quasi-GBS, extended irrevocably over the full debt service horizon. This may not sit well with the genuine GBS it accompanies, which was originally promoted by the World Bank and OECD as a longer-term oriented aid modality supporting technocratic governance reform but, in practice, is often granted only on a one- to three-year basis and subject to suspension or delay when donors perceive a breach of the political principles in the donor-recipient aid contract (Molenaers 2012). While the greater predictability of GBS-like debt relief is a boon to the recipient government, some donors might lament the loss of political leverage and flexibility it entails (given that they accept our debt relief-GBS equivalence perspective).

The fact that some countries, for example, the Central African Republic and the Republic of Congo, have received HIPC/MDRI and other quasi-GBS debt relief but no noteworthy sums of genuine GBS is puzzling. How to explain that donors do not deem these countries eligible for GBS, yet through additional bilateral debt relief and MDRI, have provided them with quasi-GBS that is *not* linked to achieving debt sustainability?²² One could also reverse the question

²¹ The similarities between debt relief and GBS are recognised as such, explicitly, by the OECD (see Lister and Carter 2007) and, more implicitly, by the World Bank when it defines budget support as ‘[d]onor instruments . . . that support the implementation of a country’s medium-term poverty reduction strategy and consist of regular (annual) disbursements of untied resources to the budget’ (Koeberle and Stavreski 2006, p. 6). But, to our knowledge, debt relief-GBS parallels have not been explored in greater detail in the literature so far.

²² Similarly, it seems odd that NGOs have strongly advocated these sorts of debt relief, while at the same time many of them are reluctant to embrace the use of GBS.

and wonder why a number of other countries, most notably Vietnam, have been eligible for GBS but not for quasi-GBS debt relief.

We argue that donors should look at GBS and GBS-like debt relief jointly, so as to avoid policy inconsistencies. The reality is different, however, most clearly for bilateral donors. Decisions on HIPC and beyond-HIPC debt relief are taken in different fora and by different actors than those on GBS; bilateral debt relief is largely decided on in the Paris Club, where creditors are represented by their ministry of finance staff, whereas on GBS, typically, donor departments of development cooperation (and by extension often, ministries of foreign affairs) have the final say. We believe the judgement to give long-term, fixed-tranche quasi-GBS debt relief to countries should *prima facie* feed into discussions about genuine GBS provision, and the other way around. Having a single locus of decision-making would be helpful.

6.4 Conclusions

Throughout our review of external debt relief since the 1980s, we have shown how, like a chameleon, this debt relief mimics different aid modalities; its ultimate ‘colour’ depending on the sorts of conditionality attached, the alignment with recipient country development policy and systems, and the expected cash flow effects of the relief operation. For example, pre-HIPC debt service and stock relief behaved similar to BoP support under structural adjustment, but without any noticeable budgetary consequences. With the introduction of the HIPC Initiative, and especially with its enhancement in 1999, most official debt relief began to generate real fiscal space; also since 1999, HIPC debt relief has been linked explicitly to poverty reduction through PRSP conditionality, turning it into a GBS-like intervention. Large-scale commercial debt exchanges such as the Brady deals, if without the usual IMF programme requirement or recap clauses, may have been much akin to ‘oil’, freely spendable resources to the amount of the secondary market value of the debt exchanged.

While interesting in itself, our categorisation of debt relief from an aid modality perspective also offers new insights into debt relief’s varying

performance and for the design of future interventions. Browsing the literature on debt relief evaluation, we must conclude that more recent debt relief operations have been assessed as more effective than their predecessors in bringing about debt sustainability, creating fiscal space and increasing investment, at least partly due to more appropriate conditionalities, better alignment and greater cash flow effects. In other words, it seems that the chameleon has changed its colour for the better. That being said, the impact of debt relief, even in its modern guises, on recipient country's governance, economic growth and poverty reduction remains hard to pin down. Of course, policy dialogue and conditionalities attached to debt relief take time to bite. And, more so than with traditional aid, debt relief's fiscal gains to the recipient are typically spread out over longer periods. While further research is needed in these areas, one should bear in mind the limits to what debt relief can realistically achieve.

Lastly, we have illustrated how the chapter's conceptual framework brings to the fore tensions underlying the quasi-GBS character of bilateral beyond-HIPC and MDRI debt relief. We argue that there are policy inconsistencies in giving certain countries debt relief that acts as a kind of longer-term, fixed-tranche, grant-type GBS, but denying them access to genuine, direct GBS (or the other way around). One way to mitigate such inconsistencies would be to discuss both forms of aid in a single forum, which is very different from current practice.

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7

Foreign Direct Investment and Economic Growth: The Structural Vector Autoregressive Approach for South Africa

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7.1 Introduction

South Africa suffers from a shortage of domestic savings to support local investment and accelerate job enhancing economic growth (Strydom 2007). As evidence, the World Bank¹ reports that the share of gross

¹ <http://data.worldbank.org/indicator/NY.GDS.TOTL.ZS>

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domestic saving to the country's Gross Domestic Product (GDP) has fallen from 20% in 2011 to 18.5% in 2014. One way to partially overcome this issue could be via attracting more Foreign Direct Investment (FDI) in the country.

FDI, a strategy used by host countries to boost capital formation, job creation and economic growth, is acceptably defined as the net inflow of investment by a foreign investor (either an individual or a firm) to acquire at least 10% of ordinary shares or voting powers in the management of a firm in a foreign country (Hawkins and Lockwood 2001; Sandrey 2013, p. 3; Shahbaz et al. 2008). Apart from being an important source of external financing which helps to accelerate the formation of capital in host countries, FDI also allows technology transfer between the home and host countries (Gruben and Mcleod 1998; Carkovic and Levine 2002).

In recent years, several developing countries have put in place investment policies that are conducive to more FDI inflows in their respective countries. For instance, according to the UNCTAD (2008), the share of FDI inflows in developing countries have increased from 5% to 36% over the period 1980–2004. Similarly, Wan (2010, p. 52) reports that FDI inflows in developing countries increased by 52% between 2001 and 2005. The World Bank (2007) reported that global FDI flows had reached US\$ 1.1 trillion in 2006 and were expected to rise in the future.

Several studies on FDI and economic growth have been carried out (see Tang et al. 2008; Agosin and Machado 2005; Liu et al. 2002; Prasanna 2010; Chowdhary and Kushwaha 2013). However, findings have been mixed and inconclusive. These findings suggest that the impact of FDI on growth, and vice versa, depend on country specific conditions and macroeconomic policies. This chapter contributes to the debate on socio-economic value of FDI specifically for South Africa.

FDI may have positive (crowd-in) or negative (crowd-out) effects on economic growth. Based on this, the main objective of this chapter is to examine the dynamic relationship between FDI and economic growth in South Africa. FDI inflows in South Africa over the period 1960–2014 have systematically increased (compare Fig. 7.1). Over the period

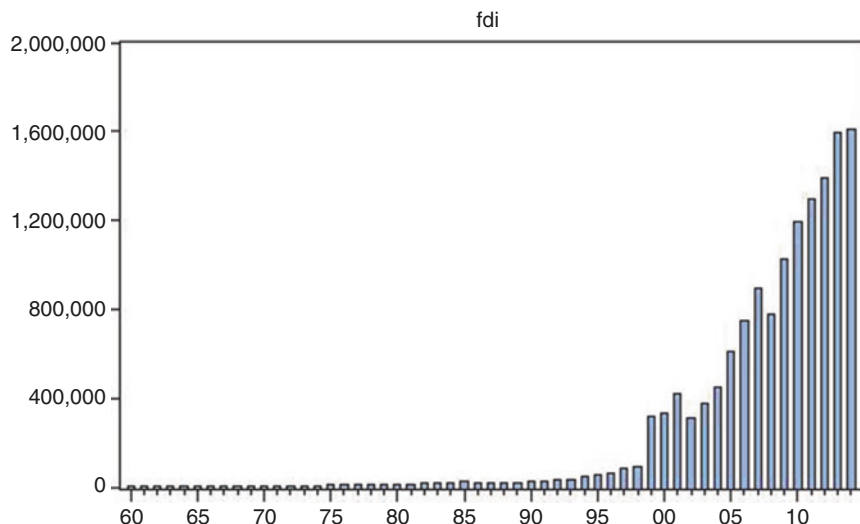


Fig. 7.1 Trend of FDI inflows in South Africa (1960–2014)

Source: South African Reserve Bank Online Database²

1980–1993 though, FDI inflows in South Africa were estimated to be around US\$0.3 billion only (Arvanitis 2006). Arvanitis argues that such low FDI inflows were partly due to the apartheid political environment, the financial and trade sanctions imposed on the country as well as the inability to pay external creditors which led to the country's suspension on the international capital market. Figure 7.2, which delivers the same information in logarithmic form (LNFDI) reinforces the idea that the non-fulfilment of the world's expectations of P.W. Botha's Rubicon speech in August 1985 sent a negative signal to international investors and further contributed to build bad expectations about the South African economy—leading still to a strong decrease of the FDI inflows after 1985.

However, FDI inflows have significantly increased in the country after 1993. Foreign Direct Investment into the South Africa's economy grew

² resbank.co.za/Publications/QuarterlyBulletins/Pages/QBOnlinestatsquery.aspx

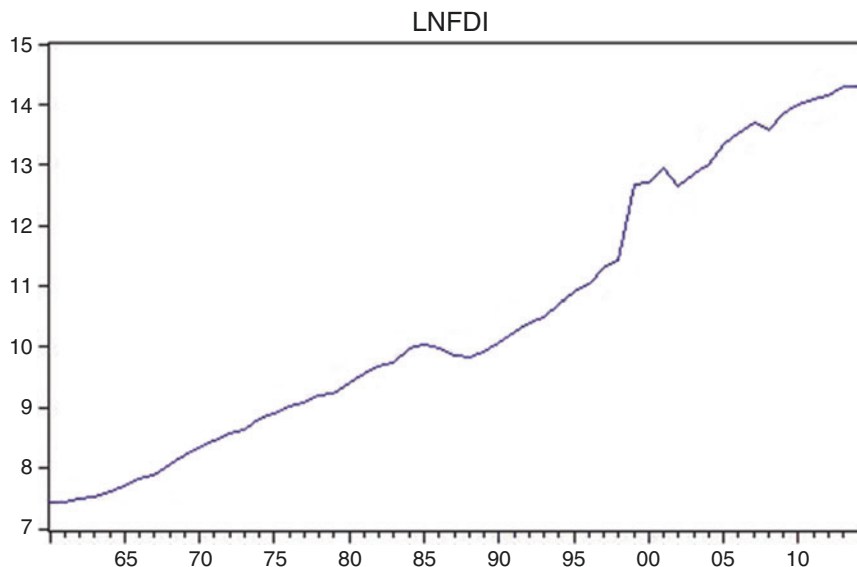


Fig. 7.2 Trend of LNFDI in South Africa (1960–2014)

Source: South African Reserve Bank Online Database³

from 81.5 billion in 1997 to round about 1.6 trillion in 2014 in rand terms (Sandrey 2013, p. 3, Arvanitis 2006, p. 66, compare also Figs. 7.1 and 7.2). Arvanitis (2006, p. 66) attributes the increase in the FDI inflows to two reasons which are: the partial sale of government shares in Telkom in 1997 and the acquisition of the DeBeers by the Anglo American in 2001 which amounted to almost US\$ 3.5 billion of FDI inflows.

Finally, Fig. 7.3 shows that prior to 1994, South Africa registered very low or negative growth rates since the end of the World War II (Faulkner and Loewald 2008). Faulkner and Loewald (2008, p. 4) note that the main causes of this declining growth are mainly attributed to trade and financial sanctions imposed on the apartheid government, political instability, increased uncertainty, and declining investment.

³ resbank.co.za/Publications/QuarterlyBulletins/Pages/QBOnlinestatsquery.aspx

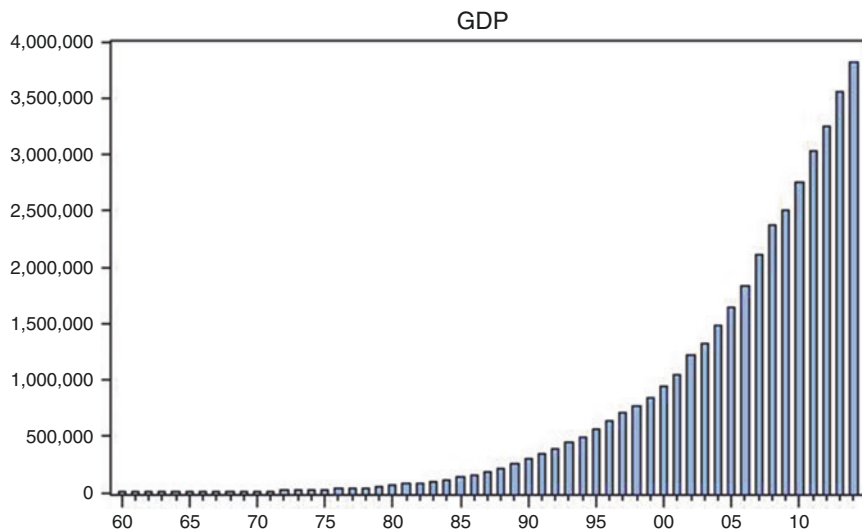


Fig. 7.3 Trend of Economic Growth in South Africa (1960–2014)

Source: South African Reserve Bank Online Database⁴

Faulkner and Loewald (2008, p. 4) further observe that from 1994, due to the new political environment and a number of policy reforms, the country's growth rate has shown a positive and persistent increasing trend.

In the literature, proponents of the positive effects of FDI are attributed to Findlay (1978), Romer (1993), Gruben and Mcleod (1998), Van Loo (1977), Borensztein et al. (1998) and De Mello (1999).

Using the neoclassical Solow model (Solow 1956), they underline that FDI aids in overcoming the capital shortage in host countries, allows the transfer of productive technologies and the building of human capital in host countries. Thus, FDI contributes to more economic growth via the increase in productivity of local firms.

Conversely, advocates of negative effects of FDI in host countries like Hymer (1976) and Caves (1971) argue that FDI is a strategy used by

⁴ resbank.co.za/Publications/QuarterlyBulletins/Pages/QBOnlinestatsquery.aspx

Multi-National Corporations (MNCs) in developed economies to advance monopoly power over local industries; through FDI MNCs control supply of inputs and gain the benefits of tax incentives in the host country which reinforce their competitive advantage over local firms that are unable to compete with MNCs because of their superiority in terms of marketing and advertisement powers (Gardiner 2000).

Lastly, another strand of literature emphasises the role of absorptive capacity as a prerequisite condition for accelerating domestic capital formation and subsequently growth rates in host countries (Borensztein et al. 1998; Trevino 2003; Lumbila 2005; Alfaro et al. 2004; Xu 2000). Absorptive capacity is measured in terms of the level of education of domestic workers, institutional infrastructure and the development of domestic financial markets that allow countries to fully take advantage of FDI spillovers.

Empirical evidence is enormous but mixed and indecisive. Vu and Noy (2009), Kumar and Pradhan (2002), Razin (2003), Tang et al. (2008) confirmed the positive effect of FDI on growth. Borensztein et al. (1998) found that the positive effects FDI were conditional on the minimum absorptive capacity of a country. On the other hand, Agosin and Machado (2005), Titarenko (2005) and Udomkerdmongkol (2008) found the effect of FDI on GDP growth being negative.

In trying to contribute to the debate on socio-economic value of FDI specifically for South Africa, this chapter is organised as follows: Section 7.2 explains the methodology used, in Section 7.3 the econometric model is discussed, the econometric analysis is provided in Sections 7.4 and 7.5 concludes with remarks and policy implications.

7.2 Methodology

7.2.1 The SVAR Model

Following the works of Fosu et al. (2014) and Kanayo and Emeka (2012), this study also uses to Structural Vector Autoregressive (SVAR) framework (Sims 1980) in order to examine the dynamic relationship between FDI and economic growth in South Africa.

An SVAR model is used to trace the effect of a policy shock on endogenous variables using impulse response functions. The SVAR model, describing the relationship of macroeconomic variables, is modelled as follows:

$$B_0 Y_t = B_1 Y_{t-1} + B_2 Y_{t-2} + \dots + B_p Y_{t-p} + \epsilon_t \quad (7.1)$$

Where: Y_t is a $(N \times 1)$ vector of endogenous variables at time t ;

B_i is a $(N \times N)$ matrix of parameters for $i = 0, 1, 2, \dots, p$

ϵ_t is a white noise process with the following properties:

$$E(\epsilon_t) = 0 \quad (7.2)$$

$$\text{Cov}(\epsilon_t \epsilon_s') = \begin{cases} \sum & \text{if } t = s \\ 0 & \text{otherwise} \end{cases} \quad (7.3)$$

The structural disturbance term ϵ_t is orthogonal. Hence, the structural disturbances are uncorrelated. The variance covariance matrix Σ is constant and diagonal.

The contemporaneous matrix B_0 is normalised across the main diagonal such that each equation in the SVAR has its correct dependent variable. The parameters of our SVAR model are estimated in two stages. In the first stage, the reduced form Eqs. (7.5), which is related to the structural Eq. (7.1), is derived as follows:

$$Y_t = B_0^{-1} B_1 Y_{t-1} + B_0^{-1} B_2 Y_{t-2} + \dots + B_0^{-1} B_p Y_{t-p} + B_0^{-1} \epsilon_t \quad (7.4)$$

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + e_t \quad (7.5)$$

Where:

$$A_i = B_0^{-1} B_i, \quad i = 1, 2, \dots, p$$

$$e_t = B_0^{-1} \epsilon_t \text{ with the following properties}$$

$$E(e_t) = 0$$

$$\text{var}(e_t) \sim N(0, \Omega)$$

e_t is the innovation term of the reduced Vector Autoregressive approach (VAR). Using ordinary least square estimation method, N

equations in the reduced form VAR are estimated and their residuals are obtained. The disturbance terms in (7.5) are related to the innovation term in the reduced VAR as follows:

$$E(e_t e_t') = B_0^{-1} (\epsilon_t \epsilon_t^{-1}) B_0^{-1'} \quad (7.6)$$

$$\Omega = B_0^{-1} \sum (B_0^{-1})' \quad (7.7)$$

The second stage identifies the contemporaneous matrix B_0 , the variance covariance matrix Σ maximises the likelihood function conditional on the parameter estimates of the SVAR in the first stage. Hamilton (1994) describes the full information maximum likelihood function as follows:

$$\ln L_t = -\frac{1}{2} \log(2\pi) - \frac{1}{2} \log |B_0^{-1} \sum (B_0^{-1})'| - \frac{1}{2} \hat{e}' B_0^{-1} \sum (B_0^{-1})' \hat{e} \quad (7.8)$$

Where: Σ is restricted to be a diagonal matrix, $\hat{e}$ is a vector of fitted residual from the reduced form VAR. In the SVAR model, the contemporaneous matrix B_0 has N^2 parameters while the variance covariance matrix Ω has $N(N+1)/2$ distinct values.

As a result, an identification problem arises since the SVAR model requires $N(N+1)/2$ number of restrictions to be imposed on the system before an exact identification can be established. Hence, it is evident that without clear identification process, the original parameters of the SVAR model cannot be estimated. To address this issue, estimated residuals from the reduced form VAR are transformed into a set of structural equations by imposing short run recursive⁵ restrictions (or Cholesky's Factorisation where matrix A is assumed to be a lower triangular matrix) on contemporaneous variables in the reduced form VAR (Sims 1980).

⁵ In the literature, the non-recursive method, which is based on prior theories and empirical evidence, is an alternative (Sims 1986; Bernanke 1986; Blanchard and Watson 1986). However, restrictions based on theories and empirical facts are complex and not straightforward.

7.2.2 Data and Econometric Tests

Our SVAR model uses annual time series data covering the period 1960–2014. All data are collected from the South African Reserve Bank online database. Our variables include GDP, Gross fixed domestic investment (GFDI), Exchange rate (ER) and FDI.

All our variables are seasonally adjusted and expressed in logarithmic form (LNGDP, LNGFDI, LNER and LNFDI). Furthermore, the following econometric tests namely the unit root test, the Johansen's cointegration test and the optimal lag length criteria are carried out prior to our empirical analysis. Results of these tests are provided in the appendices of this chapter.

7.2.3 Recursive Approach

As already discussed above, the Cholesky's structural factorisation method is used to identify the matrices A and B_0 (contemporaneous matrix in the original VAR). Equation (7.9) summarises the recursive identification process discussed in Eq. (7.7).

$$\begin{bmatrix} e_{GDP} \\ e_{GFDI} \\ e_{ER} \\ e_{FDI} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 \\ a_{41} & a_{42} & a_{43} & 1 \end{bmatrix} \cdot \begin{bmatrix} \varepsilon_{GDP} \\ \varepsilon_{GFDI} \\ \varepsilon_{ER} \\ \varepsilon_{FDI} \end{bmatrix} \quad (7.9)$$

The identified matrices A and B appear as follows:

$$A = \begin{bmatrix} 1 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 \\ a_{41} & a_{42} & a_{43} & 1 \end{bmatrix} \quad (7.10)$$

$$B = \begin{bmatrix} b_{11} & 0 & 0 & 0 \\ 0 & b_{22} & 0 & 0 \\ 0 & 0 & b_{33} & 0 \\ 0 & 0 & 0 & b_{44} \end{bmatrix} \quad (7.11)$$

Where: $(N \times N)$ in Eq. (7.1) is specified as (4×4) for A_i and B_i in the Eqs. (7.10) and (7.11) respectively. $\varepsilon_{GDP}, \varepsilon_{GFDI}, \varepsilon_{ER}, \varepsilon_{FDI}$ are the structural disturbances of GDP, GFDI, ER and FDI respectively. $e_{GDP}, e_{GFDI}, e_{ER}, e_{FDI}$ are the reduced form residuals describing the unexpected or sudden change of each exogenous variable in the SVAR model.

a_{ij} : contemporaneous coefficient in A ,

b_{ij} : contemporaneous coefficient in B .

7.3 Econometric Model

7.3.1 Impulse Response Function

The impulse response function is used in order to investigate the dynamic responses of our variables to the various shocks within our SVAR system. The reduced form VAR model in (7.5) using the lag operator is captured as:

$$A(L)Y_t = e_t \quad (7.12)$$

For any stable and stationary VAR, the effect of the reduced form innovation term e_t in (7.12) fades away through time. Consequently, the reduced form VAR (7.12) is transformed to express the endogenous variables in Y_t as a function of current and past values of e_t . Subsequently, (7.13) is obtained. It is called a Vector Moving Average (VMA) model presented as:

$$Y_t = e_t + \phi_1 e_{t-1} + \phi_2 e_{t-2} + \dots + \phi_i e_{t-i} = \Phi(L)e_t \quad (7.13)$$

Where: $\Phi(L) = (A(L))^{-1}$.

Holding constant all other reduced form innovations terms, the impulse response function traces the response of the i th variable

over time following an innovation shock to e_t from the j th variable. Since by construction, the innovation shock to e_t captures only the aggregate effect of all economic shocks to the system, it is difficult for the VMA model in (7.13) to attribute the response of a given variable to a particular shock. To overcome this problem, the reduced form innovation term e_t is transformed to recover all structural disturbances ε_t mentioned in the primitive SVAR model (7.1). Based on the orthogonality assumption of the structural disturbances ε_t in the SVAR model, the VMA model is represented as follows:

$$Y_t = \Phi^*(L)\varepsilon_t \quad (7.14)$$

Where:

$\Phi^*(L)\varepsilon_t = \Phi(L)B_0^{-1}$ is the impulse response function of Y_t to the structural shock to ε_t . The orthogonality assumption of the structural disturbances implies that the covariance between the primitive shocks is restricted to zero. Compared to the VMA model specified in (7.13), the new VMA model (7.14) generates an impulse response function which can be interpreted in a meaningful way because the structural disturbances ε_t have now specific economic meaning.

The forecast error variance decomposition, which helps to disentangle what proportion of FDI shock is responsible for fluctuations in each of the endogenous variable in the SVAR model, is explained in the next section.

7.3.2 Variance Decomposition

The forecast error variance decomposition explains what proportion of a shock to a given variable is due either to its own innovations or to the innovations of other endogenous variables at various forecast time horizons in the model. The s -period forecast error is described as:

$$y_{t+s} - \hat{y}_{t+s|t} = e_{t+s} + \phi_1 e_{t+s-1} + \phi_2 e_{t+s-2} + \dots + \phi_{s-1} e_{t+1} \quad (7.15)$$

The mean square error of the s-period forecast is:

$$MSE(\hat{y}_{t+s|t}) = \Omega + \phi_1 \Omega \phi_1' + \phi_2 \Omega \phi_2' + \dots + \phi_{s-1} \Omega \phi_{s-1}' \quad (7.16)$$

Where: $\Omega = B_0^{-1} \sum (B_0^{-1})'$. As a result, (7.16) is transformed as:

$$\begin{aligned} MSE(\hat{y}_{t+s|t}) = & B_0^{-1} \sum (B_0^{-1})' + \phi_1 B_0^{-1} \sum (B_0^{-1})' \phi_1' + \dots \\ & + \phi_{s-1} B_0^{-1} \sum (B_0^{-1})' \phi_{s-1}' \end{aligned} \quad (7.17)$$

Equation (7.17) shows the contribution of the orthogonal innovation ε_t to the MSE of the s-period-ahead forecast of variables in Y_t .

7.4 Econometric Analysis

The unit root test was conducted to ascertain whether our variables are stationary or not. Using the Augmented Dicker Fuller (ADF) test, all our variables are found to be non-stationary in levels at 5% significance level. However, after taking their first difference, they are found to be stationary. Thus, they are integrated of order 1 (see [Appendix 7.1](#)).

Using the Johansen unrestricted cointegration test (Maximum likelihood), evidence of one cointegrating equations is found. This suggests that our system can be estimated either in level or in a vector error correction model (see [Appendix 7.2](#)).

However, due to our very short sample (55 observations) and given that the objective of this chapter is not to analyse any long run relationship of FDI and GDP, a VAR model in level is adopted since it implicitly allows cointegrating relationships in our variables (Cheng 2006, p. 13; Tsangarides 2010, p. 12).

Moreover, the Akaike Information criterion (AIC), the Schwarz-Bayesian criterion (SC) and the likelihood ratio (LR) have established that two lags must be selected when estimating the VAR model (see [Appendix 7.3](#)). The estimations of matrices A and B of the structural factorisation is shown in [Appendix 7.4](#).

The next section summarises the model analysis through the use of impulse response functions and variance decompositions.

7.4.1 Impulse Response Analysis

Figure 7.4 exhibits the impact of FDI unexpected shock on the variables of interest in the SVAR system. The graph shows that shocking FDI by 1% has no positive immediate impact on GDP. However, after the 14th period, GDP shows to be increasing at a relatively low rate.

A positive shock of FDI causes a positive and persistent increase in GFDI through time. This means that FDI somehow contributes to the long run accumulation of domestic capital in South Africa. Introducing a positive shock on FDI gives rise to a temporary increase in the domestic exchange rate parity (appreciation of the local currency vs. US dollar).

However, after the third period, ER shows to be persistently falling. Finally, shocking FDI by 1% has a significant positive impact on existing FDI inflows in the second period. Subsequently, it exhibits a positive yet decreasing trend through time progression.

Figure 7.5 depicts the sudden shock of GDP on our variables in the SVAR system. The graph reveals that shocking GDP⁶ by 1% results in persistent increase in GDP for the next 24 years. Similarly, a positive shock on GDP causes substantial and persistent increase in GFDI (domestic capital formation) for the next 25 years.

A positive shock on GDP causes a temporary fall in the domestic exchange rate during the second period. Thereafter, the ER shows to be persistently increasing through time. Eventually, shocking GDP by 1% causes a temporary decrease in FDI inflows (crowd-out effect in the short run) in the second period. Thereafter, FDI exhibits a tendency of persistently increasing in the country for the next 25 years.

⁶ For simplicity, variables with and without 'LN' are the same and used interchangeably

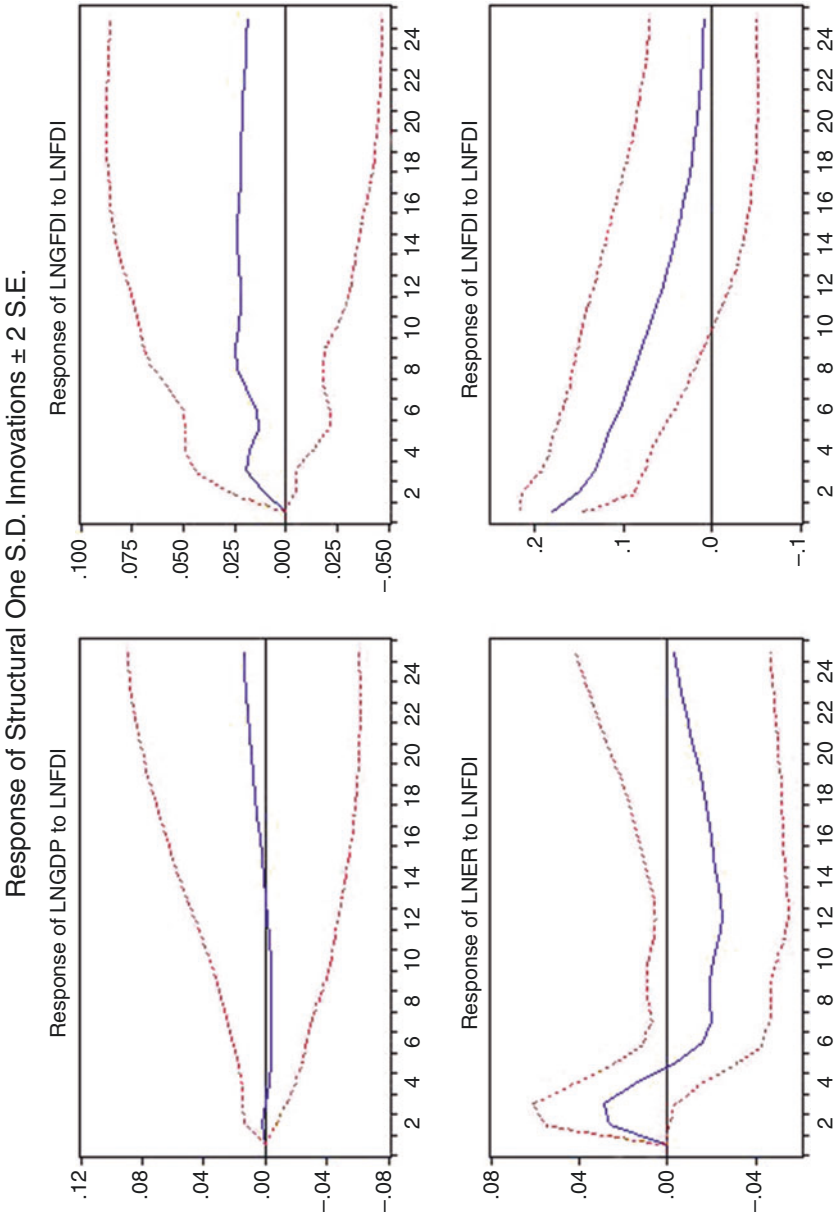


Fig. 7.4 Responses of LNGDP, LNGFDI, LNER, LNFDI to LNFDI shock

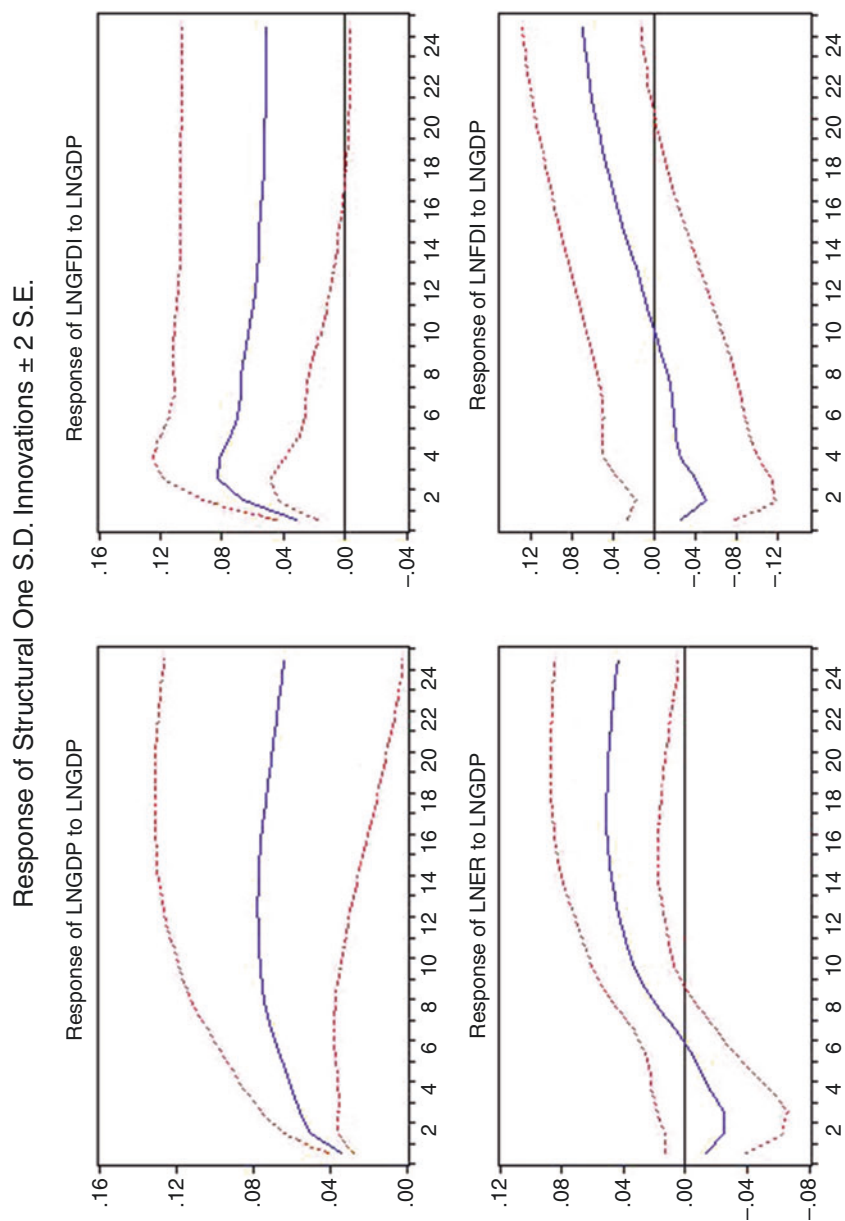


Fig. 7.5 Responses of LNGDP, LNGFDI, LNER, LNFDI to LNGDP shock

7.4.2 Variance Decomposition Analysis

The variance decomposition describes the proportion of variations in a given variable which is due whether to its own shock or shocks on other variables. [Figure 7.6](#) and [Table 7.1](#) display the proportion of variations in LNGDP, LNGFDI and LNFDI which is due to their own shocks or to other shocks in the system.

Much of variation in GDP is explained by its own shock. However, through time, the impact of its own shock is progressively falling and it is followed by the shocks on GFDI, ER and FDI, respectively. The impact of FDI on GDP seems to be minimal and insignificant

Variation in FDI is mainly explained by its own shocks through time. This is followed by the shocks on GDP, ER and GFDI respectively. Conversely, the impact of GDP on FDI is positive and significant.

Variation in GFDI is mostly explained by the shock on GDP through time. This is followed by the shocks on ER, FDI and its own shock. The findings of the variance decomposition are consistent with those of the impulse responses functions.

7.5 Conclusions and Policy Implications

The objective of this chapter was to investigate the dynamic relationship between FDI and economic growth in South Africa. To examine this problem, this chapter adopted the SVAR approach using a recursive identification method in order to examine the impact of FDI and GDP in the SVAR system.

An SVAR model of four endogenous variables (LNGDP, LNGFDI, LNER and LNFDI) was estimated for South Africa using annual data ranging from 1960 to 2014.

Using the impulse responses functions, the empirical findings revealed that shocking FDI by 1% has no positive immediate impact on GDP. However, after the 14th period, GDP shows to be increasing at a relatively low rate. A positive shock of FDI causes a positive persistent increase in GFDI through time.

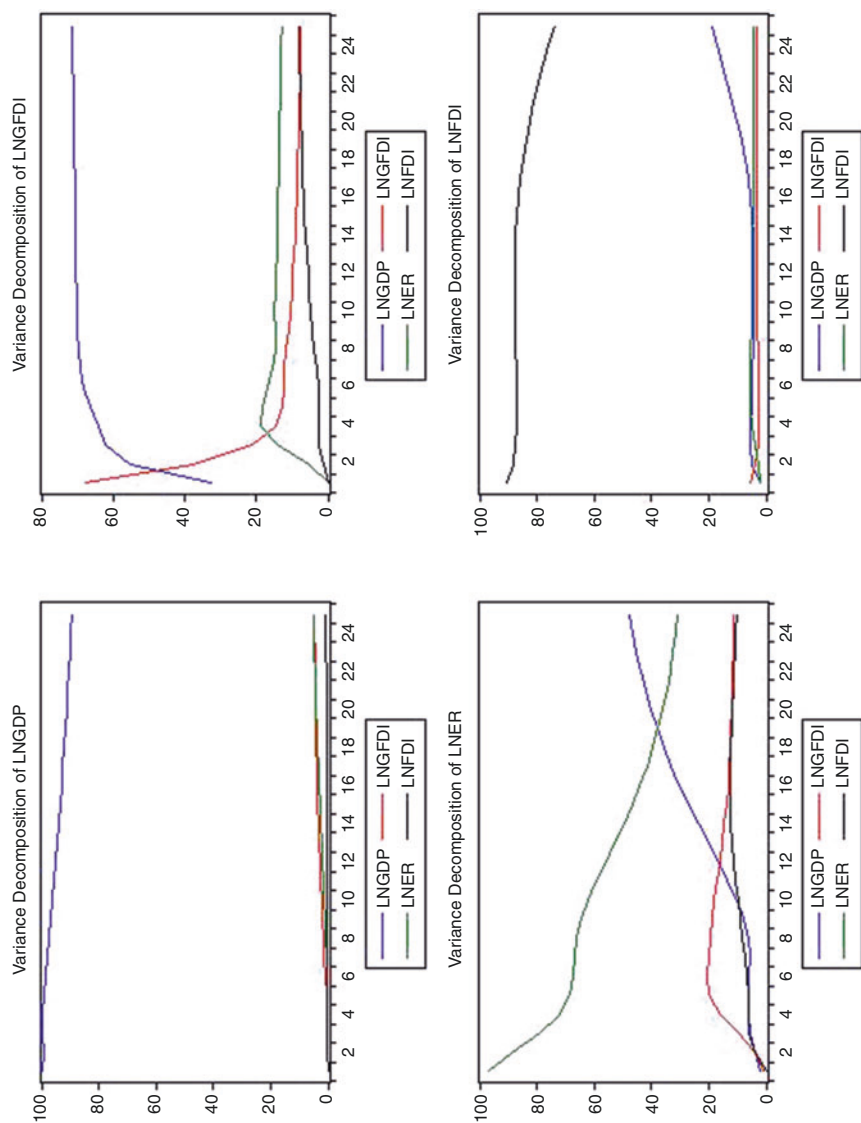


Fig. 7.6 Variance decompositions graphs of the SVAR system

Table 7.1 Variance decomposition results

Horizon	Percent of variation in			
	LNGDP shock	LNGFDI shock	LNER shock	LNFDI shock
LNGDP				
5	99.134	0.608	0.103	0.155
10	96.301	2.292	1.208	0.199
15	93.670	3.691	2.509	0.131
20	91.558	4.470	3.688	0.284
25	89.826	4.831	4.604	0.740
LNFDI				
5	5.062	2.498	5.468	86.972
10	4.292	2.982	4.841	87.885
15	4.908	3.247	4.521	87.324
20	10.080	3.047	4.302	82.570
LNGFDI				
5	68.548	12.460	16.216	2.776
10	70.580	10.503	14.121	4.796
15	71.335	9.134	13.210	6.321
20	71.888	8.236	12.615	7.261
25	72.602	7.621	12.090	7.687

Source: Authors' findings from Eviews

This means that FDI somehow contributes to the long run accumulation of domestic capital in South Africa. Moreover, shocking GDP by 1% results in persistent increase in GDP for the next 24 years. Similarly, a positive shock on GDP causes substantial and persistent increase in GFDI (domestic capital formation) for the next 25 years.

Eventually, shocking GDP by 1% causes a temporary decrease in FDI inflows (crowd-out effect in the short run) in the second period. Thereafter, FDI exhibits a tendency of persistently increasing in the country for the next 25 years.

With the help of the variance decomposition, it has been discovered that on one hand, the impact of FDI on GDP is positive yet minimal and insignificant while on the other hand, the impact of GDP on FDI is

positive and significant. Eventually, variation in GFDI is mostly explained by the shock on GDP through time

Based on the above results, some recommendations are formulated. Because FDI has a positive effect on GDP, more FDI inflows should be encouraged in South Africa. However, since the impact of FDI is less significant to economic growth, national efforts to attract more FDI should be accompanied by policies that also encourage economic growth, domestic capital formation as well as political stability. For instance, policymakers may assist in building synergies between activities of local firms and FDI enabled businesses. Furthermore, having learnt from the reaction on P.W. Botha's Rubicon speech and, more recently, the combination of the downgrading of South Africa's long-term sovereign debt rating nearly to 'junk' level together with so called 'Nenegate' experiences resulting from the replacement of South Africa's well respected finance minister Nene, governments and policymakers should avoid both irrational behaviour and adopting policies that reinforce political risk and uncertainty, send wrong signals to international investors with rational expectations and, therefore, make the country more volatile and vulnerable to macroeconomic shocks.

It is worth noting that this study only examined the dynamic relationship between FDI and GDP in South Africa. However, to gain deeper insights and derive further recommendations, future research that takes into account the interdependencies between other macroeconomic variables is needed. For instance, it would be useful to investigate the dynamic relationship between FDI, capital tax and export for the host country.

Appendices

Appendix 7.1 Unit root test

Variables	ADF with intercept	ADF with intercept
	In level (<i>P</i> value)	First difference(<i>P</i> value)
LNGDP	0.644*	0.004*
LNGFDI	-1.710*	0.000*
LNERN	0.196*	0.000*
LNFDI	0.615*	0.000*

*denotes significance at 5%

Appendix 7.2 Johansen cointegration test

Date: 16 January 2016; Time: 01:46

Sample (adjusted): 1963, 2014

Included observations: 52 after adjustments

Trend assumption: Linear deterministic trend

Series: LNGDP LNGFDI LNERN LNFDI

Lags interval (in first differences): 1–2

Unrestricted Cointegration Rank Test (Trace)

Hypothesised

No. of CE(s)	Eigenvalue statistic	Trace statistic	Critical value	Probability**
None*	0.514033	62.53931	47.85613	0.0012
At most 1	0.234360	25.01533	29.79707	0.1609
At most 2	0.163354	11.12911	15.49471	0.2037
At most 3	0.035038	1.854683	3.841466	0.1732

Trace test indicates 1 cointegrating equation(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) *P*-values

Unrestricted cointegration rank test (maximum Eigenvalue)

Hypothesised		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical value	Probability**
None*	0.514033	37.52399	27.58434	0.0019
At most 1	0.234360	13.88622	21.13162	0.3744
At most 2	0.163354	9.274429	14.26460	0.2640
At most 3	0.035038	1.854683	3.841466	0.1732

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) *p*-values

Appendix 7.3 Optimal lag length criteria

VAR Lag Order Selection Criteria

Endogenous variables: LNGDP LNGFDI LNER LNFDI

Exogenous variables: C

Date: 16 January 2016, Time: 01:49

Sample: 1960–2014

Included observations: 52

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−104.77	NA	0.000771	4.183465	4.333560	4.241008
1	239.3209	622.0107	2.56e−09	−8.435421	−7.684942	−8.147705
2	274.1589	57.61657*	1.25e−09*	−9.159956*	−7.809095*	−8.642068*
3	285.9681	17.71382	1.52E−09	−8.998772	−7.047528	−8.250711

LogL: Log likelihood

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Appendix 7.4 Matrix A and B under Cholesky's structural factorisation

Structural VAR Estimates

Date: 15 January 2016; Time: 11:42

Sample (adjusted): 1962, 2014

Included observations: 53 after adjustments

Estimation method: method of scoring (analytic derivatives)

Convergence achieved after six iterations

Structural VAR is just-identified

Model: $Ae = Bu$ where $E[uu'] = I$

Restriction type: short-run pattern matrix

 $A =$

1	0	0	0
C(1)	1	0	0
C(2)	C(4)	1	0
C(3)	C(5)	C(6)	1

 $B =$

C(7)	0	0	0
0	C(8)	0	0

(continued)

Appendix 7.4 (continued)

0	0	C(9)	0
0	0	0	C(10)
Estimated A matrix:			
1.000000	0.000000	0.000000	0.000000
−0.915960	1.000000	0.000000	0.000000
0.181144	0.221191	1.000000	0.000000
−0.114724	1.071643	0.264628	1.000000
Estimated B matrix:			
0.034158	0.000000	0.000000	0.000000
0.000000	0.044772	0.000000	0.000000
0.000000	0.000000	0.093814	0.000000
0.000000	0.000000	0.000000	0.180907

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8

Foreign Capital Flows and Output Growth Volatility in Selected Sub-Saharan African Countries

William G. Brafu-Insaيدoo and Nicholas Biekpe

8.1 Introduction

The liberalization of external capital accounts transactions in many countries, according to Kose et al. (2006) has, over the past two decades, stimulated an increase in cross-border financial flows among developed countries in general, and from developed countries to developing ones. The expected outcome of such liberalization policy was supposed to generate increased efficiency in the allocation of capital and improved international risk-sharing opportunities as a result of capital mobility.

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Theory seems to suggest that countries which have more volatile income growth and are capital-poor stand to gain the most from the increased capital flows arising from liberalization (see Lane and Milesi-Ferretti 2003; Vo 2005a, 2005b; Deléchat et al. 2009). In light of this generally accepted premise, the series of currency and financial crises in the late 1980s, 1990s and 2000s in Latin America and Asia, and the global financial crisis of 2007–2009, predicated on increased capital flows, have generated intensive debate among both academics and policymakers on the actual costs and benefits of increased international capital mobility.

Existing studies, including Mendoza (1994) and Baxter and King (1999), propose that the relationship between financial integration and output growth volatility is ambiguous. Studies by Senay (1998), Buch et al. (2002), Prasad et al. (2003) and Kose (2002) also hypothesize that the relationship between financial integration and output growth volatility depends on the nature of shocks and country-specific characteristics. Empirical studies, including the work by Ahmed and Suardi (2009) and Easterly et al. (2001), also do not offer any clear evidence on the link between financial openness and output growth volatility. Given the apparent lack of consensus on the relationship between financial liberalization and output growth volatility and the fact that currency and financial crises hold for global financial and economic stability, the real impact of capital inflows on output growth volatility, as a research area, is worth looking into. Issues addressed in this study centre on whether the types and composition of foreign capital have differential dynamics with regard to their impact on output growth volatility. In this regard, the study seeks to test the hypothesis that international capital flows stabilizes output growth rates. The study further adds value to research on Sub-Saharan Africa by disaggregating capital flows into equity and non-equity flows, analysing their impact on the time dynamics of output growth volatility and investigating the existence of threshold effects or non-linear relationships and the influence of the external financial structure.

The rest of the chapter is organized as follows. Section 8.2 reviews the literature that explains the relationship between output growth volatility and international capital flows as well as literature on other determinants of growth volatility. The hypothesis and estimated empirical model are presented in Section 8.3. Section 8.4 provides sources and description of data used for the study. Results on the impact of foreign capital flows

(aggregated and disaggregated) on output growth volatility are presented and discussed in [Section 8.5](#). Finally, [Section 8.6](#) summarizes the findings of the research and discusses basic limitation of the study and offers some directions for future research.

8.2 Literature Review

Existing studies, including the work by Calderón and Schmidt-Hebbel (2008) and Prasad et al. (2003), suggest that the impact of higher financial integration, in the form of increased international capital flows, on output growth volatility is ambiguous. Higher levels of financial integration give capital-deficient countries access to additional finance required for increased output growth and a more diversified production base. However, higher integration may also lead to higher specialization in production based on comparative advantage, and, thereby, result in greater vulnerability to traded-industry specific shocks. In addition, Calderón and Schmidt-Hebbel (2008) show that countries with high proportion of debt, in total external financial liabilities, tend to be highly susceptible to external financial shocks, with adverse consequences for the stability of output growth.

There is an increasing body of empirical studies on the relationship between international financial integration and output growth volatility. These include studies by Ahmed and Suardi (2009) and Calderón and Schmidt-Hebbel (2008). However, these studies have, generally, failed to provide evidence of a clear link between integration and macroeconomic volatility. For instance, Ahmed and Suardi (2009) investigated the impact of financial and trade liberalization on output and consumption growth volatility, and found financial liberalization to reduce both output and consumption growth volatility in 25 selected African countries. Contrary to this study, Gavin and Hausmann (1996) and Denizer et al. (2002) provide evidence of a positive relationship between financial openness, proxied by capital flows, and output volatility. Also, Easterly et al. (2001), Razin and Rose (1994) and Mendoza (1994) do not find any significant relationship between financial integration and macroeconomic volatility.

Empirical literature also provides evidence to confirm the hypothesis that the impact of foreign capital flows on output growth volatility depends on country characteristics. For instance, the study by Ahmed and Suardi (2009) provided evidence that strong institutions and increased financial depth reinforce the stabilizing effect of financial openness on output growth in the 25 selected African countries. Another related study by Calderón and Schmidt-Hebbel (2008) found evidence to support the hypothesis that output volatility increases in response to higher capital flows in developing countries that have less diversified production structure and poor quality institutions. Also, by using data covering a sample of 24 countries, Buch et al. (2002) found that countries with well-developed financial sectors are better able to reduce output volatility through financial integration.

8.3 Methodology

8.3.1 Hypothesis

Our basic working hypothesis drawn from a survey of theory and empirical literature is as follows: *Increased international financial integration helps emerging and developing economies to better manage output growth volatility*. The validity of this hypothesis depends on country-specific characteristics such as the structure of the country's external finance and the domestic financial depth of the capital-receiving country.

8.3.2 Empirical Model

The estimated empirical model for output volatility used to test for the validity of the first working hypothesis follows the work of Fatás and Mihov (2003, 2005) and Prasad et al. (2003). The relevance of output growth volatility is based on the ability of agents to diversify risk portfolio (due to international risk sharing opportunities) and to smooth

shocks and a set of other control variables, including institutions, fiscal and monetary policy and domestic financial depth.

A formalized version of the output volatility model, from Fatás and Mihov (2003, 2005) and Prasad et al. (2003), to be estimated in this study is as follows:

$$\sigma_{i,t}^O = a_0 + a_1\sigma_{i,t-1}^O + b_1feiq_{i,t} + b_2nfeiq_{i,t} + b_3debt_{i,t} + b_4feiq_{i,t}^2 + b_5nfeiq_{i,t}^2 + b_6dcq_{i,t} + v_{i,t} \quad (8.1)$$

$$\begin{aligned} \sigma_{i,t}^O = & a_0 + a_1\sigma_{i,t-1}^O + b_1feiq_{i,t} + b_2nfeiq_{i,t} + b_3debt_{i,t} + b_4feiq_{i,t}^2 + b_5nfeiq_{i,t}^2 \\ & + b_6dcq_{i,t} + b_7feiq * dbt_{i,t} + b_8nfeiq * dbt_{i,t} + b_9feiq * dc_{i,t} + b_{10}nfeiq \\ & * dc_{i,t} + b_{11}G_{i,t} + b_{12}\sigma_{i,t}^G + b_{13}m_{i,t} + b_{14}\sigma_{i,t}^m + b_{15}POL_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (8.2)$$

Where $\sigma_{i,t}^O$ = domestic output growth volatility; $\sigma_{i,t-1}^O$ = output growth volatility; $feiq_{i,t}$ = foreign equity flows as ratio of GDP; $nfeiq_{i,t}$ = foreign non-equity flows as ratio of GDP; $feiq_{i,t}^2$ = the squared value of foreign equity flows ratio; $nfeiq_{i,t}^2$ = the squared value of foreign non-equity flows ratio; $debt_{i,t}$ = share of external debt in total foreign capital (or debt-equity ratio), measures of the composition of capital flows; and $dcq_{i,t}$ = domestic credit to private sector as ratio of GDP is a proxy for domestic financial depth and development. For the control variables, $feiq * dbt_{i,t}$ and $nfeiq * dbt_{i,t}$ are interactive terms representing the interaction between foreign equity ratio and debt-to-equity (or debt-total foreign capital) ratio and the interaction between non-foreign equity ratio and debt-to-equity ratio, respectively; $G_{i,t}$ denotes fiscal policy measured by government expenditure as ratio of GDP; $\sigma_{i,t}^G$ is the volatility of fiscal policy; $m_{i,t}$ represents monetary policy measured by changes in money supply; $\sigma_{i,t}^m$ represents the volatility of money supply changes; and $POL_{i,t}$ represents political climate measured by the weighted conflict index.

The introduction of the interactive terms in the estimation model are justified on the grounds that both theory and empirical literature, including work by Calderón and Schmidt-Hebbel (2008) and Ahmed and Suardi (2009), suggest a significant influence of country-specific

characteristics such as the structure of a country's external finance and domestic financial depth on the relationship between foreign capital flows and output growth volatility in developing countries. Similarly, the subscript $i = 1, 2, \dots, N$ represents cross-sections with periods $t = 1, 2, \dots, T$, with ' N ' number of countries and $T = 37$ years, spanning the sample period 1975–2011. The intercept a_0 is a country-fixed effect that controls for country specific factors that do not vary overtime.

Estimation of the dynamic panel model involved the use of the system-generalized method of moments (GMM) estimator. This approach corrects for potential endogeneity biases that may arise from the inclusion of the lagged-dependent variable in the equation and produces consistent and efficient estimates. Estimating a panel model with a lagged dependent variable by ordinary least squares (OLS) estimator often leads to endogeneity biases and inconsistent estimates because by construction, the unobserved panel-level effects are correlated with the lagged dependent variables.

Equation (8.1) or (8.2) can have the following general data-generating process:

$$\sigma_{i,t}^Q = \beta \sigma_{i,t-1}^Q + \lambda X_{i,t} + V_{i,t} \quad (8.3)$$

where: $\sigma_{i,t}^Q$ is output growth volatility measure, x is the vector of explanatory variables and $V_{i,t}$ is structural disturbance that is decomposed into time-invariant part $\mu_{i,t}$ (individual country fixed effect) and a time varying part $\vartheta_{i,t}$ (time specific effect).

Arellano and Bond (1991) normally recommend that the equation should be first-differenced and the lagged levels of the dependent variable must be used as instruments for the lagged differenced dependent variable. In addition, they recommend that the lag of some explanatory variables can be used as instruments for those variables, to account for the potential endogeneity of such variables.

First differencing Eq. (8.1) or (8.2) gives us the following equation.

$$\sigma_{i,t}^Q - \sigma_{i,t-1}^Q = \beta (\sigma_{i,t-1}^Q - \sigma_{i,t-2}^Q) + \lambda (X_{i,t} - X_{i,t-1}) + (V_{i,t} - V_{i,t-1}) \quad (8.4)$$

Arellano and Bond (1991) confirm that using the lagged difference results in a greatly superior estimator. By first-differencing the equation, the Arellano-Bond estimator removes the panel level effects and uses instruments to form moment conditions. This estimation procedure is referred to as the first difference GMM estimator or the Generalized Method of Moments-Instrumental Variables (GMM-IV) estimator. It has the advantage of producing unbiased and consistent estimates.

A major setback of the Arellano and Bond estimator, however, is its failure to take advantage of all available moment conditions under standard assumptions (see Arellano and Bover 1995 for details and explanation). As a result of that, the first-difference GMM estimator produces consistent but inefficient estimates. To correct for the inherent weakness associated with the first-difference GMM estimator, Arellano and Bover (1995) and Blundell and Bond (1997) suggest a concurrent estimation of the model in both levels and first-differencing as a way of improving on the first-differenced GMM estimator. In this study, the first-differenced variables are used as instruments in the level regression and the lagged values of the variables are used as instruments in the first-differenced regression. The Arellano and Bover (1995) and Blundell and Bond (1997) estimator, also known as the system-GMM estimator, is more accurate and efficient than the first-differenced GMM estimator. As a result, we employ the system-GMM estimator in our estimation of the dynamic panel data model. Lastly, an attempt is made to evaluate the soundness of the model specification by using the test for over-identifying constraints and the test of second-order autocorrelation of the new residuals. The two-step system robust (sandwich) variance estimator was used to correct for biases associated with some types of misspecifications.

8.4 Data and Variable Definition

8.4.1 Data Type and Source

Annual data covering forty-two (42) Sub-Saharan African countries were collected for the study, using a dynamic panel regression analysis (see Appendix for list of countries). With the exception of the

weighted conflict index, data on all the variables were obtained from the World Bank's World Development Indicators database. Data on the weighted conflict index for the political environment were obtained from the Databanks International. The study period is from 1975 to 2011.

8.4.2 Variable Definitions and Measurements

8.4.2.1 Output Volatility

Most empirical studies have used the standard deviation of annual output over a rolling window; say three-to-five year rolling averages. A large number of alternative measures have also been based on the standard deviation measure around a simple time trend. However, these measures have shortcomings. One of the limitations in the use of this measure is that it entails loss of observations at the beginning of the sample. Another limitation is that volatility measures such as standard deviation and the coefficient of variation are deemed to overemphasize variability in non-trending series. The squaring of the values of these volatility measures also has a tendency to worsen the problem of outliers (Canova 1998; Offut and Blandford 1986). Literature, including Nelson (1992), identifies the simple ARCH and related models as the most appropriate for assessing overtime changes in volatility.

This study estimates volatility by using two key methods. The first method measures volatility as the standardized residual term generated from estimating a simple GARCH (1, 1) model for each of the 42 selected countries. The GARCH (1, 1) model used for the estimation of the volatility measure is presented next:

$$Q_t = Q_{t-k}\rho + \varepsilon_t \quad (8.5)$$

$$\sigma_t^2 = \mu + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2 \quad (8.6)$$

where Q_t is output growth, Q_{t-k} is the k -period lagged value of output growth. The notation σ_t^2 is the variance of the disturbance term from the

mean equation (Eq. 8.5); μ is the mean; ε_{t-1}^2 is the one-period lag of the squared residual from the mean equation which represents news about volatility from the previous period; and σ_{t-1}^2 is last period's forecast variance. The (1, 1) in the GARCH (1, 1) indicates the presence of a first-order GARCH term and a first-order ARCH term. The model was estimated for each of the 42 selected countries.¹ The one-period forward-looking standardized value of the residuals obtained from estimating the GARCH model is used as an indicator of output volatility in equation 8.1.

The second method is the conventional/traditional measure of computing the standard deviation of GDP growth for five-year non-overlapping periods for each of the 42 selected countries. The purpose for the use of the traditional measure of volatility is to enable us compare results from our analysis to those obtained in previously related studies.

8.4.2.2 Foreign Capital Flows

International financial integration is measured by the ratio of disaggregated foreign capital flows to GDP, namely, equity and non-equity flows expressed as share of GDP. It is hypothesized in the literature, including Kose et al. (2003) that the relationship between international financial integration and output growth volatility is ambiguous and depends on country-specific characteristics.

In this study, we also test for the existence of threshold effect of international capital flows on output growth volatility. Prasad et al. (2005) and Kose et al. (2003) suggest that at low levels of international financial integration, an increase in financial integration leads to an increase in economic instability. However, once the level of integration crosses a threshold, economic instability starts to reduce with sufficiently

¹ The list of countries selected for the study are as follows. Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Democratic Republic of Congo, Congo Brazzaville, Cote d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

high levels of financial integration. The basic explanation for this phenomenon is that international financial integration helps to promote the development of the domestic financial sector and institutions, and the adoption of sound macroeconomic policies. So far, this hypothesis has been found to apply only to industrialized countries and to the relative volatility of consumption. In our study, the squared values of the disaggregated capital flow ratios are used as explanatory variables to test for the possible existence of threshold or non-linear effects of financial integration on output growth volatility.

8.4.2.3 Domestic Financial Depth or Development

Ahmed and Suardi (2009) and Easterly et al. (2001) suggest that the robustness of an economy is strongly associated with the development of its domestic and international financial markets. The development of the domestic financial sector is measured as the share of domestic credit to private sector in total GDP. Increased domestic financial development improves availability of credit for direct investments and provides investors with funds needed to meet their short- and long-term needs. Increased capital inflows into a country, with increasing domestic financial development, reduce the country's vulnerability to shocks that impacts on its production sector.

8.4.2.4 Country-Specific Characteristics

To capture the influence of country-specific characteristics on the relationship between international capital (equity and non-equity) flows and output growth volatility, we introduce two interactive terms in the estimation model. These are (i) an interactive term for capital (equity and non-equity) flows and domestic financial depth and (ii) an interactive term for capital (equity and non-equity) flows as share of total GDP and external debt as share of total foreign capital flows. The ratio of debt to total external financial liabilities reflects the vulnerability of the country to external financial shocks. A higher debt to total external financial liabilities ratio makes small open economies more vulnerable to

external shocks. This follows the works of Calderón and Schmidt-Hebbel (2008). Increasing capital inflows with higher share of debt in total foreign capital inflows increase the country's vulnerability to external financial shocks, which in turn, could increase the domestic output growth volatility of the country.

8.4.2.5 Monetary Policy

The relationship between monetary policy and output volatility has been widely discussed in literature. The main conclusions from both theory and empirical studies are that the relationship is ambiguous and depends on the type of shock that impacts the economy. In the presence of aggregate demand shocks, the use of monetary policy to reduce inflation volatility will result in a reduction in output growth volatility. However, in the presence of aggregate supply shocks, the use of monetary policy to reduce inflation volatility will result in an increase in output volatility (Dotsey 2006; de Hart 2008). Monetary policy is measured as growth in monetary aggregate (precisely broad money supply). The traditional and unconventional measures of volatility apply to the computation of monetary policy volatility.

8.4.2.6 Fiscal Policy

The role of fiscal policy is captured using size of government measured by the ratio of government expenditure to GDP and its volatility. The incorporation of government size helps to control for the stabilizing role of fiscal policy as argued by Gali (1994) and Fatás and Mihov (2001). We construct a fiscal policy volatility indicator that is not influenced by the business cycle and indicates discretionary policy changes by estimating the following function using the GARCH (1, 1) model:

$$\Delta E_t = \alpha_i + \beta_i \Delta Y_t + \gamma_i \Delta E_{t-1} + \theta_i P_t + v_t \quad (8.7)$$

$$h_t^2 = w + c_1 \varepsilon_{t-1}^2 + d_1 h_{t-1}^2 \quad (8.8)$$

where:

ΔE is the rate of growth in government spending

ΔY is output growth in current period

P is vector of control variables, including inflation.

h_t^2 is the error variance;

w is the mean;

ε_{t-1}^2 is the one-period lag of the squared residual from the mean equation which indicates news about volatility from the previous period; and

h_{t-1}^2 is last period's forecast variance.

Following Fatás and Mihov (2003), we defined discretionary fiscal policy volatility as the residual series obtained from estimating the variance equation. The model was estimated for individual countries to allow for heterogeneity in the estimated coefficients. It is hypothesized in literature, including Kose et al. (2003) and Furceri (2007), that fiscal policy can be used as a tool for the achievement of a stable output growth.

8.4.2.7 Political Environment

As a proxy for quality of government and institution, this study used the weighted conflict index obtained from the Data-Banks International. It is hypothesized by Bekaert et al. (2006) and Prasad et al. (2005) that political instability exacerbates macroeconomic volatility.

8.5 Estimation Results

The first stage of the estimation exercise involved use of the GARCH (1, 1) model to estimate volatility measures for output growth, fiscal and monetary policies.

The volatility measures generated from fitting a GARCH (1, 1) model are incorporated into the main estimation model (that is Eqs. 8.1 and 8.2). The second stage of the regression involved the estimation of the impact of disaggregated measures of external capital flow ratios on output growth volatility. Findings from the estimation results are presented in Tables 8.1 and 8.3 below. The diagnostic tests for the dynamic model specification in both instances indicate that the model is well specified. The new residuals for the specifications are, at times, auto-correlated of order 1, but not auto-correlated of order 2. The Sargan test results also confirm the validity of the over-identifying restrictions and use of the instruments. The tests for stationarity of the panel series and for causality among the series suggest that the use of the system dynamic panel regression model is appropriate for the study. We also checked for possible multicollinearity by use of the Variance Inflation Factor estimates, which led us to drop some of the proposed control variables to correct for the existence of multicollinearity. Tables 8.2 and 8.4 present the Variance Inflation Factor estimates for the estimation results presented in Tables 8.1 and 8.3, respectively.

Table 8.1 presents results from estimating Eqs. (8.1) and (8.2) using the measure of volatility generated from estimating a simple GARCH (1,1) model whilst Table 8.3 presents results from estimating the model using the conventional measure of volatility. The estimation results show significant differences in terms of explanatory variables that have consistently robust coefficients. The results in Table 8.1 show robust and consistent estimates for share of external debt, domestic credit ratio, interactive term for equity flow and domestic credit ratio, monetary policy and its volatility, and political climate whilst those in Table 8.3 show robust and consistent estimates for foreign non-equity flows, and interactive term for equity flows and external debt ratio only.

When the non-conventional method for estimating volatility is used, international equity integration has a nonlinear effect on output growth volatility in the panel of 42 Sub-Saharan African (SSA) countries. The coefficient for foreign equity flow ratio is significant and positive, but the coefficient for the squared value of equity flow ratio is negative. The results suggest that international equity integration has a threshold effect

Table 8.1 System dynamic panel regression for output growth volatility^a

	Without WC- Robust SE	With WC- Robust SE	Without WC- Robust S.E	With WC- Robust S.E
First-order lagged dependent	0.341 (0.12)	0.341 (0.06)	0.388 (0.13)	0.891 (0.09)
Foreign equity flows (as share of GDP) [$feiq_t$]	0.381** (2.39)	0.381** (1.99)	1.167*** (3.13)	1.167** (2.10)
Foreign equity flows (share of GDP) [squared value] * 100 [$feiq_t^2$]	-0.385* (-1.80)	-0.385* (-1.86)	-1.230*** (-3.43)	-1.230*** (-2.73)
Foreign non-equity flows (as share of GDP) [$fneiq_t$]	0.679*** (2.82)	0.679 (1.08)	1.563 (1.59)	1.563 (1.05)
Foreign non-equity flows (share of GDP) [squared value] * 100 [$fneiq_t^2$]	0.122 (1.40)	0.122 (0.47)	1.681 (1.07)	1.681 (0.69)
Share of external debt in total foreign capital flows [$debr_t$]	0.964*** (4.13)	0.964* (1.65)	1.080*** (4.00)	1.080** (2.46)
Domestic credit to private sector ratio [dcq_t]	-1.471*** (-3.97)	-1.471* (-1.76)	-0.511*** (-3.01)	-0.511* (-1.72)
Interactive term III (equity flows times domestic credit ratio) [$feiq_t \times dcq_t$]			-0.020*** (-3.62)	-0.020** (-2.70)
Interactive term IV (non-equity flows times domestic credit ratio) [$fneiq_t \times dcq_t$]			-0.054 (-0.88)	-0.054 (-0.56)
Fiscal policy [G_t]			-0.327** (-2.54)	-0.327** (2.46)
Fiscal policy volatility [σ_t^G]			0.341** (2.16)	0.341** (1.91)
Monetary policy (one period lag) [m_t]			-0.025*** (-16.78)	-0.025*** (-10.42)
Monetary policy volatility [σ_t^m]			2.968***	2.968***

Political climate (weighted conflict index) [POL_t]

Constant	1.992*** (3.47)	1.992 (1.61)	(11.55) 10.756*** (3.84)	(6.92) 10.756** (2.44)
Serial correlation test (first order)	0.000	0.000	0.000	0.000
Serial correlation test (second order)	0.103	0.185	0.013	0.023
Sargan test	1.000		1.000	
Number of cross-sections used	40	40	39	39
No. of observation	1,293	1,293	1,259	1,259

Note: All regressions include time effects, not reported here. The *t*-statistics are in parentheses with *, **, *** representing 1%, 5% and 10%, significance respectively.

^a The measure of volatility is the standardized residual term generated from estimating a simple GARCH (1,1) model for output growth for each of the 42 selected countries.

Table 8.2 Variance inflation factor estimates for the non-conventional method

	VIF	1/VIF	VIF	1/VIF
First order lagged dependent	1.01	0.990	1.03	0.969
Foreign equity flows (as share of GDP) [$feiq_t$]	1.28	0.784	3.43	0.291
Foreign equity flows (share of GDP) [squared value] *100 [$feiq_t^2$]	1.29	0.773	2.81	0.356
Foreign non-equity flows (as share of GDP) [$fneiq_t$]	2.47	0.405	1.09	0.920
Foreign non-equity flows (share of GDP) [squared value] *100 [$fneiq_t^2$]	2.40	0.417	2.51	0.399
Share of external debt in total foreign capital flows [$debt_t$]	1.03	0.971	1.05	0.956
Domestic credit to private sector ratio [dcq_t]	1.01	0.986	1.26	0.793
Interactive term III (equity flows times domestic credit ratio) [$feiq_t \times dcq_t$]			7.34	0.136
Fiscal policy [G_t]			1.15	0.872
Fiscal policy volatility [σ_t^G]			1.10	0.910
Monetary policy (one period lag) [m_t]			1.01	0.991
Monetary policy volatility [σ_t^m]			1.03	0.974
Political climate (weighted conflict index) [POL_t]			1.06	0.943
Mean variance inflation factor	1.50			

on output growth volatility in the panel of selected countries. An increase in international equity flows increases the volatility of output growth at low levels of integration. However, beyond a threshold, the volatility of output growth reduces with further increases in the level of equity integration. Our estimation results contradict those obtained by Calderón and Schmidt-Hebbel (2008) who could not find any robust relationship between financial (equity and non-equity) openness and growth volatility for a sample of 82 industrial and developing countries. When the conventional measure of volatility is used, the international non-equity flow ratio tend to have a robust linear relationship with output growth volatility. The coefficient on international non-equity flow ratio is consistently positive and suggests that an increase in the level of non-equity integration exacerbates output growth volatility. This means that non-equity flows are destabilizing in the panel of 42 SSA countries. The results are consistent with those obtained by Kalemli-Ozcan et al. (2012) for 15 European Union member countries, Pisani (2005) for Malaysia, and Neaime (2005) for Middle East and North

Table 8.3 System dynamic panel regression for output growth volatility ^a

	Without		Without		Without		Without	
	WC-Robust	With WC-Robust	WC-Robust	With WC-Robust	WC-Robust	With WC-Robust	WC-Robust	With WC-Robust
	S.E	Robust S.E	S.E	Robust S.E	S.E	Robust S.E	S.E	Robust S.E
First order lagged dependent	0.198*** (5.63)	0.198 (0.88)	0.206*** (6.07)	0.206 (0.96)	0.085** (2.48)	0.085 (0.60)	0.085** (2.48)	0.085 (0.60)
Foreign equity flows (as share of GDP) [$feiq_t$]	0.053*** (1.95)	0.053 (0.95)	0.057** (1.99)	0.057 (1.01)	0.067 (1.43)	0.067 (0.87)	0.067 (1.43)	0.067 (0.87)
Foreign equity flows (share of GDP) [squared value] *100 [$feiq_t^2$]	-0.059 (-0.55)	-0.059 (-0.27)	-0.034 (-0.32)	-0.034 (-0.19)	0.114 (0.70)	0.114 (0.36)	0.114 (0.70)	0.114 (0.36)
Foreign non-equity flows (as share of GDP) [$fneiq_t$]	0.241*** (3.68)	0.241** (2.04)	0.304*** (4.67)	0.304*** (2.78)	0.377*** (3.64)	0.377*** (2.21)	0.377*** (3.64)	0.377*** (2.21)
Foreign non-equity flows (share of GDP) [squared value] *100 [$fneiq_t^2$]	-0.764 (-0.98)	-0.764 (-0.35)	-0.969 (-1.32)	-0.969 (-0.52)	-1.246 (-1.17)	-1.246 (-0.64)	-1.246 (-1.17)	-1.246 (-0.64)
Share of external debt in total foreign capital flows [$debt_t$]	0.444*** (7.08)	0.444*** (3.17)	0.445*** (8.00)	0.445*** (3.19)	0.278** (2.07)	0.278** (1.95)	0.278** (2.07)	0.278** (1.95)
Domestic credit to private sector ratio [dcp_t]			-0.062*** (-2.84)	-0.062** (-1.97)	-0.034 (-1.33)	-0.034 (-1.18)	-0.034 (-1.33)	-0.034 (-1.18)
Interactive term I (equity flows times external debt ratio) [$feiq_t \times debt_t$]					0.026*** (4.57)	0.026*** (3.21)	0.026*** (4.57)	0.026*** (3.21)
Interactive term III (equity flows times domestic credit ratio)					-0.003 (-0.22)	-0.003 (-0.13)	-0.003 (-0.22)	-0.003 (-0.13)
[$feiq_t \times dcp_t$]								
Interactive term IV (non-equity flows times domestic credit ratio)					0.012 (0.21)	0.012 (0.16)	0.012 (0.21)	0.012 (0.16)
[$fneiq_t \times dcp_t$]								
Fiscal policy [G_t]					-0.010** (-2.11)	-0.010** (-2.11)	-0.010** (-2.11)	-0.010** (-2.11)

(continued)

Table 8.3 (continued)

	Without WC-Robust S.E	With WC- Robust S.E	Without WC-Robust S.E	With WC- Robust S.E	Without WC-Robust S.E	With WC- Robust S.E
Fiscal policy volatility [σ_t^F]						
Political climate (weighted conflict index) [POL_t]						
Constant	1.901*** (7.01)	1.901** (2.14)	2.863*** (6.55)	2.863*** (2.66)	2.150* (1.89)	2.150 (1.01)
Serial correlation test (first order)	0.095	0.150	0.106	0.159	0.094	0.124
Serial correlation test (second order)	0.146	0.216	0.135	0.197	0.146	0.207
Sargan test	0.138		0.213		0.305	
Number of cross-sections used	40	40	40	40	39	39
No. of observation	236	236	235	235	229	229

Note: All regressions include time effects, not reported here. The t-statistics are in parentheses with *, **, *** representing 1%, 5% and 10% significance respectively.

^a The measure of volatility is the traditional/conventional approach of computing the standard deviation of GDP growth for five-year non-overlapping periods for each of the 42 selected countries.

Table 8.4 Variance Inflation Factor estimates for the conventional approach

	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
First order lagged dependent	1.16	0.863	1.18	0.845	1.21	0.825
Foreign equity flows (as share of GDP) [$feiq_t$]	1.96	0.511	2.01	0.499	6.39	0.157
Foreign equity flows (share of GDP) [squared value] *100 [$feiq_t^2$]	2.02	0.496	2.04	0.489	5.23	1.910
Foreign non-equity flows (as share of GDP) [$fneiq_t$]	1.47	0.681	1.47	0.680	8.11	0.123
Foreign non-equity flows (share of GDP) [squared value] *100 [$fneiq_t^2$]	1.39	0.717	1.40	0.716	1.50	0.668
Share of external debt in total foreign capital flows [$debt_t$]	1.16	0.861	1.17	0.853	1.21	0.827
Domestic credit to private sector ratio [dcq_t]			1.05	0.951	1.51	0.664
Interactive term I (equity flows times external debt ratio) [$feiq_t \times debt_t$]						
Interactive term III (equity flows times domestic credit ratio) [$feiq_t \times dcq_t$]					3.30	0.303
Interactive term IV (non-equity flows times domestic credit ratio) [$fneiq_t \times dcq_t$]					7.50	0.133
Fiscal policy [G_t]					1.39	0.720
Fiscal policy volatility [σ_t^G]					1.30	0.767
Political climate (weighted conflict index) [POL_t]					1.21	0.829
Mean variance inflation factor	1.53		1.48		3.32	

African countries, but contradict those of Ahmed and Suardi (2009) who found output volatility to reduce with an increase in financial openness for a panel of 25 SSA countries.

We also tested for the role of financial vulnerability by estimating the effect of the composition of external financial liabilities measured as the ratio of foreign debt to foreign equity. The estimation results show a robust and consistently positive coefficient on the foreign debt-to-equity ratio. This suggests that the structure of external capital plays a key role in amplifying shocks to output growth. In addition, using the reported regression in

Table 8.3, the interaction between equity integration and the structure of external capital enters with a robust and consistently positive coefficient. This confirms the hypothesis that increased financial vulnerability makes increased equity integration destabilizing. The result is consistent with the findings of Calderón and Schmidt-Hebbel (2008) for a sample of 82 industrial and developing countries.

In Tables 8.1 and 8.3, we also estimated the effect of domestic financial depth, measured as domestic credit ratio, on output growth volatility. We found robust and consistently negative coefficient on domestic credit ratio when the non-conventional and conventional measures of volatility are used. The results mean that increased depth of domestic financial markets contributes significantly to the reduction of output growth volatility in the 42 selected SSA countries. In addition, the interaction between domestic financial depth and equity integration enters the model with robust and consistently negative coefficient when the non-conventional measure of volatility is used. When the conventional measure of volatility is used, we do not find any significant role for the interaction term and our findings are similar to what was obtained by Ahmed and Suardi (2009) for 25 SSA countries.

In our regression analysis, we also find an output-stabilizing role for monetary policy in the 42 selected SSA countries. However, monetary policy uncertainty has the potential of causing instability in the growth of output. The coefficient on monetary policy is robust and consistently negative, but the coefficient on the monetary policy volatility is consistently positive in the specifications that use the non-conventional measure of volatility. In addition, fiscal policy has an important output growth-stabilizing role in the panel of 42 selected countries. The coefficient for fiscal policy is statistically significant and negatively signed but is positively signed for its volatility measure. The results indicate that increased government expenditure reduces output growth volatility, but its volatility exacerbates instability in growth of output. This suggests that fiscal policy is counter-cyclical, but fiscal instability leads to unstable growth patterns in the selected countries. The coefficient for political climate is also found to be robust and consistently

positive, suggesting that political uncertainty contributes significantly to the amplification of output growth instability in the 42 selected SSA countries.

8.6 Conclusions and Recommendations

This study looked at the impact of international capital flows on output growth volatility in 42 selected Sub-Saharan African countries. The study involved use of the system dynamic panel (GMM-IV) estimation strategy. The study confirms the hypothesis that a higher level of international equity integration reduces instability in growth of output. Equity integration exacerbates instability in growth of domestic output at low levels of integration. However, beyond a threshold, higher levels of equity integration reduce instability in growth of domestic output. This is because, at higher levels of equity integration, countries tend to develop stronger financial institutions to increase depth of domestic financial markets and consequently reduce the financial vulnerability of the host country. The study also suggests that higher inflows of international non-equity and changes in a country's structure of external financial liabilities towards greater external debt are destabilizing and increases the susceptibility of the country to external financial shocks. The study also indicates that domestic macroeconomic policies, in the form of expansionary fiscal and monetary policies, contribute significantly to the reduction of output growth instability in the panel of selected countries. Expansionary monetary policy improves availability and access to domestic credit for investment and domestic production and the achievement of a more stable growth. Similarly, expansionary fiscal policy leads to the development and expansion of economic and social infrastructure, which helps to improve the enabling environment for investment and production by the private sector, and consequently the achievement of a more stable growth. Lastly, findings from the study show that political uncertainty play a very significant role in increasing instability in the growth of domestic output in the panel of selected countries.

Some tentative recommendations can be made from findings of the study to inform public policy in the panel of 42 selected SSA countries. One of the recommendations that could be made is to implement selective control measures that increase the inflow of foreign equity and make the selected countries more integrated to international equity markets, and at the same time reduce the inflow of international non-equity. The domestic macroeconomic policy measures adopted by the selected countries contribute significantly to the stabilization of domestic output growth. However, further research would be required to unearth the types and nature of monetary and fiscal policies adopted to better explain how these policies contribute effectively to the reduction of output growth instability. It is also recommended that countries entrench democracy and increase the participation of the citizenry in decision-making to reduce political uncertainty.

The basic limitation of the study is its inability to adequately capture the impact of development of segments of the domestic financial market on output growth stability covering the study period due to data limitations. Future research could look into the possibility of how international financial integration impacts on segments of the domestic financial market and its implications for economic growth and output diversification.

Appendix

The list of countries selected for the study are as follows. Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Democratic Republic of Congo, Congo Brazzaville, Cote d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

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9

Do Remittances Matter in Accelerating Labour Productivity and Capital Accumulation?

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9.1 Introduction

The key to the sustenance of growth of an economy hinges on the idea gaps of human capital and the object gaps of physical capital within that economy. These two are related to the effect that countries that lack one type of capital tend to lack the other (Romer 1993). The lack of access to finance is an impediment that keeps underprivileged economies from getting a toehold on the development ladder (Solow 1956; Harrod 1959; Sachs 2005). The bane of trumpeting Africa as poor and under-developed therefore appears to be a misnomer.

Africa is the second largest recipient of remittance after Asia (Ratha et al. 2014). Coupled with its hefty share of the world's natural resource,

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this puts Africa on the dais of other capital rich continents. Remittances into Africa alone make available substantial inflows of physical capital. It outpaces official development assistance and other private capital inflows (Ratha et al. 2014). These monies are augmented by Africa's mineral wealth. Natural resources in Africa accounted for 77% of total exports and 42% of government revenue in 2012 (AfDB 2015). It is estimated that the continent's natural resources will contribute over US\$30 billion per annum in government revenues over the next 20 years (AfDB 2013). Remittance, on the other hand, sent by 31 million international African migrants, through formal channels, has more than quadrupled since 1990, reaching US\$40 billion in 2010 equivalent to 2.6% of Africa's gross domestic product (GDP) (Ratha et al. 2012). It is expected to increase by 3.4% in 2016 (World Bank 2016). It is worth noting that this is the data gathered from formal channels and are most likely to be understated due to the several informal channels via which these remittances are received.

It suffices to note that these two (remittances and mineral wealth) can be perceive as akin. If remittances are distributed among a large number of people, then, distributing resource revenue makes the two jointly unleash massive domestic capital, increasing per capita income and disposable income. Empirically, it is proven that countries receiving large revenues from natural resource endowments raise less revenue from domestic taxation (Moore 1998, 2007; Collier and Hoeffler 2005; Collier 2006; Bornhorst et al. 2008). It suffices to argue that this is likely to increase disposable income. Remittance inflows will further augment income levels. Ascertaining how labour productivity and capital accumulation are significantly impacted is imperative.

This notwithstanding, the Multidimensional Poverty Index (2015) shows that Africa is 75.3% rural, indicating the propensity to internationally migrate in search of greener pastures (Alkire et al. 2015). Africa's growing population plagued with deprivation, poor mainly rural households, validates the probability of high propensity to international migration in search for greener pastures which inevitably leads to huge inflows of remittance. It is expected that Africa will continue to confronts its poverty with its hard cash receipts (remittances) in addition to wealth from its large natural resources and will amass significant natural

capital, leapfrogging its capital base and providing opportunities to improve human capital. Africa cannot be poor.

For Africa's transformation, it must harness what it has to get what it needs. Employing its huge remittance inflow and resource wealth now to empowering its human capital into productive labour will ultimately sustain it far beyond the time when the continent's natural resource and their high prices run out. Turning finite wealth into infinite wealth, natural wealth into created wealth and resource-based economies into diverse knowledge and industry-based economies which create jobs is imperative. Osabuohien and Efobi (2013) find that the African diaspora contribute immensely to homeland development, however, the comprehensive macroeconomic policy options on how international remittance inflow impacts labour productivity and capital accumulation has not been adequately studied. Maximizing natural and human capital is intrinsically linked, and the two constitute the twin and overarching objectives of this study.

The quest in this chapter is twofold: using a panel of 25 African countries across 23 years. First, we established the full potential of remittance impact on labour productivity with respect to the continent's natural resource capital; furthermore, we show the extent to which remittance impacts on labour productivity in environments where life expectancy is high. Secondly, we investigate the difference human capital makes in remittance impact on capital accumulation in Africa.

9.2 Stylized Facts

Remittances have become an increasingly prominent source of external funding for many developing countries. Remittances are most often intended for consumption, by recipient households, should be less volatile than those intended for investment (Ratha 2003). Migrants may increase remittances in times of economic hardship, especially in low-income countries where their families may depend significantly on remittances as a source of income and may live at close to subsistence levels. Economic downturns may also encourage workers to migrate abroad—and to begin transferring funds to families left behind. Even when the purpose behind remittances is investment, remittances are less

likely to suffer the sharp withdrawal or euphoric surges that characterize portfolio flows to emerging markets (Fig. 9.1).

Remittance flows are the second-largest source, behind foreign direct investment (FDI), of external funding for developing countries. Clearly remittances are more stable than private capital flows, which often move pro-cyclically, thus raising incomes during booms and depressing them during downturns. By contrast, remittances are less volatile—and may even rise—in response to economic cycles in the recipient country. Remittances were smaller than FDI inflows, but larger than international capital market flows. Remittance receipts have exceeded official development assistance although it presents more predictable (Fig. 9.2).

There are large variations in labour productivity growth between economies in the region, ranging from more than 4% in large economies such as Angola, Mozambique, Uganda, Ethiopia, to contractions in economies such as Democratic Republic of Congo (DR Congo), and Côte d'Ivoire and Madagascar. Twenty countries experienced positive growth in labour productivity over the period, with the highest peak in

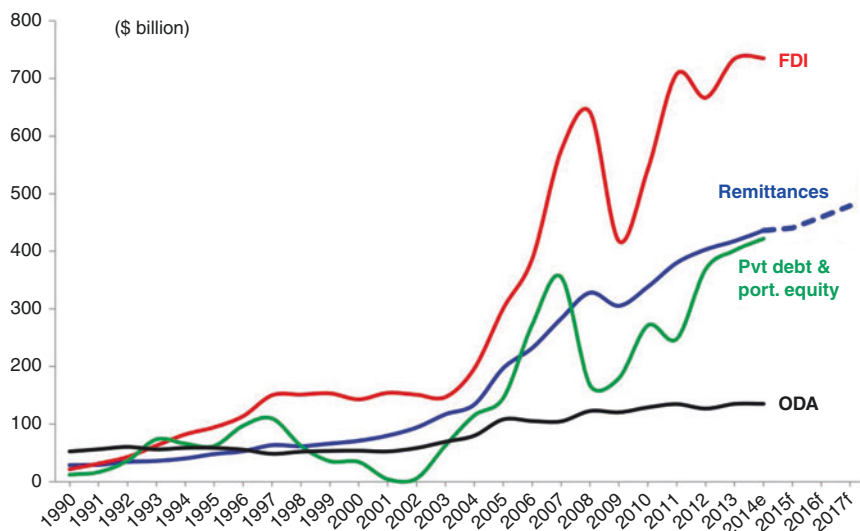


Fig. 9.1 Remittance flows show consistent and steady growth

Source: Ratha et al. 2015

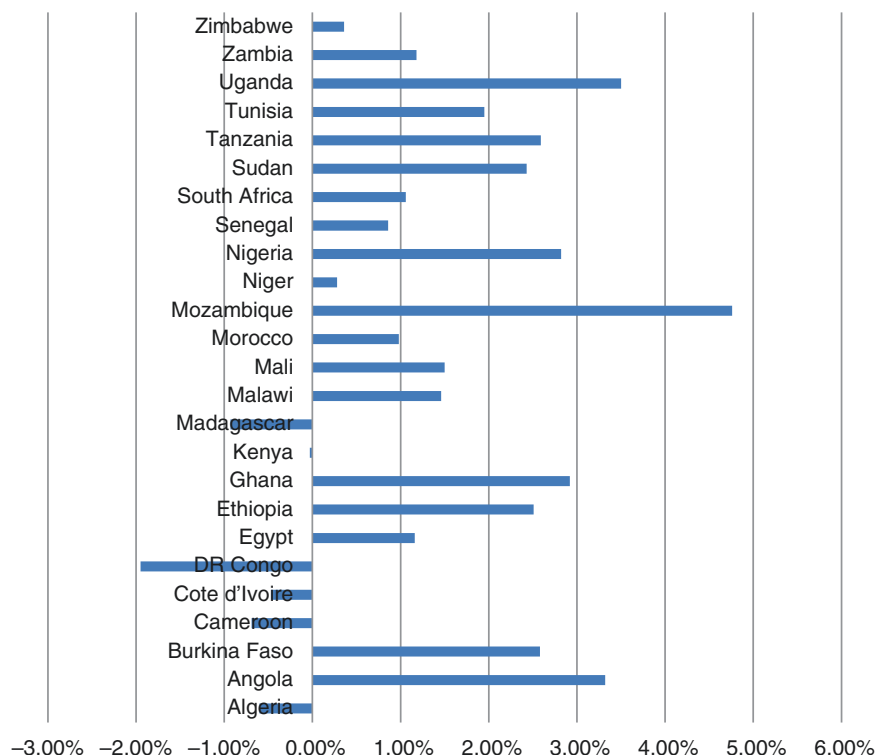


Fig. 9.2 The average growth of labour productivity of the sampled African countries

Source: Compiled by authors on the basis of The Conference Board Database (labour productivity)

Mozambique (5%). Five countries (Algeria, Cameroon, Côte d'Ivoire, DR Congo and Madagascar) present negative growth in labour productivity, with the lowest in DR Congo (−2%). North African countries in the sample show positive growth, except Algeria with negative growth (−0.05%). Likewise, south eastern African countries show positive labour productivity growth, with the highest in Mozambique, except Madagascar with (−1%). Within the West African block, Angola has the highest growth (3.4%) and Cote d'Ivoire, the least (−0.02%) in West Africa.

Labour productivity remains the single most important determinant of a country's per capita income over the longer term as well as the

source of a nation's comparative advantage, it remains imperative that African countries pursue national agenda that seek to enhance training and the acquisition of skills for effective labour. This inures favourably to the growth of labour productivity.

The absolute fear that remittance inflows are an alternative source of earning thus may result in Dutch disease for recipient is not valid (Al Mamun et al. 2016). Remittance flow moves in tandem with labour productivity. From Fig. 9.3, there is a positive relationship between remittance and labour productivity with both increasing steadily over time.

9.3 Conceptual Framework: Remittance Impact on Labour Productivity and Capital Accumulation

The underpinnings of this framework stem from (Al Mamun et al. 2015). Baldé (2011) shows that remittance inflows increase saving, investment capital, human capital investment and have an overall multiplier effects on consumption, aggregate demand and output (Fig. 9.4).

Diagrammatically we show that remittance inflows are either consumed (Sofranko and Idris 2009; Chami et al. 2003) or invested (Woodruff and Zenteno 2007). Investing of remittance inflows can be made in human capital through the financing of training, skills acquisition and other forms of educational attainments of recipients, this having a spill-over effect on the productive potential of labour (Rapoport and Docquier 2006; Caballé and Santos 1993). Remittance inflows are also invested in productive assets leading to an increase in accumulation of capital (Chiodi et al. 2012; Amuedo-Dorantes and Pozo 2014).

9.4 Literature

In the last two decades, the colossal remittance literature has focussed attention on issues other than the potential impact of remittance on labour productivity and domestic saving-enhancing capital accumulation.

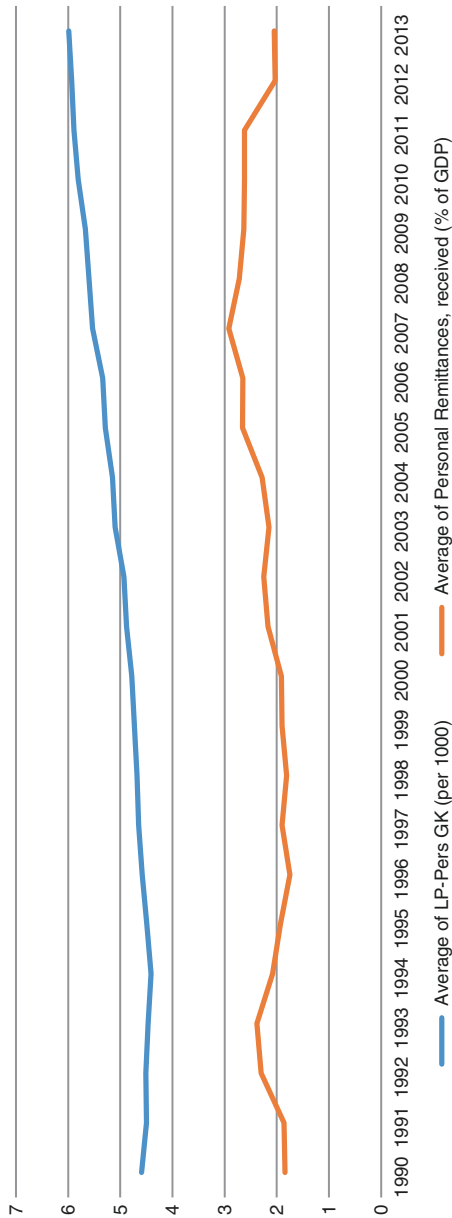


Fig. 9.3 Shows variability in average labour productivity and average personal remittances

Source: Compiled by authors on the basis of The Conference Board Database (labour productivity) and World Development Indicators (personal remittances)

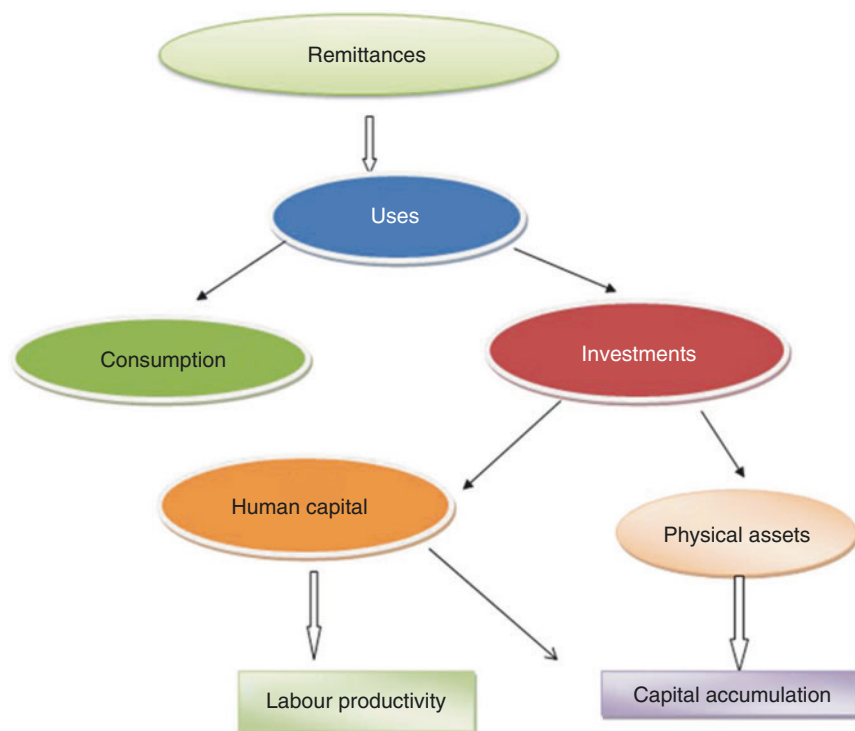


Fig. 9.4 Conceptualizing Remittance, labour productivity and capital accumulation

Source: Authors' compilation

Some empirical studies on remittances include: remittance and economic growth (Dzeha 2016; Nyamongo et al. 2012; Barajas et al. 2009; Rajan and Subramanian 2005; Taylor and Wyatt 1996; Nishat and Bilgrami 1991). Dzeha (2016) finds that there is no consensus in both theoretical and empirical literature on the impact of remittance on economic growth. Some of the studies in the remittance and development literature include Adenutsi 2010; Gupta et al. 2009; Adams and Page 2005; Chami et al. 2003, 2005; Ratha 2003; Adams 1993.

Gupta et al. (2009) show how remittances afford recipients the ability to increase consumption of basic necessities such as food, good

healthcare, shelter and clothing, alleviating poverty and enhancing the productive capacity of recipients. Adenutsi (2010) finds that there are increased positive externalities resulting from high remittance inflows. These externalities include higher access to essential social infrastructure, potable water, healthcare facilities in import-dependent developing countries like Sub-Saharan Africa (SSA) (perhaps with the exception of Republic of South Africa, Cote d'Ivoire and the Seychelles and some oil exporting countries like Nigeria and Namibia).

For remittance impacts on human capital formation, on education and schooling has been studied widely. These include Adams and Cuecueha 2010; Calero et al. 2009; Edwards and Ureta 2003; Bredl 2011; Hanson and Woodruff 2003. Edwards and Ureta (2003) find that remittances play a significant role in keeping younger members of the family at school by financing human capital in El Salvador. Caballé and Santos (1993) and Graça et al. (1995) show that increases in physical capital raise the return of education producing a positive spill-over effect on the level of human capital.

Remittance impact on consumption positively according to Sofranko and Idris 2009; Rapoport and Docquier 2006; Quartey and Blankson 2004. Rapoport and Docquier (2006) show that remittances enhance consumption smoothing and lead to the decline in poverty in many developing countries. In the remittance and financial development literature, Nyamongo and Misati 2011; Aggarwal et al 2010; Shahbaz et al. 2007; Giuliano and Ruiz-Arranz 2005; Gupta et al. 2009 explain how remittances impact financial development positively as well as negatively. Substantiating remittance as a source of insurance and welfare Gupta et al. 2009; Amuedo-Dorante and Pozo 2006 argue that remittance lead to Dutch Disease. Adenutsi 2010; Acosta et al. 2007, 2009; Vargas Silva 2009; Bourdet and Falck 2006 express that an increase in remittance inflows results in a moral hazard arising from higher voluntary unemployment, higher income inequality, exchange rate appreciation and Dutch disease especially in small open import-dependent economies. In remittance and labour participation studies, Chami et al. (2005) show that remittance receiving households in Pakistan experience a decline in their active involvement in agriculture while Bayangos and Jansen (2011) find remittances that have a significantly positive effect on the Philippines' domestic labour market.

Rodriguez and Tiongson (2001) indicate that remittances reduce employment among men and women in the Philippines

Amuedo-Dorantes and Pozo (2006) find evidence that remittances tend to encourage Mexican men to change their allocation of labour supply across types of employment and thus to a drop in the labour supply of Mexican women. In agreement, Acosta (2006) finds that remittances are negatively related to the female labour supply in El Salvador, while male labour force participation seems to be insensitive. Adenutsi (2010) finds that the disincentive to work is associated with the inflow of remittance.

Sofranko and Idris (2009) conclude that workers' remittance is mainly for consumption. Ssozi and Asongu (2015) with data from 31 SSA countries across 1980–2010, show that current remittance receipts boost consumption, but have a negatively insignificant impact on investment. They however show that it is previous remittance received that boosts investment through increased consumption and not current receipts. Woodruff and Zenteno (2007) show that remittance inflows employed in financing domestic investments, lead to capital accumulation.

While there exist no data on how much of remittances are consumed or invested, studies show that the remittances are mostly consumed (Gupta et al. 2009; Adams and Page 2005). Others find that remittances are invested as business start-up capital (Mesnard 2004; Woodruff and Zenteno 2007; Dustmann and Kirchkamp 2002) or directly into domestic savings (Osili 2007; Amuedo-Dorantes and Pozo 2006). Remittance receipts are also invested in education, acquisition of skills through training and personal development (Vlase 2013; Bredl 2011; Calero et al. 2009; Amuedo-Dorantes et al. 2008; Acosta et al. 2007; Acosta 2006).

León-Ledesma and Piracha (2004) studied 11 Central and East European transition countries across 1990–1999 and found that remittance impacted positively on productivity and employment both directly and indirectly via its effect on investment. Al Mamun et al. (2015) using data from 1980 to 2012 on 61 countries show that remittances impact positively on labour productivity, but it is insignificant. They also show that beyond a certain threshold, remittances have negative impacts on domestic labour productivity.

Clearly, there is dearth in literature as to how remittance impacts on labour productivity and domestic savings in Africa that has much resource wealth, making this study imperative.

Remittances unlike loans have no direct interest payments or financial obligations attached, hence have the potential to augment financial wealth. If natural resource wealth improves domestic capital, then both may accrue to disposable income, all things being equal. These afford recipients excess income over expenditure which can be channelled into various forms of investments. These investments include: purchase of real physical assets which generate wealth and increase savings and capital accumulation or the options of investing into education, acquisition of skills through training, enhancing labour productive quality. We fill the gap by exploring remittance impact on labour productivity with respect to resource wealth and longevity of life. We further explore the difference remittance will make in capital accumulation through—domestic savings with respect to human capital in Africa.

9.5 Methodology

9.5.1 Introduction

This study contributes to knowledge, first by establishing the full potential of the remittance impact on labour productivity with respect to the continent's natural resource wealth. Furthermore, we show the extent to which remittance has an impact on labour productivity in environments where life expectancy is high. Secondly, we investigate the difference human capital makes in remittance impact on capital accumulation in Africa.

9.5.2 Model Specification and Description of Data

This study ascertains the impact of remittance on labour productivity and capital accumulation, together in two different models: Labour productivity (Lp) is defined as labour productivity per person employed

according to the 1990 US\$ which is converted at the Geary Khamis Purchasing Power Parity. The Geary-Khamis dollar (International dollar) is a currency unit used by economists and international organizations to compare the values of different currencies, adjusted to absorb variations in currency exchange rates as well as reflecting purchasing power parity and average commodity prices within each country. We employ the model in Al Mamun, et al. (2015) that looks at labour productivity per economically active men globally. We however depart from their studies by considering the total labour productivity per person (both male and female), sourced from 'The Conference Board database 2015'.

Labour productivity Lp_{it} however in this study is the dependent variable and is a function of a vector of explanatory variables X'_{it} .

$$Lp = f(Rem, Gdp/cap, Investment, FinOpen, Manv, Empgrowth, Popgrowth) \quad (9.1)$$

$$Lp_{it} = \alpha_0 + X'_{it}\beta + \mu_i + \lambda_{it} + \varepsilon_{it} \quad (9.2)$$

Where i stands for cross-sectional dimension, $i = 1, 2, 3, \dots, J$ and t represents the time period, $t = 1, 2, 3, \dots, T$ and $X_{it} = (X_{it1}, X_{it2}, X_{it3}, \dots, X_{itk})$ is a vector of explanatory variables, $\beta = (\beta_1, \beta_2, \beta_3, \dots, \beta_k)$ is a vector of K regression parameters where $\beta_j = (j = 1, 2, 3, \dots, K)$ represents the average change in Lp_{it} per a unit increase in j th explanatory variables $X_{itj} = (j = 1, 2, 3, \dots, K)$ while α_0 stands for an intercept parameter, μ_{it} and ε_{it} are the vectors of country-specific fixed effect errors and time specific errors, respectively.

The specific equation is,

$$\begin{aligned} \ln l p_{it} = & \alpha_0 + \beta_1 l p_{it-1} + \beta_2 Rem_{it} + \beta_3 NatRes_{it} + \beta_4 Rem * NatRes_{it} \\ & + \beta_5 lifeExp_{it} + \beta_6 Rem * lifeExp_{it} + \beta_7 Gdp/cap_{it} + \beta_8 invest_{it} \\ & + \beta_9 finope_{it} + \beta_{10} Manv_{it} + \beta_{11} empgrwth_{it} + \beta_{12} popgrwth_{it} \\ & + \mu_i + \varepsilon_{it} \end{aligned} \quad (9.3)$$

Being aware of the limitation in the measurement of international migrant remittance (*Rem*) under the circumstance we adopt the definition from the World Bank's World Development Indicators. Define as the sum of worker's remittances (which are the monetary transfers sent home from workers residing abroad for more than one year under the current account subcategory as 'current transfers' and migrants' transfers representing the net wealth of migrants who moved from their country of employment to another, often captured under the capital account subcategory as 'capital transfers' and compensation of employees). It is expected that remittance will positively impact labour productivity. Natural Resource (*NatRes*) is measured as total natural resource rent scaled by GDP and total life expectancy at birth for both males and females in years. All sourced from the World Bank's World Development Indicators and are expected to positively impact labour productivity.

We further interact remittance and natural resource ($Rem * NatRes$). The intuition is that remittance flow in to increase incomes thus in resource rich countries, disposable incomes will further be increased. This is like to increase labour productivity if such incomes are invested in human capital development. The literature documents that countries receiving large revenues from natural resource endowments raise less revenue from domestic taxation (Moore 1998, 2007; Collier and Hoeffler 2005; Collier 2006; Bornhorst et al. 2008). It suffices to argue that the reduction in tax collection is likely to increase disposable income. Remittance inflows will further augment income levels and therefore we expect that it will promote labour productivity. Ascertaining the effect of this on labour productivity is imperative.

We further argue that the longer life expectancy and remittance inflows move in tandem. Higher inflows of remittance are received by older people for their upkeep. A dummy was created for countries with a life expectancy ratio greater than 55 years as '1', for high life expectancy, and those with less than 55 years as '0', for lowlife expectancy. We interact remittance with high life expectancy to ascertain its effect on labour productivity. It is hope that older people towards the end of their working years become less productive thus, are more likely to attract the inflows of remittance although these will be useful for consumption smoothing. This

may or may not directly promote labour productivity hence interacting remittance and life expectancy ($Rem * lifeExp$) will enable us ascertain its impact on labour productivity. We further argue that longevity undergirds and strengthens labour productivity through the transmission of knowledge, skills and expertise to the younger generation. If older recipients of remittance are skilled and trained, they may live longer to share their skills and expertise with the younger generation enhancing labour productivity. This makes its effect undecided.

The factors that can affect labour productivity are numerous in an economy in transition towards a market economy, such as Africa where economic policies and productive structures are changing dramatically. We employ other control variables which include the gross domestic product per capita (gdp/cap), investment (Inv) is proxy as gross fixed capital formation, financial openness (fli) proxy as foreign direct investment all normalized at GDP. All three are sourced from the World Bank's World Development Indicators and are expected to have a positive impact on labour productivity. Other control variables sourced from the World Bank's World Development Indicators include manufacturing value to GDP ($Manv$) and annual employment ($empgrwth$) which were expected to impact positively on labour productivity. Population growth ($popgrwth$) is annual date and expected to have a negative impact.

The second model explores the impact of remittance on capital accumulation, as per (Hossain 2013).

$$Ca = f\left(Rem, Finopen, Inv, \frac{Gdp}{cap}, Humcap, Inf, Trade, Agedep, IR\right) \quad (9.4)$$

$$Ca_{it} = \alpha_0 + X'_{it} + \mu_i + \lambda_{it} + \epsilon_{it} \quad (9.5)$$

Specific model estimated is;

$$\begin{aligned} Ca_{it} = & \alpha_0 + \beta_1 Ca_{it-1} + \beta_2 Rem_{it} + \beta_3 Rem * Humcap_{it} + \beta_4 finopen_{it} \\ & + \beta_5 inves_{it} + \beta_7 Gdp/cap_{it} + \beta_8 humcap_{it} + \beta_9 Inf_{it} \\ & + \beta_{10} Trade_{it} + \beta_{11} Agedep_{it} + \beta_{12} IR_{it} + \vartheta_i + \epsilon_{it} \end{aligned} \quad (9.6)$$

Capital accumulation (Ca) is the dependent variable, proxy growth of gross domestic savings which directly augment domestic capital that can be harnessed and channelled into productive investments enhancing the productivity of labour. It is a function of personal remittance received from abroad to GDP (Rem) as the key endogenous variable. Data were sourced from the World Bank's World Development Indicators. We anticipate that remittances will augment domestic savings if their recipients are more knowledgeable, skilled and trained. It is much more likely that such recipients will channel remittance inflows into more productive domestic investments. This will increase the accumulation of capital. We thus interact remittance and human capital ($Rem*Humcap$) and expect that it impact on capital accumulation will be positive. We also expect human capital ($humcap$), proxy as secondary school enrolment, to positively promote domestic savings-capital accumulation. Financial openness (fdi) proxy as foreign direct investment normalized by GDP, investment (inv) proxy as gross-fixed capital formation, growth in GDP per capita (gdp/cap) and trade to GDP ($Trade$) are all sourced from the World Bank's World Development Indicators and are expected to promote domestic savings.

Inflation (inf) deflated by GDP and Age dependency ($Agedep$) also from the World Bank's World Development Indicators are expected erode capital thus have a reduction effect on capital accumulation. It is expected that real interest rate (IR) has both a positive and negative impact on capital accumulation.

9.5.3 Methods of Estimation

Prominent concerns in the migration and development literature is the issue of endogeneity. We employ panel data estimation which is best suited for pooling cross-section and time-series data together.

The use of the OLS, Fixed and Random estimators are not deemed fit for the estimation of the parameters in our panel regression model. Basically, the assumptions undergirding these estimators are violated given the data available for the study, its best to employ the GMM. Moreover, the independent variable, remittances, is seen as endogenous

to the model, creating biased estimates should the OLS be used. According to Arellano and Bover (1995), a regressor is endogenous if it is not orthogonal to the error term. That is, if it does not satisfy the orthogonality condition. With an intercept in the equation, endogeneity arises if and only if the regressor is correlated with the error.

Remittance inflows are presumed to influence labour productivity and capital accumulation of a country; although it is believed that some other independent variables may be dependent on the labour productivity and capital accumulation. For instance, it is likely that the per capita GDP growth affects labour productivity and capital accumulation and, inversely, labour productivity and capital accumulation might affect GDP growth in an economy through the channel of savings and investment. This comes with issues of endogeneity.

The GMM estimators developed for dynamic panel data introduced by Arellano and Bond (1988) is utilized in our estimation. Arellano and Bond (1988) proposed a one-step and two-step GMM framework to estimate coefficients of panel regression and argued that additional instruments can be obtained in a dynamic model if one utilizes the orthogonality conditions that exist between lagged values of dependent variables and the disturbance term. The first-difference of the model taken eliminates the individual effects and then estimates are computed using two or higher period lagged dependent variables as instruments, following Sargan-Hansen's optimal GMM framework (Baltagi and Kao 2000).

Although GMM proven to be more efficient with short-time series and employs the use of internal instruments as oppose to other IV estimators which use external instruments, one of its limitation is the asymptotic weakness of its precision and that of the instruments which involve considerable bias in finite samples.

The GMM allows the elimination of country-specific effect by; taking the first-differences of Eqs. (9.3) and (9.6).

$$y_{it} - y_{it-1} = \alpha(y_{it-1} - y_{it-2}) + \beta(X_{it} - X_{it-1}) + (\epsilon_{it} - \epsilon_{it-1}) \quad (9.7)$$

Thus, this eliminates potential biases with unobserved fixed country effects. The use of instruments required deals with (1) the endogeneity of the explanatory variables and (2) the problem created by constructing

the new error term $\epsilon_{it} - \epsilon_{it-1}$ which correlates with the lagged dependent variable, $y_{it} - y_{it-1}$ is eliminated. Under the assumptions that the error term is not serially correlated and the explanatory variables are weakly exogenous (i.e. the explanatory variables are uncorrelated with future realizations of the error term), the GMM dynamic panel estimator uses the following moment conditions:

$$E[y_{it-s} \cdot (\epsilon_{it} - \epsilon_{it-1})] = 0 \text{ for } s \geq 2; t = 3, \dots, T$$

$$E[X_{it-s} \cdot (\epsilon_{it} - \epsilon_{it-1})] = 0 \text{ for } s \geq 2; t = 3, \dots, T$$

9.6 Discussion of Results

We initially used descriptive statistics to have a clear and generalized view of the data. In [Table 9.1](#), the description of the entire panel is exhibited. It shows that the average level of labour productivity per year (real GDP per person employed converted to Geary Khamis Purchasing power parity) is US\$5,062.62. The level of remittance receipts per GDP per year is 2.2% averagely. Maximum remittance received per year under the coverage period is 14% per GDP with variability of 2.5%. The average growth of GDP per capita per year is approximately 1.6%. Average investments proxy as gross-fixed capital formation yearly and is 19%. Growth in employment and population growth is 2.9% and 2.4%, respectively. Among the variables, labour productivity has the greatest variability and the least variable is remittance and population growth.

[Table 9.2](#) presents the bivariate correlations among the variables. Labour productivity is significant and positively correlated to remittance as well as GDP per capita growth and investment. While it surprisingly correlates negatively with financial openness, manufacturing, employment growth and population growth, it is significant to manufacturing and population growth. Remittance inflows negatively correlate to population growth, although significant to its inflow.

The results generally show relatively low correlations among the variables. Additionally, we assessed whether multicollinearity was a

Table 9.1 Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max	Observations
Labour productivity	5,062.617	4,760.746	645.8616	21,134.06	600
Remittances	2.227774	2.570737	0.000039	14.58351	567
Growth of GDP per capita	1.611339	4.993255	-26.28907	54.95331	600
Investment	19.14834	6.962468	0	40.31781	579
Financial openness	2.738478	4.20194	-5.980459	42.84896	598
Manufacturing value	4,553,320	2.65e+07	0	2.03e+08	570
Employment growth	2.945064	2.616311	-16.043	22.8662	600
Population growth	2.479564	0.9237034	-1.664223	7.633476	600

problem by computing the variance inflation factors (VIFs). None of the VIFs approached the threshold value of 10 suggested by Neter et al. (1985).

Clearly, the regression results in Table 9.3 show that previous productivity of labour has more than a hundred percent positive impact on current labour productivity. An increase in remittance inflow has a significantly positive impact on labour productivity. This suggests that although remittances are sent basically with altruistic motives, it is not just for consumption or leisure. It is also employed as fees and payments for acquisition of skills and training. The results of this study also reveal that natural resource endowment has a positive impact on the productivity of labour in Africa, however it is insignificant. Guha (2013) shows that natural resource-rich countries are vulnerable to macroeconomic volatility and structural change and this enhances remittance inflows.

Interestingly, however, remittance inflow into resource-rich countries significantly reduces labour productivity. This is in agreement with Al Mamun et al.'s (2015) assertion that beyond a certain threshold, remittance inflows tend to have a negative impact on labour productivity. Per this finding, it is worth noting that the interaction of remittance and natural resource augments domestic capital and increase disposable income in countries that are resource rich. This is likely to lead to Dutch Disease and its rippling consequences.

Visibly from the findings, it is worth noting that while high life-expectancy is insignificant to labour productivity, it does have a positive impact. It may be argued that the higher the average life expectancy, the more people become more productive, effective and efficiency due to accumulation of skills and expertise over the years although the effect is not significant. It may also be conjectured that the longer the average life expectancy, the higher the tendency to be less productive. Remittances received by retirees may be massive as their income earning potential reduces towards the end of their lives; however, they are mostly meant for consumption smoothing. Remittances received into countries with high life expectancy (beyond 55 year) decrease labour productivity significantly.

Beyond remittances, economic growth through per capita income is important for increasing productivity of labour. Financial openness

Table 9.2 Pairwise correlation among variables

	LabProd	Rem	Gdp/cap	Invest	Finopen	Manuv	EmpGrwth	PopGrwth
LabProd	1.000							
Remittance	0.317	1.000						
Gdp/cap	0.092	0.131	1.000					
Invest	0.246	0.186	0.196	1.000				
Finopen	-0.045	0.007	0.115	0.171	1.000			
Manuv	-0.083	0.125	-0.003	0.098	-0.033	1.000		
EmplGrwth	-0.057	0.016	0.122	0.091	0.011	0.004	1.000	
PopGrwth	-0.565	-0.140	-0.114	-0.032	0.027	0.069	0.174	1.000

significantly and positively increases labour productivity, and this is robust. It may be argued that financial openness facilitates the flow of funds needed to lubricate business endeavours. This has the tendency of raising productivity. Employment growth, however, robustly and significantly reduces labour productivity. Population growth is also significantly positive to labour productivity although not robust. Manufacturing value to GDP is insignificant but increases labour productivity. This is in congruence to Al Mamun et al. (2015) as seen in Table 9.3.

9.6.1 The Role of Remittance in Capital Accumulation

We further discuss results of the second model in Eq. (9.6) of unbalanced panel that models remittance impact on capital accumulation. We first explore the variables in a descriptive statistics in Table 9.4. The average remittances received, normalized by GDP, are 2.4%, while GDP per capita is 1.5% and trade to GDP as well as interest rate is averagely 60% and 10%, respectively. Average inflation, GDP deflator is 90%, and financial openness proxy as FDI to GDP averages to 2.7%, while investment proxied as gross fixed capital formation to GDP, is 19%. Averagely, the age dependency shows that the proportion of dependents per 100 working age is 86. Averagely human capital, proxied as the percentage of net of secondary school enrolment is 40.

Table 9.5 shows the bivariate correlations among the variables and evidently suggests that capital accumulation proxy as domestic saving and correlates positively with remittance. Surprisingly, financial openness is negatively correlated to capital accumulation as well as age dependency. Investment, GDP per capita growth, human capital and trade are positively correlated to capital accumulation contrarily; inflation and interest rate which summaries macro economy are negatively correlated to capital accumulation. Inflation generally erodes capital. Unattractive domestic rates of interest discourage savings and investments domestically. The interaction between human capital and remittance positively correlated to capital accumulation. Moving in tandem, an increase in remittance receipts by skilled and trained persons leads to

Table 9.3 Results of the impact of remittances on labour productivity

Variables	Fixed effect	Random effect	GMM
Lag of labour productivity			1.002*** (0.002)
Remittances	-0.149*** (0.042)	-0.151*** (0.042)	0.006** (0.003)
GDP per capita	0.004*** (0.002)	0.004** (0.002)	0.010*** (0.000)
Investment	-0.005*** (0.001)	-0.005*** (0.001)	-0.000 (0.000)
Financial openness	0.004** (0.002)	0.004** (0.002)	0.000*** (0.000)
Manufacturing value	-0.062** (0.030)	-0.023 (0.021)	0.001 (0.002)
Employment growth	-0.006** (0.002)	-0.005** (0.003)	-0.009*** (0.000)
Population growth	-0.038*** (0.011)	-0.043*** (0.011)	0.010*** (0.001)
Natural resource	-0.003** (0.001)	-0.003** (0.001)	0.000 (0.000)
Life expectancy	0.037*** (0.003)	0.038*** (0.003)	0.000 (0.000)
Rem_ life expectancy	0.002*** (0.001)	0.002*** (0.001)	-0.000** (0.000)
Rem_ natural resource	0.001*** (0.000)	0.001*** (0.000)	-0.000** (0.000)
Constant	6.596*** (0.163)	6.426*** (0.179)	-0.036* (0.019)
AR (1)			0.060*
AR (2)			0.354
Sargan test			0.947

Standard errors in parentheses *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$.

an increase in domestic savings and capital accumulation as shown in [Table 9.5](#).

Clearly from [Table 9.6](#), it is observe that capital accumulated today increases as a result of domestic saving and capital accumulated previously. Remittance receipts are significant to capital accumulation, but have a reduction effect on capital accumulation. For every 1% of remittance received, it leads to 0.09% fall in capital accumulation and domestic savings. This finding agrees with Chami et al. (2003) who find that most of remittance income is spent on consumption goods and does

Table 9.4 Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Capital Accum	579	13.66061	10.97020	-33.41301	57.06182
Remittances	501	2.42449	2.61532	0.00004	14.58351
Fin openness	595	2.74416	4.21163	-5.98046	42.84896
Investment	579	19.14834	6.96247	0	40.31781
GDP/capita	600	1.51073	4.62366	-27.14594	30.34408
Human capital	393	40.07172	27.37636	5.16489	110.76360
Inflation	575	90.89918	1,035.013	-8.484249	23,773.13
Trade	598	60.29282	23.33337	10.74832	178.9938
Age dependency	600	86.53102	15.33133	43.47878	111.4636
Interest rate	353	10.20820	24.03883	-94.21993	252.1153

not aid savings and economic investment in the short run. However in the long run, it augments aggregate demand and culminates into growth and development.

Human capital is significant and has a positive impact on capital accumulation. The interaction between remittance and human capital has a significant and positive impact on capital accumulation. This suggests that although remittances are presumed to be consumed if it flows to educated and skilled recipients, they are better saved and channelled into productive investment leading to an increase in capital accumulation. This is in agreement with (Fishlow 1966; Barro 1991) who find physical capital accumulation in the US was driven by high levels of education as human capital development in the 1900s.

Investment is the key to capital accumulation; it is robustly significant and has a positive impact on capital accumulation. Investment robustly leads to an increase in domestic savings. GDP per capita growth significantly raises domestic savings (capital accumulation) and has a positive impact. Economic variables, as inflation and interest rate, are significant to domestic saving (capital accumulation); however, they have negative relationships with domestic savings. An increase in inflation by 1% is likely to erode domestic savings by 0.12%, as high inflation is a disincentive to savings. Interest rate robustly reduces domestic saving. 1% increase in interest rate leads to decrease in 0.01% capital accumulation.

Table 9.5 Bivariate correlation between variables

	CA	Rem	Finope	Inv.	gdp/ cap	HumCap	Inf	Trade	Agedep	IR	HumCap *Rem
CA	1.000										
Rem	0.016	1.000									
Finopen	-0.013	0.041	1.000								
Inv	0.288	0.160	0.174	1.000							
gdp/cap	0.206	0.064	0.140	0.264	1.000						
HumCap	0.533	0.166	-0.053	-0.026	0.124	1.000					
Inf	-0.004	-0.052	-0.023	-0.091	-0.138	-0.038	1.000				
Trade	0.190	0.084	0.320	0.123	0.106	0.205	-0.002	1.000			
Agedep	-0.390	-0.187	0.090	-0.181	-0.073	-0.781	0.054	-0.219	1.000		
Int. Rate	-0.296	0.014	-0.093	-0.203	-0.166	-0.181	-0.548	-0.061	-0.016	1.000	
HumCap*Rem	0.187	0.834	-0.002	-0.040	0.094	0.514	-0.036	0.163	-0.367	-0.162	1.000

Table 9.6 Results of remittance impact on capital accumulation

Variable	OLS	Random	Fixed	GMM
Lag of capital Acum.				0.213***
Remittance	-0.097***	-0.042	-0.029	-0.086***
Financial openness	-0.007	-0.003	-0.001	-0.003
Investment	0.530***	0.630***	0.653***	0.283**
GDP/capita	0.025**	0.013*	0.012	0.021**
Human capital	0.011***	0.007	0.003	0.011***
Inflation	-0.227***	-0.052	-0.062	-0.122***
Trade	0.001	0.001	0.001	-0.003
Age dependency	0.001	0.004	0.006	0.005
Interest rate	-0.020**	-0.008**	-0.007*	-0.011***
HumanCap*Remitt.	0.001	0.000	0.001	0.001*
cons	0.910	0.068	0.140	0.654
AR (1)				0.001***
AR (2)				0.993
Sargan test				0.161

Standard errors in parentheses *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$

9.7 Concluding Remarks

In this study, we investigate the impact of remittance on labour productivity and capital accumulation in Africa. We conclude that although remittance is imperative to labour productivity in resource-rich countries it has a debilitating and impeding effect on labour productivity. We also conclude that for countries which are characterized with high life expectancy labour productivity is low. This suggests that, although massive remittance may flow into the hands of the aged, it is basically for consumption smoothing and therefore does not directly lead to labour productivity.

We also conclude that growth of GDP per capita is crucial for labour productivity and that targeting at opening up for an increase in FDI will improve labour productivity. We also conclude that employment growth does not influence labour productivity an increase.

It is clear that inflows of remittances do not lead to capital accumulation rather investment, growth in Gdp per capita, is crucial to raising domestic savings and capital accumulation. Ideally developing humans through education makes persons more circumspect in taking investment decisions. They careful consider investment options that tend to

offer higher return. We conclude that inflation erode domestic savings by serving as a disincentive. Interest rate also reduces domestic saving and capital accumulation. We conclude that since an increase in interest rate is often accompanied by increase in inflation, if it is believed that purchasing power will be eroded by inflation the propensity to spend and consume will far outweigh saving.

9.7.1 Policy implications

Africa's growing population plagued with deprivation signifies the probability of a high propensity to migrate in search of greener pastures. This is accompanied by huge inflows of remittance, confirming Africa as the second largest recipient of remittance. However, there is dearth of comprehensive macroeconomic policies on remittances' impact on labour productivity and capital accumulation. Thus, policy implications to this end are of principal significance to guide the stimulation of the inflow of remittance.

Given that remittance impact labour productivity, there is the need to strategically channel efforts at improving the efficiency in the inflows of remittances especially through formal channels. Boosting the continuous inflows will be especially useful for African countries that are much less endowed in natural resources. The findings show that beyond remittance policies that tend to encourage financial openness and raise incomes are vital for labour productivity.

Additional, as shown in the findings, although remittances directly reduce capital accumulation (domestic savings), it indirectly increase capital accumulation through human capital. This suggests that remittances will promote capital accumulation in countries with high quality of human capital. Since quality human capital is important for capital accumulation, a more pragmatic approach in pursuit of national agenda that seeks to equip labour with requisite skills through training is imperative for Africans governments. This will inure to labour productivity and capital accumulation.

Inflation rate and interest rate summarize the state of macro economy of a nation. An unstable macro economy will erode capital. The pursuit of policies that tends to stabilize macro-economy in Africa is imperative for increasing capital accumulation. It is expected that Africa will

continue to confront its setbacks with its hard cash receipts through remittances capital, leapfrogging its capital base and providing opportunities to improve human capital.

Appendices

Appendix 9.1 Sampled African countries and their labour productivity growth

Ccode	Country	LP growth %	Code	Country	LP growth %
1	Algeria	-0.05	14	Morocco	0.95
2	Angola	3.40	15	Mozambique	4.95
3	Burkina Faso	2.80	16	Niger	0.02
4	Cameroon	-0.06	17	Nigeria	2.90
5	Côte d'Ivoire	-0.02	18	Senegal	0.70
6	DR Congo	-2.00	19	South Africa	1.00
7	Egypt	1.10	20	Sudan	2.20
8	Ethiopia	2.50	21	Tanzania	2.50
9	Ghana	2.90	22	Tunisia	2.80
10	Kenya	3.00	23	Uganda	3.50
11	Madagascar	1.00	24	Zambia	1.00
12	Malawi	1.50	25	Zimbabwe	0.02
13	Mali	1.50			

Source: Author's compilation

Appendix 9.2 Control variables

Variables	Description	Source	Expected sign
GDP per capita	Gross domestic capital per capita	Wdi	+
Gross fixed capital formation	Investment made in land improvements; plant, machinery and equipment purchases; construction of roads, railways, schools, offices, hospitals, etc.	Wdi	+
Financial openness	Proxies as foreign direct investment inflow to GDP	Wdi	±
Manv	Manufacturing value to GDP	Wdi	±
Empgrowth	Employment growth annual	Wdi	+
Popgrowth	Population growth annual	Wdi	-
NatRes	Total natural resource rent to GDP	Wdi	±
LifeExp	Life expectancy total (year)	Wdi	+
Humcap	Secondary school enrolment	Wdi	+
Inf	Inflation		-
Trade	Trade to GDP	Wdi	+
Agedep	Age dependency	Wdi	+

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