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Annual Trends & Outlook Report 2012

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Agricultural Growth Trends and Outlook

for Southern Africa

Inter-temporal Trends and Patterns in Agricultural Investment Spending in Southern Africa

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Greenwell Matchaya, Pius Chilonda and Sibusiso Nhlengethwa

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Acronyms and Abbreviations

AfDB	African Development Bank
ACS	Agricultural capital stock
AgGDP	Agricultural gross domestic product
ARDL	Auto regressive distributed lag
ATOR	Annual Trends and Outlook Report
AUC	African Union Commission
CAADP	Comprehensive Africa Agriculture Development Programme
CGIAR	A global research partnership for a food-secure future
CV	Coefficient of variation
COFOG	Classification of the functions of government
COMESA	Common Market for Eastern and Southern Africa
DAC	Development Assistance Committee
DFID	UK Department for International Development
DRC	Democratic Republic of the Congo
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO Statistical Database
FDI	Foreign direct investment
GDP	Gross domestic product
GNI	Gross national income
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
LI	Low-income (countries)
LOWESS	Locally weighted scatterplot smoothing
M&E	Monitoring and evaluation
MDG	Millennium Development Goal
MFAN	Ministry of Foreign Affairs of the Netherlands
MI	Middle-income (countries)
NEPAD	New Partnership for Africa's Development
NPCA	NEPAD Planning and Coordinating Agency
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PAE	Public agricultural expenditure
PFP	Partial factor productivity
R&D	Research and development
REC	Regional economic communities
ReSAKSS	Regional Strategic Analysis and Knowledge Support System
ReSAKSS-AW	Regional Strategic Analysis and Knowledge Support System Africa-Wide
ReSAKSS-ECA	Regional Strategic Analysis and Knowledge Support System Eastern and Central Africa
ReSAKSS-SA	Regional Strategic Analysis and Knowledge Support System Southern Africa
ReSAKSS-WA	Regional Strategic Analysis and Knowledge Support System West Africa
RISDP	Regional Indicative Strategic Development Plan
SADC	Southern African Development Community
SIDA	Swedish International Development Cooperation Agency
SPEED	Statistics of public expenditure for economic development
SSA	Sub-Saharan Africa
TFP	Total Factor Productivity
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency for International Development
WDI	World Development Indicators

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Executive Summary

The ReSAKSS-SA Annual Trends and Outlook Reports (ATORs) are produced every year to track agricultural performance in the context of the Comprehensive Africa Agriculture Development Programme (CAADP) and the Southern African Development Community Regional Indicative Strategic Development Plan SADC-RISDP (SADC 2003), using the CAADP monitoring and evaluation (M&E) framework. Tracking agricultural performance in the SADC region is crucial for informing policy, and for planning and implementation of investment in agriculture. This report focuses on public investments in the agriculture sector.

The 2012 report sets out to analyze and present trends in investments in agriculture in the SADC region, and to also show, in a simple but useful way, the associations that exist between investments in agriculture and important selected output and outcome variables, such as agricultural productivity, incomes and measures of poverty. In pursuing this goal, the report empirically highlights the importance of disaggregating expenditure data when examining its links to measures of productivity and poverty. This is important because not all types of expenditure have the potential to positively impact productivity and poverty. The analysis focused mainly on data on public expenditure, including overseas development assistance (ODA) and, to a limited extent, private expenditure and foreign direct investments (FDI), for Angola, Botswana, the Democratic Republic of the Congo (DRC), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe. This included data collected by ReSAKSS-SA in 2012, and data collected from several other sources: World Bank, Organisation for Economic Co-operation and Development (OECD), Food and Agriculture Organization of the United Nations (FAO), Statistics of Public Expenditure for Economic Development (SPEED database) of the International Food Policy Research Institute (IFPRI) and United Nations Conference on Trade and Development (UNCTAD). Because data on investments in the agriculture sector at household level are hard to find, this report is based on expenditure related to agriculture as a proxy for investments.

Furthermore, owing to the fact that public expenditure data are documented by various national institutions, the analysis concentrates mainly on public investments in SADC. Since various factors, including the development stage of the country and the sub-sector of agriculture concerned, can influence agricultural expenditure, the analysis takes low-income countries and middle-income countries as classified by the World Bank as separate groups (Angola, Botswana, Lesotho, Mauritius, Namibia, Seychelles, South Africa and Swaziland are considered as middle-income countries; and the Democratic Republic of the Congo (DRC), Malawi, Mozambique, Tanzania, Zambia and Zimbabwe are referred to as low-income countries). The classification of agriculture into sub-sectors, namely livestock, crops, forestry and fisheries, as units of analysis follows the classification of the functions of government (COFOG), which is in line with NEPAD/CAADP guidelines for monitoring public expenditure in agriculture (Maputo Declaration of 2003). In addition, expenditure is grouped into recurrent and capital expenditure to capture the important distinctions in the purposes that these two types of expenditure serve in the sector. A further effort is made to disaggregate expenditure into various functions, and trends are then examined with a view to thoroughly understand the patterns at these functional levels. The link between agricultural investments and outcome variables of concern are examined through Spearman's correlations, Lowess smoothing and scatterplots.

Various countries have tended to invest in their agriculture sectors differently across time

One of the major findings of this report is that, across the SADC region, various countries have tended to invest in their agriculture sectors differently across time, but there appears to be an interesting dichotomy between middle- and low-income countries as defined by the World Bank and discussed above. For instance, considering public expenditure alone in its crude form, the results show that over the period 2000-2012, for which complete data were available, the SADC region as a whole spent just over 3% of its total expenditure on agriculture. This was below the CAADP target of 10%, but the proportion of expenditure increased to 7% when only the low-income countries were considered. High-performing countries in relation to this target include Malawi and Zambia, which have reached or surpassed the target for at least 5 years (in the case of Malawi) and two years (for Zambia). Madagascar, Mozambique and Zimbabwe, although often not reaching the 10% target, have also dedicated increasing shares of their national budgets to the agriculture sector.

So far investments in the agriculture sector have been limited and volatile in the region, and the quality of spending has been low, favoring private goods at the expense of public goods in some cases

Another finding is that, so far investments in the agriculture sector have been limited in the region, even in the low-income countries where agriculture remains the mainstay of the economy and livelihoods. This calls for concerted efforts post-2015 to ensure that the agriculture sector receives more funding as one way of reducing poverty. For instance, expenditure intensity ratios show that expenditure on agriculture in the SADC countries was less than 1% of agricultural gross domestic product (AgGDP). However, for the low-income countries, expenditure on subsidies was higher (3%) as a share of agricultural GDPs. The research and development (R&D) spending intensity ratios were, on average, lower than the 2% minimum recommended by CAADP and the NEPAD target of 1%, suggesting undercapitalization and low-quality investments in the agriculture sector. It should also be pointed out that, in some cases, growth in expenditure has been volatile, which is undesirable for sustainable agricultural growth and may signal the absence of real principles to guide agricultural investment.

Different types of public agricultural investments affect agricultural outcomes differently in the SADC region

The analysis reveals that recurrent and capital expenditures on agriculture have different impacts on poverty, agricultural productivity and incomes. A disaggregated examination of the impacts of expenditure has the potential to guide policymakers on how they should prioritize expenditure, not only across ministries but within agriculture sectors. For instance, the results have consistently shown that, at both country and regional level, investing in short-term inputs through subsidies in agriculture, investing in various forms of capital, and spending on emoluments and goods and services have different impacts on the agriculture sector. The results also show that investment spending geared toward capital accumulation (such as spending on R&D, and rural agricultural infrastructure and extension) is beneficial to incomes, productivity and even international trade, whereas other kinds of spending, such as that made on goods and services and emoluments, do not exhibit clear positive effects on incomes and productivity.

To the extent that data systems in the SADC countries are not strong enough to track sectoral performance, country-level M&E and analytical capacity need to be strengthened to inform processes better.

Significant donor dependence coupled with low-budget execution rates calls for improvements in revenue collection and budget processes

Although anecdotal evidence appears to suggest that foreign direct investment (FDI) is flowing into the Southern African region, data capturing the flows are still scant and disaggregated data on FDI expenditure at sub-sector level are not readily available. Again, data on private domestic investments are hard to find and, given the data at hand, the analysis centers on public expenditure. Noting the critical role of private sector investment in sustainable agricultural growth and transformation, more concerted efforts, at both country and regional levels in the SADC region, should be made to access data on this major player in the economy. The proportion of internal revenue in total revenue used in development varies over time and is generally less than 100%, underscoring the fact that these countries fund significant portions of their budgets with donor funding. This, along with the fact that budget execution rates over time have generally been below 100%, points to the need for governments of the SADC countries to improve their tax collection and spending capacities at ministries of agriculture.

A bias exists in public agricultural expenditure towards crop production at the expense of other sectors

Agriculture is still dominated by crop production, and expenditure on crops is often more than 50% of the agricultural budget followed by livestock, forestry and fisheries. This distribution, which reflects the importance that crops have in the everyday lives of many people in the developing countries of the SADC region, has implications for nutrition and food security. Over the period 2000-2012, the crops sub-sector received just over 50% of total agricultural expenditure, followed by the livestock (20%), forestry (18%) and fisheries (12%) sub-sectors. Within the SADC region, low-income countries spent more on crops and they also saw the highest increase (25%) in the share of expenditure devoted to crops in the period 2003-2012. The increase in the share of expenditure spent on crops in the SADC middle-income countries between the periods 2000-2002 and 2003-2012 was smaller and stood at less than 1%. The shares of expenditure going to fisheries and forestry in low-income countries declined over the period under study, while livestock shares only increased marginally.

If food and nutritional security are to be improved significantly, agricultural investment plans should encourage the growth of the fisheries and livestock sub-sectors, taking into account each country's comparative advantage or natural resource endowment.

More and better-targeted agricultural growth-enhancing investments needed

This report concludes that there is a need for concerted efforts towards the mobilization of greater government support for more and well-targeted agricultural expenditure in growth-enhancing investments, because this is important for long-term agricultural growth. It is shown in this report that some public agricultural expenditure (such as expenditure in capital/public goods) appears to correlate more positively with increased agricultural productivity. Proper targeting of investment is pertinent because as national budget lines tighten due to the effects of global financial problems, developing nations, which often rely partly on external funds to finance their economic activities, will need to finance larger portions of their budgets on their own and prioritizing the allocation and use of scarce public resources will become paramount. As private investments are very important, there is a need to find ways to encourage an evolution of interest rates that can spur private investment (low interest rates have been shown to favor agricultural investments). Prevailing interest rates are high, especially for the SADC low-income countries (ranging from -3.5% to above 100% over the past decade for low-income countries, and only between -2% to 14% in middle-income countries), and appear to stifle agricultural investments. Again, more research needs to endeavor to demonstrate context-specific links between investment in R&D, and productivity, poverty and food security, both in the short term and long term. Good monitoring and evaluation (M&E) systems at the ministries of agriculture would be critical for this.

1. Introduction

Over the past decade, there have been a number of developments in both the regional and international settings aimed at mobilizing resources for agricultural growth and poverty reduction. These have included the United Nations Millennium Summit held in September 2000, where world leaders pledged a huge commitment to reducing poverty, and the Monterrey Conference of 2002, where rich countries renewed their pledge to increase development assistance from 0.4% at that time to 0.7% of their GDP in subsequent years. Again, in 2005, the Commission for Africa requested rich nations to double the support provided to developing countries and cancel their debts, while the United Nations Millennium Project called for a big push to support the Millennium Development Goals (MDGs) (see Fan 2008). Within Africa, in 2003, African states signed the Comprehensive Africa Agriculture Development Programme (CAADP), founded by the African Union's New Partnership for Africa's Development (NEPAD). In doing so, African governments committed to achieving agricultural growth of at least 6% per annum. In order to ensure that sufficient resources were made available for the implementation of CAADP, member countries of the Southern African Development Community (SADC) signed the Africa Union's Maputo Declaration in 2003, thereby agreeing to allocate at least 10% of their national budgetary resources to the agriculture sector. In other words, CAADP is a strategic framework to guide country development efforts and partnerships in the agriculture sector. The principle behind the CAADP framework is to use agriculture-led growth to achieve the first MDG of eradicating extreme poverty and hunger by 2015, which is also a goal set by the SADC Regional Indicative Strategic Development Plan (RISDP) (SADC 2003). The SADC-RISDP outlines specific targets for sustainable food security and poverty reduction. Achieving these targets on time hinges on increasing agricultural investments from either the public or private sectors, or from both.

Our focus on investments in the agriculture sector is based on the understanding that investments in agriculture are essential for enhancing productivity in this sector and in other sectors. Therefore, this can also facilitate achievement of the agreed goals set under CAADP and SADC-RISDP in all the countries in the region. World Bank (2007) identified agricultural growth as having the largest impacts on poverty, thus cementing the rationale for more productivity-enhancing investments in agriculture. Moreover, the positive impact of sustained agricultural investment, together with increased productivity, on poverty reduction is well documented. The results and experience from the Green Revolution in Asia and other areas attest to this positive contribution to poverty reduction (see Hazell and Haggblade 1993; Hazell 2008; Diao et al. 2012; Tsakok 2011). The agriculture sector reduces poverty mainly through income and consumption linkages. By creating additional productive employment for households, workers and others, the sector generates income. Through a reduction in food prices via sustained productivity increases and growth, agriculture reduces the share of the food budget in each household. Many poor households

and low-income workers spend a high proportion of their disposable income on food; hence, an increase in agricultural productivity, other things being equal, helps to reduce food prices,

Furthermore, the specter of the 2007/2008 food price volatilities (partly caused by poor climatic conditions and policy) coupled with the fact that poverty is still increasing in sub-Saharan Africa (SSA), while it is declining everywhere else, stands as evidence that unless appropriate investments and incentives are injected into the agriculture sector, the livelihoods of many of the 70% of the 273 million people who live in rural areas (Fan and Breisinger 2011) and eke out a living from agriculture will be in jeopardy. Although thorough studies on investments in the agriculture sectors in the SADC region is hard to come by in existing literature, data collected by ReSAKSS-SA from SADC countries show that expenditures on agriculture trail the CAADP (Maputo Declaration 2003) target of 10% of national budgets. At this pace of investment in the Southern African region, the targets of MDG 1 of eradicating extreme poverty and hunger by 2015 may not be achieved.

Although governments have taken steps to align their economic policies with the CAADP framework since 2003, detailed studies on the nature and magnitude of the investments they have made are scant. Also, there are gaps in our understanding of how countries have made progress towards greater investments in the agriculture sector. Against this background, this report, the 2012 Annual Trends and Outlook Report (ATOR), seeks to (1) analyze spatial trends in investments in the agriculture sector in the Southern African region, and (2) examine, in detail, the nature and magnitude of such investments made by selected countries in agriculture and its sub-sectors, focusing mainly on Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe.

Finally, the report discusses possible links between investments, productivity and poverty based on the available data. In doing so, it builds on ReSAKSS-SA work on productivity within the agriculture sector, as investments have an important link to productivity. Chilonda et al. (2013) showed that the productivity of labor and land has been growing in the SADC region, albeit at low rates. However, the focus of this report is to provide the context in which such productivity changes have been taking place, at least with respect to investments in the agriculture sector. Therefore, the specific objectives of this report are to (1) analyze and present trends in investment flows in the SADC region, and (2) to provide some pointers to the potential association between disaggregated categories of expenditure and outcome variables, including agricultural productivity and poverty.

It is widely known that low capital stock per capita is reflected in low agricultural output per worker; consequently, in order to achieve an increase in agricultural labor productivity, there has to be an increase in capital per worker (see Mogues et al. 2012). In other words, without increasing investments per capita in Africa, it would be hard to achieve increases in productivity, irrespective of how it is measured. In some cases, this explains the gaps in labor productivity in agriculture between high- and low-income countries (see Mogues et al. 2012).

As a point of departure, in Chapter 2, we first discuss issues that constitute investments in agriculture, considering that public and private spending (which, in some cases, has been the default measure of investment) include other components of spending that cannot be considered as investment. This is followed by a discussion of the data, its sources and the methodology that has guided our analysis. Thereafter, in Chapter 3, we analyze spatial and inter-temporal trends in public expenditure, concentrating more on investment spending, especially as a proportion of total national expenditure or allocations and as a share of agricultural GDP (AgGDP) in order to identify the agricultural orientation of investments. This is followed by a discussion of the link between agricultural investments, productivity and poverty in Chapter 4, before we present the conclusions in Chapter 5.

At the end of the report, we include annexes that present data on the CAADP M&E indicators organized according to the CAADP and SADC-RISDP targets, principles and themes under the following categories: enabling environment (Annex A), CAADP implementation processes (Annex B), agricultural financing (Annex C), agricultural output, productivity and growth (Annex D), agricultural trade (Annex E), and poverty and hunger (Annex F).

2. Measures of Public Investment, Data Sources and Methodology

2.1 Measures of Public Investment

Given that investments in agriculture are important for stimulating much-needed economic development that will lead to poverty reduction, it is important that policymakers and analysts have an appropriate understanding of what does and does not constitute investment. A simplistic approach would be to consider all government spending as investment but, as we know from the literature, that is too crude a position for most purposes and it is more useful to separate public consumption from public investment (Mankiw 2003). Although the definitions of investments vary widely, for purposes of this report, we adopt two simple but practically important definitions. The first argues that investments constitute any goods and services purchased for future use (for example, expenditure on R&D, and extension) (see Mankiw 2003). The importance of this definition for agricultural development rests in its ability to look to the future. From this perspective, government spending that improves an institution's ability to make gains in the future can be considered investment. This can be differentiated from consumption spending and transfers of money which may, for example, simply involve re-allocation of funds (e.g., the transfer of money for social security).

The second concept that has guided how we identify investments in the agriculture sector in this report contends that public investment refers to public expenditures that provide various public goods, such as R&D, infrastructure and education (Zhang and Fan 2004). Put differently, these are expenditures that generate future fiscal benefits (Easterly et al. 2008). Fan and Pardey (1998) gave extension and irrigation as other examples of

public expenditure that can be considered as public investments. Other studies (Fan and Brzeska 2010; de la Croix and Delavallade 2009; Mogues et al. 2012) provided additional examples of public investment, including expenditures on health, housing, fuel, energy, mining and manufacturing, transport and other economic activities. Non-investment spending would include direct ongoing production by the public sector. World Bank (2002) defines public investment as public expenditure that adds to the physical stock and to knowledge.

Obviously, where researchers choose one proxy over another for purposes of approximating reality, there will always be some difficulty associated with any one proxy. Despite the definitions given above, it is still hard, in some cases, to decide which government expenditures should count as public investment. For example, while the purchase of office buildings, roads, military equipment, education and health care for the youth may be considered as investment, it may be debatable whether the same can be said about the purchase of health care for senior citizens in the last days of their life. Within the agriculture sector, while payments to staff may be considered less of an investment, such payments have the potential to complement capital through incentives and hence improve total factor productivity (TFP) in the long run. Besides that, other forms of investment in agriculture include investing in silos, contract farming, agro-industry, farm equipment, human capital and pre-processing at the farm gate.

2.2 The Nexus between Investments and Economic Development

The theory and evidence about public expenditure/investment and growth offers mixed predictions about the importance of public agricultural expenditure (PAE) (see Devarajan et al. 1993). Moreover, there is little empirical work on how public expenditure should be undertaken. This is partly due to a problem of data availability and a reflection of the lack of context-specific knowledge. For the SADC region, where agriculture is vital, this is a much under-explored issue. Yet, SADC is probably one of the regions in Africa where fiscal policy needs to be thoroughly used to benefit agriculture, owing to the high proportion of the population (70%) that relies on agriculture for their livelihoods. Understanding the levels of expenditure, and how different types of expenditure affect agricultural or economic growth, is important. In this regard, studies on economic growth that do not consider the composition of public expenditure are less useful when considering prioritization of resources across different and, more often than not, competing public investment options in agriculture and other sectors of the economy (Johnson et al. 2011). This point is also clear in Barro (1990), who discussed the role of public expenditure in economic growth through a simple endogenous growth model.

Some of the literature contends that public spending carries with it a crowding-out effect that stifles private investment at the expense of livelihoods (see Sloman 2006; Mankiw 2003). However, the theory of public goods offers some guidance on where it may be justified for the government, rather than the private sector, to provide goods and services. The theory argues that only the public sector can supply public goods efficiently (and in adequate amounts), as the market will always under-provide them. When supplied in a cost-effective manner, public goods can generate higher returns than private investments because they can create positive externalities for the economy as a whole. Governments are better suited to supplying public goods, because they have the capacity to collect individual contributions, capture economies of scale, access funding and manage risk better than farmers. For example, it makes sense for the government to provide goods that have a higher degree of non-excludability and/or non-rivalry, because their very nature hinders the private sector from providing these goods profitably. Even where goods and services have higher degrees of excludability and rivalry, government intervention may still be justified if market failures exist. Investments in rural and agricultural roads, for example, are important for agricultural growth as they help to reduce transaction costs for farmers in rural areas, thereby encouraging their participation in the markets for goods and services. Yet, no single private individual would have incentives to construct

such roads, due to the sole reason that it would be impossible for them to restrict the use of these roads.

Following the seminal paper by Barro (1990), it is clear that not only is public expenditure important for growth, it is complementary to private investment. Public expenditure on infrastructure, such as transportation and communications, minimizes costs and enhances efficient production. This encourages more private investment, as it increases the potential profitability of firms. Expenditure on productive activities is expected to contribute positively to economic growth. However, non-productive expenditure, for example, on consumption in the form of inessential travel, retards economic growth. At national level, expenditure on health, education and communication is important, as they improve human capital, reduce transaction costs and lead to gains in efficiency. It is clear that investments in research and development are keys to long-term technical progress, and hence are pertinent for economic growth. At sectoral level, the kinds of investments made (recurrent versus capital, communication, irrigation, etc.) are also important.

Using a sample of 14 member countries of the Organisation for Economic Co-operation and Development (OECD), Devarajan et al. (1993) found that expenditure on health, transport and communication had positive impacts on economic growth, whereas expenditure on defence did not have a significant impact on growth. Therefore, whether the analysis is at the macroeconomic or sectoral level, the composition and amount of expenditure are important in generating GDP growth at economic or sectoral level. However, Romer (1990) suggested that total government spending, regardless of its composition, should be expected to impact negatively on economic growth. However, regarding the total level of public spending and growth, an implicit common result in recent empirical studies seems to support an inverse U-shaped relationship (Armas et al. 2012). This caveat on the limits to government intervention should inform policy analysis regarding the likely impact of public spending on growth, as increasing the size of the budget beyond a certain threshold may be associated with efficiency losses (see Barro 1998; Tanzi 1997). Others, including Kumar et al. (2009), have found a co-integrating relationship between output measures and expenditure using autoregressive distributed lag (ARDL) bounds testing procedure to co-integrate, which further suggests that expenditure and output have a causal relationship.

The literature suggests that both the composition and level of spending have an effect on growth, which is also why our analysis in this report details disaggregated levels of investment. Regarding the composition of public spending, some items can trigger a complementary effect by either stimulating private spending or by providing additional counterpart funding to boost private sector investments, such as safe roads, reliable communications and energy supply (see Barro 1990). -On the contrary, some other budget items can crowd-out private spending, either by reducing incentives for private investors to enter a particular market (or sector) or by triggering higher public deficits and accumulated public debt in need of financing. This reduces the credit available for the private sector and leads to higher interest rates in the long run, which can stifle the demand for investment finance.

Given stable fiscal conditions, some categories of public expenditure exhibit positive growth effects. In particular, some authors (Gemmell 1996; Moreno-Dodson 2008) provided empirical support for the view that, in a developing country context, 'productive' public expenditure stimulates growth. For example, in their study of Indonesia and other fast-growing countries, including South Korea, Singapore, Malaysia, Thailand, Botswana and Mauritius, Moreno-Dodson (2008) found a robust empirical relationship between public spending and GDP per capita growth for the period 1970-2006. Again, medium-term and dynamic effects of public spending on growth were identified for some categories of spending, such as education and other forms of productive spending (both in the short and medium term). The role of the public sector in agricultural development, which is primarily a private activity, is to set the enabling environment in which private sector activities can flourish, correcting for instances where the market fails to allocate resources efficiently, and minimizing price distortions faced by both farmers and consumers, while promoting inclusive growth.

The impact of public expenditure on the economy is non-homogenous and different kinds of government expenditure manifest different effects on economic development. It has been said that investing in public goods such as public infrastructure, research and development, health and public education, among others, enhances economic growth (Aschauer 1989; Barro 1990; Morrison and Schwartz 1996). OECD and FAO (2007) also highlighted the potential of investments in public infrastructure for generating economic development. The complementary effect of public investments on private investment is also important. For instance, investing in the four pillars of CAADP (land and water management, market access, food supply and hunger, and agricultural research) serves to maintain an enabling institutional framework that allows private commercial agricultural investment to thrive. The absence of balanced investments across these pillars discourages private investment and delays structural transformation of agriculture (Govereh et al. 2009). On the other hand, in Zambia, the government justifies heavy involvement in non-core functions, by suggesting that agricultural markets have failed and there is a strong case for government involvement. Furthermore, private on-farm investment will yield little, if there is no public investment in markets.

Evidence provided by a FAO research project in 20 Latin American countries showed that public spending in rural areas has a positive impact on agricultural growth (Allcott et al. 2006). The study also showed that both the volume and the composition of spending matter. Assuming a fixed amount of spending in the agriculture sector, a high share of spending on subsidies to private inputs has a negative impact on agricultural growth, given the corresponding lower spending on the provision of public goods. López and Galinato (2007) found similar results and argue that the positive impact of public spending on rural incomes is primarily dependent on the composition of spending. They estimate that a 10% re-allocation from subsidizing private goods to providing public goods can increase per capita agricultural income by 5%. The implication of this is that, although increased usage of a particular input may have a positive impact on production (e.g., fertilizer on rice production), the impact of subsidizing such inputs can be negative over time, especially when it is done at the expense of providing public goods (e.g., research on newer varieties or improvements to the irrigation network) with a larger positive impact on production.

In Indonesia, Fuglie (2004) identified the drivers of growth in agriculture from the 1960s to 2000. He argues that, while in the 1970s and 1980s agricultural productivity was increasing, this trend has been flat since the early 1990s with most growth in agriculture emanating from increases in production inputs (labor, land). Furthermore, Fuglie (2004) argued that the reason behind the stagnation in agricultural productivity from the 1990s onwards is the low levels of both private and public investments, with public investments in R&D, rural infrastructure and irrigation being necessary complements to private investments in agriculture.

The literature reviewed conveys a number of important messages. First, there is an empirical and theoretical relationship between various kinds of investments in agriculture and productivity, and poverty. Second, in order to thoroughly examine the relationship between agricultural investments, productivity and incomes, it is important to disaggregate expenditure into at least productive and non-productive spending or, depending on the purpose of the analysis, into other forms of spending.

Regardless of how investments in agriculture[1] are undertaken, the four main elements of investment in agriculture comprise: private domestic investment, productive government expenditure on agriculture and rural development, ODA to agriculture and FDI) in agriculture. The first element, private domestic investment, is proxied by the amount of agricultural credit going to households from commercial banks. However, data on this element is still scant and has yet to improve. Public investment in agriculture is measured by government spending on agricultural R&D, extension and irrigation. Domestic R&D investment in agriculture

[1] For purposes of CAADP and this report, agriculture is defined as comprising crops, livestock, fisheries and forestry.

is proxied by total public R&D expenditure on the agriculture sector. Public investment in extension is proxied by public expenditure on extension, and public investment in irrigation is proxied by public expenditure on irrigation. In the same way, investments in education, health, defence and many other economic functions, with potential linkages to agriculture considered in this report, are proxied by public spending in those sectors.

In order to understand the trends in the investments under study, we have disaggregated expenditure data into recurrent or capital expenditure and indicated whether spending was for payment of emoluments or for capital purchases. At the agricultural sub-sectoral level for the region and for individual countries, we have also endeavored to present disaggregated trends in expenditure on crops, livestock, fisheries and forestry sub-sectors (following COFOG), in order to show the amount of investments (magnitudes and proportions) that have gone into these sub-sectors, the rates at which they have grown (growth rates) over time and the nature of the spending involved (capital/generally growth enhancing or recurrent).

2.3 Data Sources and Methodology

In order to conduct the analysis required and achieve the goals set in this report, we used data drawn mainly from the ReSAKSS-SA database, constituting data collected from the countries under study in 2012, the FAO Statistical Database (FAO 2012), the World Bank's World Development Indicators (WDI) (World Bank 2012b) and the Statistics of Public Expenditure for Economic Development (SPEED) database (IFPRI 2012).

The FAO and World Bank databases are used to supplement ReSAKSS-SA data on capital stocks, government expenditure on agriculture and rural development, ODA to agriculture, FDI in agriculture, and total factor productivity. The SPEED database provides data on government expenditure by function, but is limited to a few of the SADC countries and does not cover expenditure after 2007. The World Bank and FAO data is less detailed, in that it does not cover expenditure at the lower levels/sub-sectors, such as crops and livestock.

The analysis is conducted at various levels, namely regional and, in a few cases, at country level. Within countries, the analysis also covers agricultural sub-sectors and disaggregated expenditures, namely recurrent and capital expenditures. The results are presented at aggregate level for the SADC region and for the three economic groupings of SADC: SADC middle-income countries, SADC low-income countries and SADC excluding South Africa. The grouping by income levels partitions countries into low- and middle-income groups, following the World Bank classification of economies based on gross national income (GNI) (Table 2.1). Aggregation for the SADC and the economic subgroups is based on a weighted sum approach, where the share of the country's value of the indicator is used as a weight. The low-income countries are characterized as agriculture-based economies, although some of these countries have significant mining activities. On the other hand, some of the middle-income countries have significant mining sectors and some are small countries with significant amounts of tourism, such as Seychelles and Mauritius. Eight of the 15 SADC countries were classified as middle-income countries by December 2012. They include Angola, Botswana, Lesotho, Mauritius, Namibia, Seychelles, South Africa and Swaziland. The low-income countries are the DRC, Malawi, Tanzania, Madagascar, Zambia,[2] Zimbabwe and Mozambique. The countries for which we have data and which are included in the analysis are: Angola, Botswana, Lesotho, Mauritius, Namibia, South Africa and Swaziland (middle-income countries), and Madagascar, Malawi, Mozambique, Zambia and Zimbabwe (low-income countries).

The region's middle- and low-income countries have interesting characteristics with respect to the role of agriculture. For instance, the importance of agriculture in the national economies drops systematically as we move from the low- to middle-income countries, implying that agriculture plays a more significant role in poor countries relative to those

[2] Although Zambia was reclassified as a lower middle-income country in 2013, we treat it as a low-income country for purposes of this analysis because the data under consideration was generated before its reclassification.

that have attained higher standards of living. Of course, that does not imply that agriculture is unimportant in the other countries where agricultural GDP (AgGDP) to total GDP ratios are lower. In fact, South Africa, which has one of the lowest AgGDP to total GDP ratios, is the largest producer of agricultural goods and commodities for the region. It should be noted that whilst countries such as South Africa have a lower AgGDP to total GDP ratio compared to low-income countries, the role of the agriculture sector in the macro-economy is higher than this ratio suggests. This is because of the high value added in the sector through processing, financial and other services as well as direct and indirect income, and employment linkages. The size of the agricultural economies in the middle-income countries relative to the entire SADC region vary substantially (Figure 2.1).

TABLE 2.1 WORLD BANK CLASSIFICATION OF SADC ECONOMIES, GNI PER CAPITA (2009).

Low-income (USD 995 or less)	**Lower-middle-income** (USD 996 - USD 3,945)	**Upper-middle-income** (USD 3,946 - USD 12,195)
DRC	Angola	Botswana
Madagascar	Lesotho	Mauritius
Malawi	Zambia	Seychelles
Mozambique	Swaziland	South Africa
Tanzania		Namibia
Zimbabwe		

Source: World Bank 2011.

Over the period 2000-2012, South Africa, Tanzania and the DRC stand out among the countries in the sample as the three countries with the largest shares in SADC agriculture, accounting for about 25%, 23% and 13%, respectively, of SADC AgGDP (see Figure 2.1). For purposes of this report, countries are assigned to low- and middle-income groups (following the World Bank classification presented in Table 2.1), the latter being a composite of lower and upper middle-income countries. Figure 2.1 shows that AgGDP makes up a larger share of total GDP in the low-income countries more than it does in the middle-income countries. The analysis that follows often highlights this economic divide and also pays attention to the distinct nature of South Africa, which has by far the biggest economy among the SADC countries, in the region and indeed in Africa. Figure 2.1 shows that agriculture contributes 21% to the GDPs of the SADC low-income countries.

In order to understand the relationship between different kinds of public spending and productivity and income, we rely on Spearman's correlation, Lowess (locally weighted scatterplot smoothing) and scatterplots. Although these do not seek to establish causality between measures of public spending and the outcomes of productivity and income, they help illustrate the relationship that exists between the set of variables being examined.

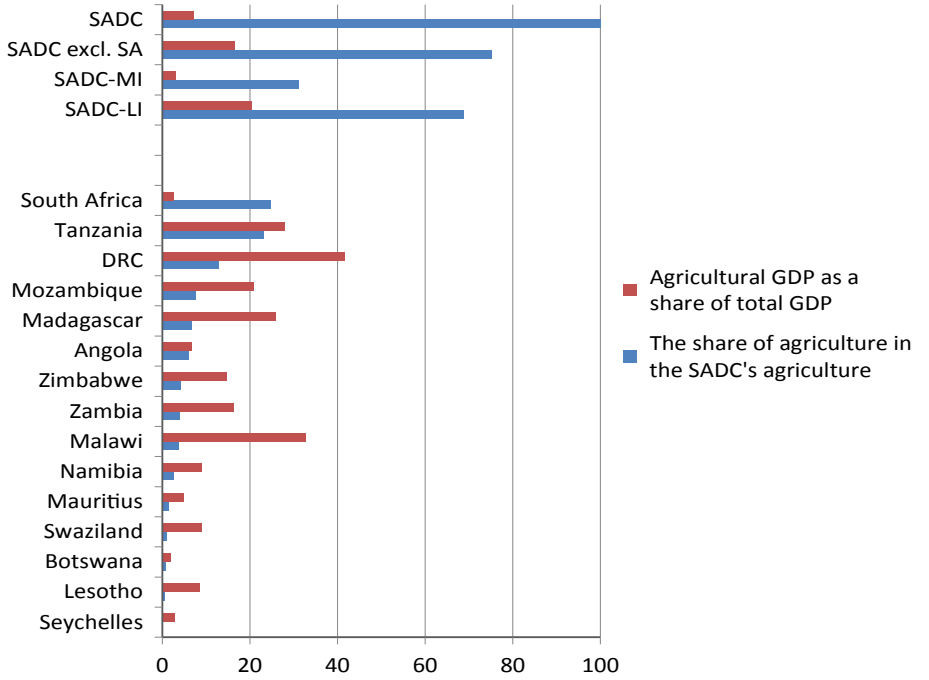


FIGURE 2.1 SHARE (%) OF AGRICULTURAL GDP IN INDIVIDUAL COUNTRIES IN THE SADC REGION (ANNUAL AVERAGE 2000-2012).
Source: Authors' calculations based on ReSAKSS-SA data collected from countries.

3. Trends and Patterns in Agricultural Investments in Southern Africa

In order to achieve the targets set out in CAADP, the SADC RISDP and MDG 1, it is important that investments in agriculture are made across all the four pillars of CAADP:

- Extending the area under sustainable land management and reliable water control systems.
- Improving rural infrastructure and trade-related capacity for market access.
- Increasing food supplies and reducing hunger.
- Agricultural research, and dissemination and adoption of technologies.

Since the Maputo Declaration in 2003, countries have made investments in the agriculture sector, but it is not entirely clear how such investments have changed over time and how they have been made. Thus, it is pertinent to show the trends in such investments over time, in order to understand whether countries need more and renewed efforts towards donor mobilization or domestic revenue collection.

Analysis of trends shows that, throughout the 2000-2012 period, the proportion of internal and external government revenue as a proportion of total revenues has varied from one year to another. Not surprisingly, except in the cases of Zimbabwe and Madagascar, low-income countries appear to have relatively higher dependence on external finance compared to middle-income countries. For example, Figure 3.1 shows that the ratio of internal revenues to total revenues for the SADC low-income countries over the period under study was 65% compared to 82% for the middle-income countries.

In other words, as we present patterns of public investments, it is important to also bear in mind that external finance is of paramount importance for the low-income countries. Thus, reducing aid would have detrimental effects in poor countries, as national sources would be insufficient to run all government functions.

Consequently, high dependency on foreign aid/external finance could have serious negative effects on the ability of some SADC countries to achieve CAADP targets. However, high dependency on foreign aid or donors to transform or develop the agriculture sector is not necessarily a bad policy. The real issue is how and where external finance or aid is allocated, and whether there is accountability for the resources. The Green Revolution in Asia was heavily funded by donors whilst international agricultural research organizations developed technologies together with recipient national governments (Hazell 2008). Over time, national governments increased their share of the agricultural budget, which led to more public support for the program by recipient Asian nations. Understanding these dynamics is an important step in avoiding development challenges that can arise from the dependence on external finance.

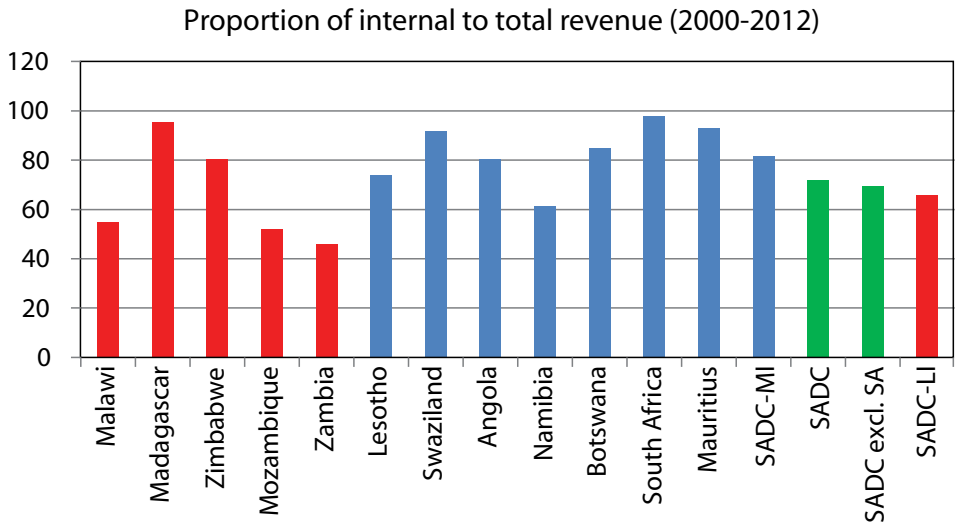


FIGURE 3.1 INTERNAL REVENUES AS A SHARE (%) OF TOTAL REVENUES (2000-2012).
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries.

Figure 3.2 shows that public investments per capita in agriculture have generally risen from the early 2000s and increased to around USD 33 (in constant 2005 USD prices) by 2010 from a mere USD 10 in 2000. The reduction in per capita public expenditure post-2006 coincides with the financial crisis that hit western countries during that period, leading to a reduction in international trade and assistance given to developing countries. Although these figures are lamentably low compared to the long-term funding requirements, which show that per capita expenditures should be above USD 50 in order to achieve the MDGs for poverty reduction (see UNDP 2000; Fan et al. 2008), the numbers indicate an increase after 2009. On the other hand, private investments has generally trailed public investments and, in per capita terms, has been below USD 25. Since 2010, private investments have declined, although it remains at higher levels compared to the pre-2008 period, when the maximum per capita private expenditure attained was below USD 15. Generally, these expenditure figures are similar to the findings of AfDB (2010) which showed that while the world's public spending on agriculture averaged USD 44 in 2007, this figure stood at a mere USD 11 per capita for sub-Saharan Africa.

Figure 3.3 shows that the share of private investment in total agricultural investment has been below 30%, but this share has been increasing over time from the year 2000 onwards. In this case, private expenditure is proxied by the amount of credit going to rural areas for farming and, although it may not capture all forms of private expenditure, the movement in this variable communicates something of importance. Because private and public investments are complementary in nature, an increase in private expenditure is desirable for realizing the many agricultural growth outcomes. Low private expenditure levels imply that farmers may not be able to take full advantage of increases in public investments. In this regard, it is important that policy, institutional and legal constraints are identified at both regional and country levels in the SADC region, in order to design an appropriate investment environment for the private sector to support the agriculture sector.

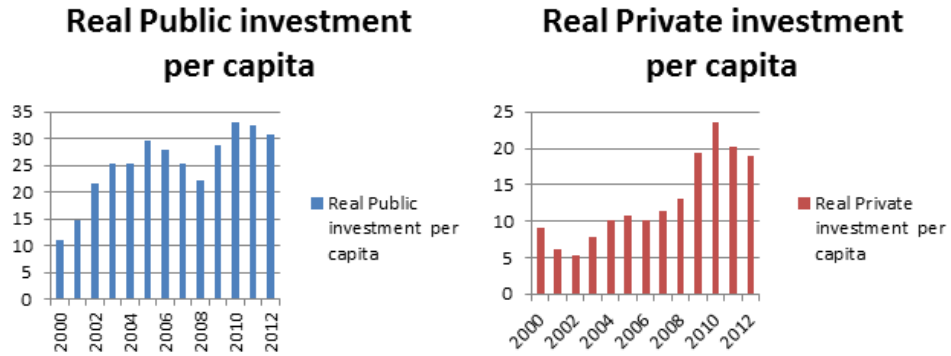


FIGURE 3.2 REAL PUBLIC/PRIVATE AGRICULTURAL INVESTMENT IN THE SADC REGION (2000-2012, IN CONSTANT 2005 USD PRICES).
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries. Private investments are proxied by agricultural credit to the private sector, whereas capital spending proxies public investments.

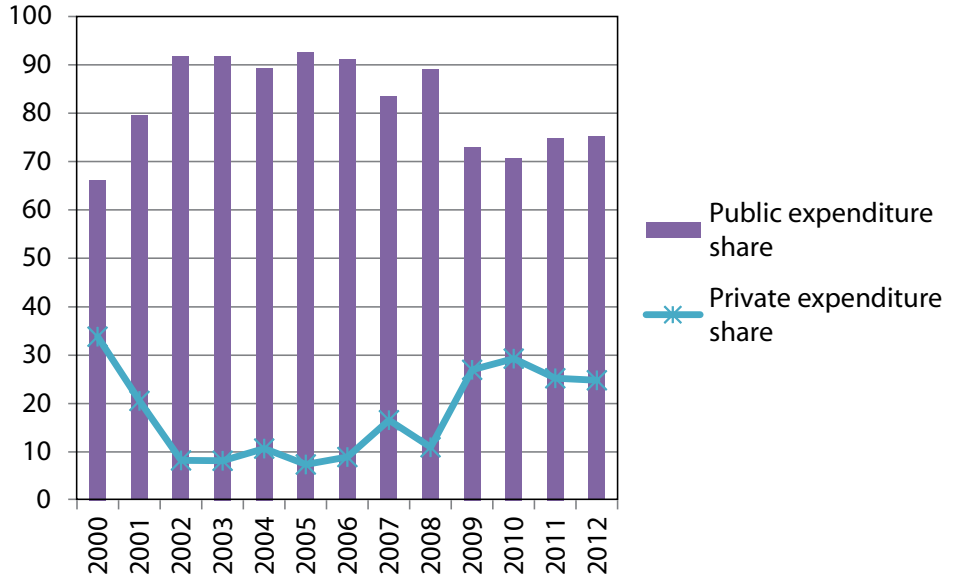


FIGURE 3.3 RELATIVE PROPORTIONS (%) OF PRIVATE AND PUBLIC INVESTMENTS IN AGRICULTURE OVER TIME FOR THE SADC REGION (2000-2012).
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries.

3.1 Official Development Assistance

Official development assistance (ODA) flows indicate the commitments of the donor community to increase aid to Africa, and include disbursements likely to come into the agriculture sector. Figure 3.4 shows each country's share of total net ODA to the SADC region over the period 2003-2011. In 2009, Tanzania received the largest share (23%) of net ODA flowing into the SADC region, followed by the DRC which received close to 18% of the total net ODA. Seychelles received the least (0.2%).

Figure 3.4 also shows that, on average, the DRC received the most net ODA over the period from 2003 to 2011, equalling about 25% of all ODA to the SADC region. Over the same period, Tanzania's share of total net ODA to the SADC region averaged 19%, followed by Mozambique and Zambia at 14% and 9%, respectively. Interestingly, despite its status as a middle-income economy, South Africa has also received a considerable share of net ODA, averaging about 7% over the period 2003-2011. Of the poor and largely agrarian countries, Malawi and Zimbabwe have received the least ODA over the period, averaging 6% and 3.9%, respectively.

Figure 3.5 shows the per capita ODA for middle-income countries in the SADC region for the period 2003-2011. The annual average net ODA[3] per capita (constant 2009 USD prices) for the SADC region fluctuated between USD 19.5 and USD 233.6. The low-income countries and the SADC region had a higher ODA per capita than SADC excluding South Africa and the SADC middle-income countries over the period 2003-2011. The net ODA per capita ranged from USD 64.1 to USD 142 in the low-income countries, and from USD 31.9 to USD 96.8 in the middle-income countries.

Among the middle-income countries, Seychelles, Namibia and Botswana were the top recipients of per capita ODA averaging USD 234, USD 108 and USD 100, respectively, over the period 2003-2011. In general, there was an upward trend in per capita ODA from 2003 to 2011. The exception to this was Angola, which had a consistent decline in ODA per capita from 2004 onwards. This trend in Angola was the main driver of the decline in ODA per capita in the middle-income countries.

[3] Net ODA is disbursement flows (net of repayment of principal) that meet the Development Assistance Committee (DAC) definition of ODA, and are made to countries and territories on the DAC list of aid recipients. Data are in constant 2009 USD prices.

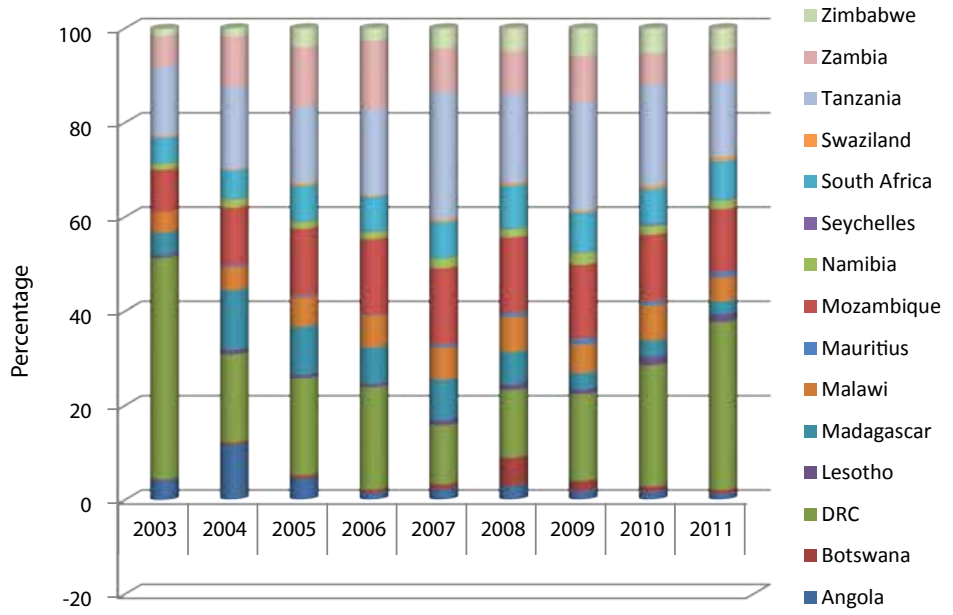


FIGURE 3.4 NATIONAL SHARE (%) OF TOTAL NET ODA TO THE SADC REGION (2003-2011).
Source: Authors' calculations based on OECD 2012.

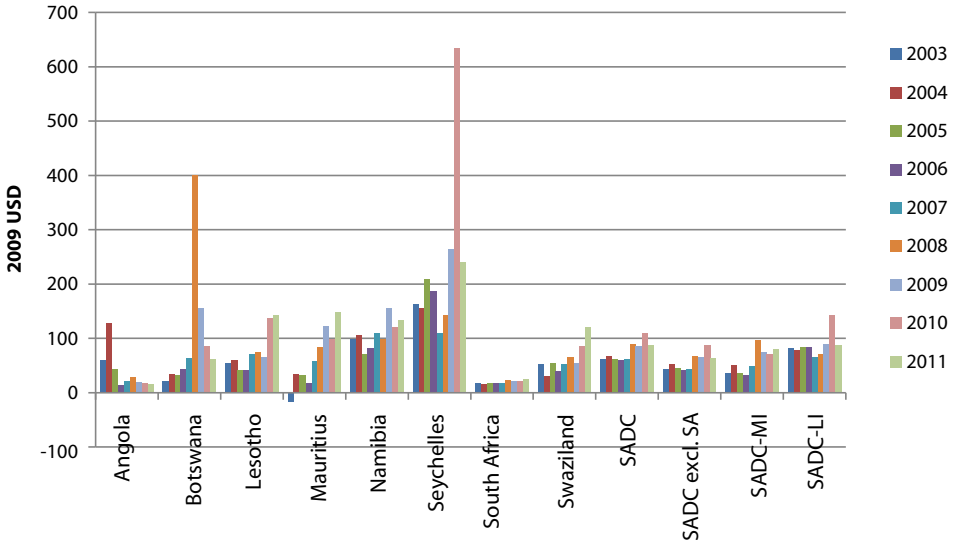


FIGURE 3.5 PER CAPITA NET ODA RECEIVED FOR MIDDLE-INCOME COUNTRIES IN THE SADC REGION (2003-2011, IN 2009 CONSTANT USD PRICES).
Source: Authors' calculations based on OECD 2012.

Among the low-income countries, two experienced a declining trend in ODA per capita – the DRC from 2003 and Madagascar from 2004 (See Figure 3.6.). However, net ODA per capita of the DRC increased again after 2007. In general, all the low-income countries depicted in Figure 3.6, except for the DRC and Madagascar, had upward trends in ODA per capita over the period 2003-2011. Among the low-income countries, Zambia had the highest ODA per capita (USD 98), followed by Mozambique (USD 85) and Tanzania (USD 62), while Zimbabwe (USD 40) received the least net ODA over the period 2003-2011. Zambia was also the only low-income country to have received per capita ODA of over USD 135 in 2006, and Zimbabwe received the lowest ODA per capita (USD 18) in 2004.

The trends presented above show that ODA per capita has been given at various levels to countries in the SADC region. Also, in most countries, the net ODA per capita received has fluctuated greatly, suggesting that ODA flows are unstable and as such cannot be totally relied on to steer economic growth in the region. Consequently, developing countries in the SADC region need to understand that over-reliance on external assistance increases their exposure to external shocks. For example, Figures 3.5 and 3.6 show that the financial crisis during the period 2007-2008 led to a decrease in net ODA into the SADC region, as donors changed their priorities in favor of solving their own problems.

3.2 Agricultural Budget Execution Rates

Figures 3.7 and 3.8 show patterns in budget execution rates for the SADC countries for the period 2000-2012. These are measured as the percentage of the total agricultural budget allocation spent on agriculture. In general, actual expenditures tend to fall short of budget allocations, although there are some cases where expenditure exceeds allocation. Figure 3.7 shows that agricultural budget execution rates of all eleven countries presented, with the exception of Mozambique, Madagascar and Zambia, averaged below 100%. Existing studies suggest that, among other factors, shortfalls between expenditure and allocation could be due to imperfect projections of government tax collection, underreporting of actual spending channelled through externally supported funds, and limited capacity to spend funds released (Zavale et al. 2011).

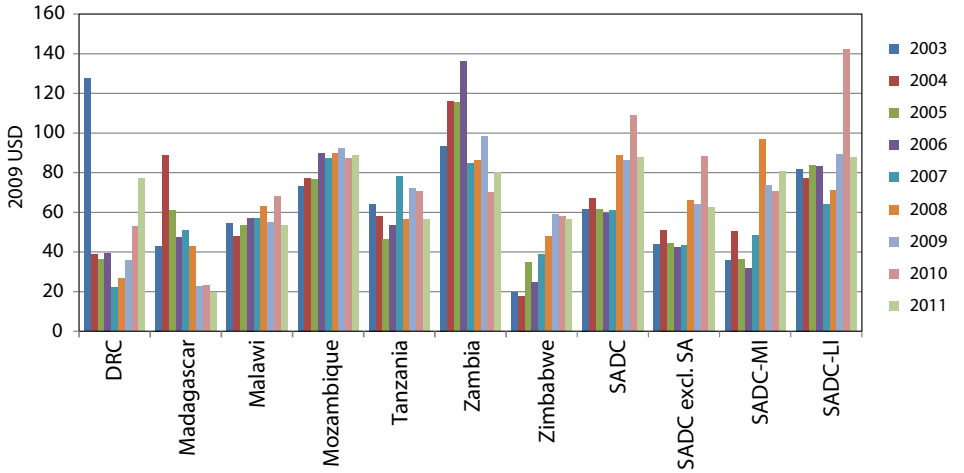


FIGURE 3.6 PER CAPITA NET ODA RECEIVED FOR LOW-INCOME COUNTRIES IN THE SADC REGION (2003-2011, IN 2009 USD CONSTANT PRICES).
Source: Authors' calculations based on OECD 2012 and Chilonda et al. 2013.

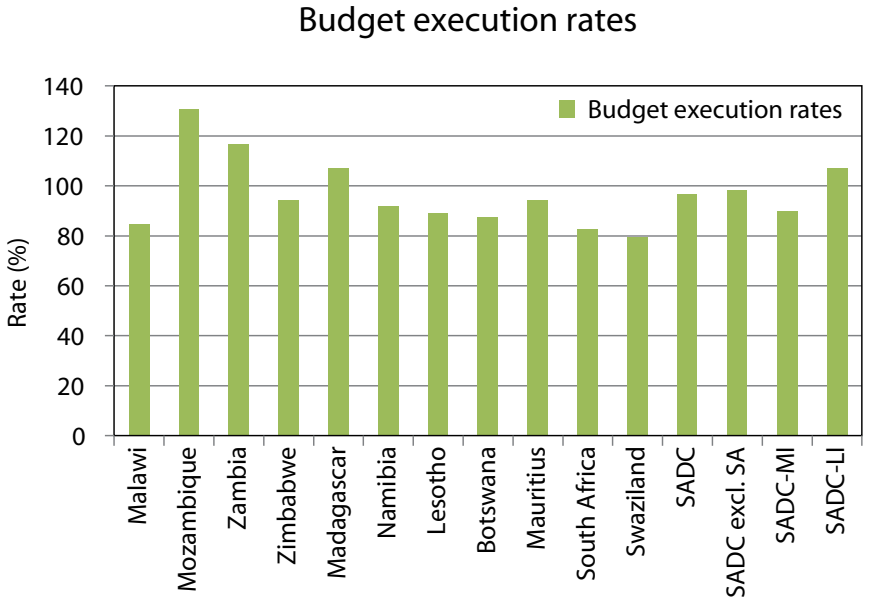


FIGURE 3.7 TOTAL BUDGET EXECUTION RATES OVER TIME FOR THE SADC REGION AND FOR INDIVIDUAL COUNTRIES (2000-2012, ANNUAL AVERAGES)
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries.

Where spending levels exceed allocation levels, it could imply that additional funds were injected into the agriculture sector by the government and/or development partners, and these funds were not registered in the agricultural budget allocation.

Figures 3.7 and 3.8 show that both the total budget and the agricultural budgets are executed differently across years. In most years, the agricultural budget execution rates are below 100%. Poor budget execution rates may suggest that governments need to enhance their spending capacities. This is important because it does not make development sense for cash-strapped economies to underutilize the few resources available for implementing government programs. Of course, specific implications depend on the country context, because the reasons for poor execution rates could differ across countries. If one of the reasons is the inability of development partners to release funds in a timely manner, this consolidates the need for countries to reduce donor dependence.

Table 3.1 shows that annual public expenditure across most sectors increased for all categories (the SADC region, SADC low-income countries and SADC middle-income countries) between the periods 1980-2002 and 2003-2007. This increase was more pronounced in the SADC low-income countries across all expenditure streams (agriculture, education, health, defence, social protection, and transport and telecommunications). Agricultural expenditure in the SADC region increased substantially from USD 0.127 billion during the period 1980-2002 to USD 0.148 billion during the period 2003-2007. An even greater increase is shown when considering only the SADC low-income countries, where agricultural expenditure increased from USD 0.150 billion to USD 0.190 billion between 1980-2002 and 2003-2007. These patterns in agricultural expenditure appear promising, although further analysis below reveals that the rates of increase have differed across the SADC countries over time.

The share of agricultural expenditure in AgGDP or total GDP reflects the intensity of expenditure, given national resources. It proxies the agricultural orientation of expenditure, and Figure 3.9 shows that the share of agricultural expenditure in total AgGDP is often more than 10% and is even higher in Botswana, Angola, Swaziland, Madagascar, Zambia,

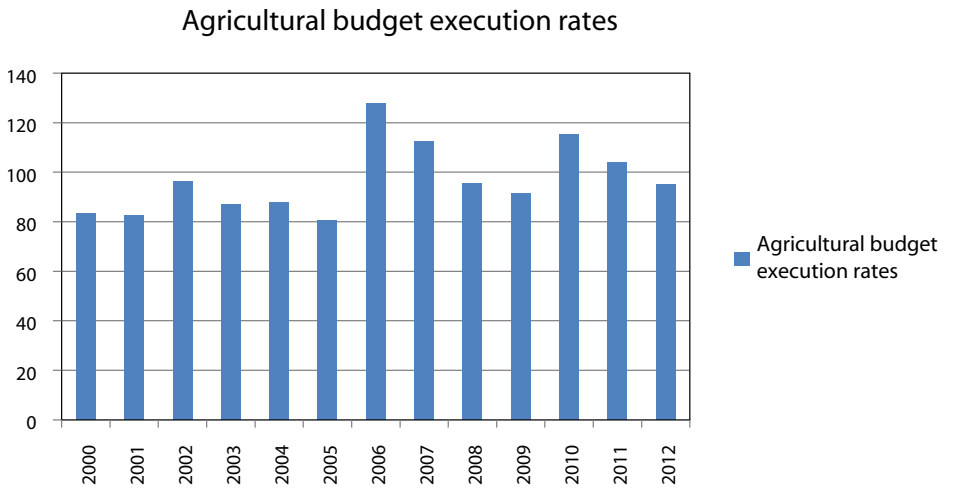


FIGURE 3.8 ANNUAL AGRICULTURAL BUDGET EXECUTION RATES (%) (2000-2012, AVERAGES).
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (the data are for all SADC countries, except the DRC, Tanzania and Seychelles).

TABLE 3.1 PUBLIC EXPENDITURE ACROSS SECTORS IN 2005 US DOLLARS (ANNUAL AVERAGES, BILLIONS).

	Agriculture	Education	Health	Defence	Social protection	Transport and telecomm-unications
SADC region (1980-2002)	0.127	0.308	0.126	0.131	0.091	0.120
SADC region (2003-2007)	0.148	0.627	0.335	0.201	0.160	0.094
SADC low-income countries (1980-2002)	0.150	0.259	0.134	0.145	0.078	0.106
SADC low-income countries (2003-2007)	0.190	0.380	0.222	0.197	0.076	0.026
SADC middle-income countries (1980-2002)	0.107	0.341	0.118	0.118	0.099	0.129
SADC middle-income countries (2003-2007)	0.123	0.776	0.403	0.204	0.211	0.134

Source: SPEED data (IFRPI 2012) covering Malawi, Mozambique, Zimbabwe, Zambia, Botswana, Lesotho and Mauritius.

Zimbabwe, Namibia, Lesotho, Mauritius and South Africa. This may imply that these countries are using their AgGDP to finance agricultural development.

On the other hand, countries in the SADC region spend about 18% of their AgGDP on agriculture, with low-income countries spending a substantial 25% of their AgDGP to finance agricultural transactions. Botswana's expenditure as a share of AgGDP averaged 45% between 2000 and 2012, which is comparable to Fan et al. (2009), who found that Botswana's expenditure on agriculture as a share of AgGDP reached 60% in 2007. Given the high level of Botswana's public expenditure on agriculture (as a share of the country's sector GDP), it is probably the right time to examine the sustainability of resource allocation and whether there has been a corresponding growth in agricultural productivity and progress made towards achieving the CAADP targets, mainly because Botswana's AgGDP is very small.

Figure 3.10 shows the progress that countries in the Southern African region have made towards achieving the CAADP target of allocating 10% of their total budget to the agriculture sector. The first observation is that, apart from Malawi, which reached the 10% target several times after 2003, the other countries with substantial allocations to the agriculture sector (as a proportion of the total budget) are Zimbabwe, Mozambique and Madagascar. The general trend, however, is that most countries are not reaching the 10% target. The 10% allocation, however, needs to be understood in context. For instance, highly industrialized countries may not be expected to allocate 10% of their budgets to agriculture, because of the limited role that agriculture plays in their economies (e.g., South Africa). Furthermore, it should also be understood that owing to differences in AgGDPs, an allocation of less than 10% to agriculture in some countries can still amount to substantial agricultural expenditure relative to the size of the sector (e.g., Botswana). On the other hand, an allocation of more than 10% in other countries could represent less agricultural expenditure relative to the size of the sector (e.g., Malawi and Zambia), and such countries may still need to mobilize more resources to bringing about substantial changes in their agriculture sectors (Fan et al. 2010).

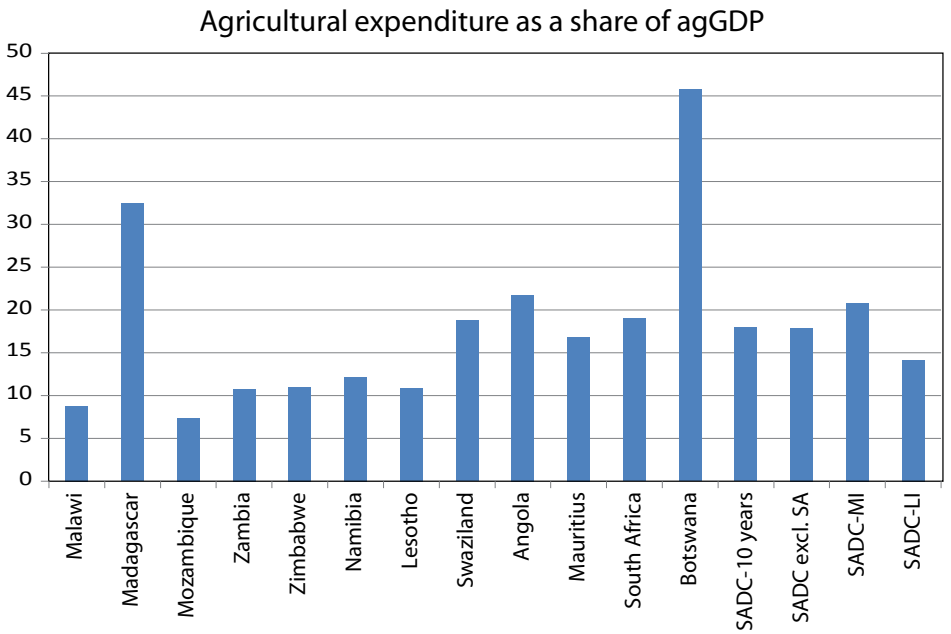


FIGURE 3.9 SHARES OF AGRICULTURAL EXPENDITURE IN TOTAL AGRICULTURAL GDP (AGGDP) (2000-2012, ANNUAL AVERAGE PERCENTAGES).
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries.

Against this background, it is pertinent to consider the results based on the SADC middle-income countries (SADC-MI) (which are usually mineral-rich and have a larger share in the manufacturing sector) and low-income countries (SADC-LI) (which are generally characterized by good agricultural lands, but have limited minerals under exploitation at present). Ideally, low-income countries would be expected to find the 10% allocation to agriculture more important. However, Figure 3.10 shows that the SADC-LI countries as a group are allocating more than 7% of their budgets to agriculture, which is just 3% less than the 10% CAADP target. Although this figure falls below the 10% target, it is much higher than the average allocation in middle-income countries. Over the 2000-2012 period, the middle-income countries only allocated about 2% of their budgets to agriculture. These figures should be seen in the context of yearly variations in allocations by both middle- and low-income countries. However, it should be noted from Figure 3.9 that the SADC-LI countries spend less relative to the size of their agriculture sectors (compared to the SADC-MI countries). This means that there is room for increasing expenditure on agriculture in the SADC low-income countries, by tapping more into the agricultural value added.

The findings above carry a message of hope because, although the 10% CAADP target has not been consistently achieved, the trend has been upward/positive in some countries such as Malawi, Mozambique and Zambia, and to some extent in Zimbabwe. However, there are also reasons to believe that, in a number of countries, public expenditure on agriculture (as a share of total expenditure) is declining. Of course, over time, the variations in agricultural expenditure of individual countries require thorough analysis. For example,

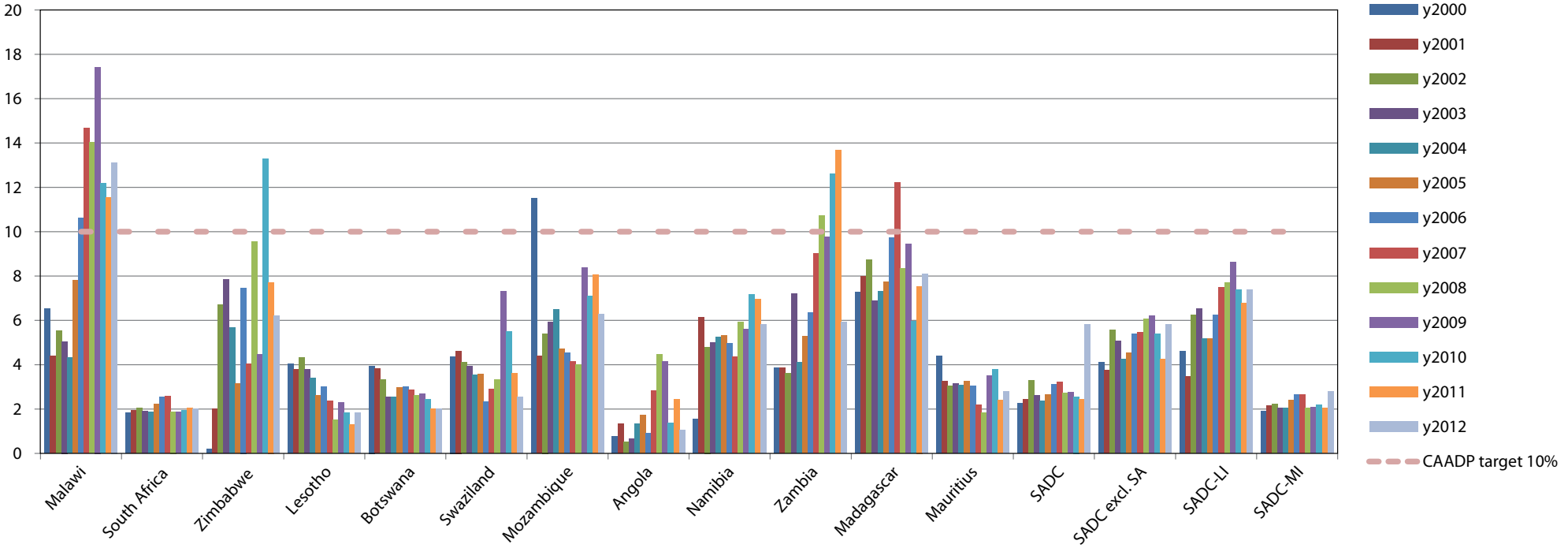


FIGURE 3.10 PROGRESS MADE BY COUNTRIES TOWARDS ACHIEVING THE CAADP 10% AGRICULTURAL EXPENDITURE TARGET.
Source: Computations by the authors based on ReSAKSS-SA 2012 data collected from individual countries.

it would be informative to probe the factors that yield those decisions, in order to find ways of encouraging investments in the sector. However, this issue goes beyond the objectives of this report and hence is not given any in-depth analysis.

An important point to be made about the data above relates to the kinds of expenditure involved in each of the countries under study. One implicit assumption made by proponents of increased agricultural expenditure is that such expenditure would eventually create the much-needed agricultural capital stock, which will dictate the pace and magnitude of long-term agricultural and economic growth.

Nevertheless, whether governments will end up allocating budgets to investment spending is an empirical question at present, given that there is no clear-cut theory or practice on how governments should allocate their spending within the agriculture sector, and given the importance of country-specific contexts. The following section presents trends in government expenditure at national level and within the agriculture sector, in order to understand how expenditure is distributed within the sector. In doing so, depending on data availability, we have endeavored to disaggregate expenditure based on whether it is recurrent or capital expenditure, and whether it is for research and development, infrastructure, irrigation, extension, etc. Within the agriculture sector, we have also endeavored to show the distribution of expenditure between forestry, crops, livestock and fisheries.

3.3 Evolution of Spending in the SADC Region (2000-2012)

Table 3.2 shows average expenditure on various functions for specific periods as shares of total expenditure. Looking at the table, it is clear that recurrent expenditures account for the greater share of all expenditures across almost all the functions. The evidence also shows that the middle-income countries employ more (67-71%) resources under the recurrent expenditure category than under the capital expenditure category, where the allocation has been about 29-33% over the period under study (1995-2002 and 2003-2011). Low-income countries appear to be associated with a small bias (40-46%) towards capital expenditures. By definition, recurrent expenditures do not result in the acquisition or enhancement of assets. Therefore, the finding that low-income countries are investing more in capital relative to the past, is a good step forward in the quest for solutions that should develop the region. Again, across time, allocations to capital expenditure appear to have increased by 6% in low-income countries from 40% in the period 1995-2002 to 46% in the period 2003-2012. In the middle-income countries, total allocations to capital expenditure declined by about 4% over the same period, implying that these countries have tended to spend more on consumption.

The economic functions that enjoyed more total funding over the periods under study in descending order are education, health and agriculture in the SADC region. Tables 3.3 and 3.4 show that total recurrent and capital expenditure for the eight SADC countries, for which data were available, grew at different rates and had varying degrees of variation from year to year. First, the average shares of recurrent expenditure on agriculture in all the countries under study stood at less than 6%, with Botswana, Zimbabwe and Malawi registering higher proportions, and Mozambique registering the lowest shares in the pre-2003 (CAADP) period. The shares of recurrent expenditure on agriculture in total spending increased after 2003 in Lesotho, Malawi, Swaziland and Zimbabwe. The average growth rates in the shares of recurrent expenditure on agriculture also increased in Malawi, Mauritius, Mozambique, Swaziland and Zimbabwe after 2003 (Table 3.3).

In general, however, the shares of recurrent expenditure on agriculture exhibited higher degrees of variation as measured by the coefficient of variation. Between the pre-CAADP period before 2003 and the post-CAADP period after 2003, the variability in the shares of recurrent expenditure on agriculture in total spending decreased in Botswana, Madagascar, Mauritius and Mozambique.

The share of capital expenditure on agriculture in total spending also showed huge variations across countries, although there was some stability within countries over time. These shares declined after 2003 in Botswana, Lesotho, Madagascar, Malawi and Mauritius. However, the share of capital expenditure on agriculture in total spending increased in Mozambique, Swaziland and Zimbabwe. The shares of capital expenditure on agriculture

TABLE 3.2 THE SHARE (%) OF RECURRENT AND CAPITAL EXPENDITURES IN TOTAL EXPENDITURE ACROSS SECTORS (1995-2002 AND 2003-2011, ANNUAL AVERAGES).

		Agriculture Recurrent	Agriculture Capital	Education Recurrent	Education Capital	Health Recurrent	Health Capital	Transport Recurrent	Transport Capital	Total Recurrent	Total Capital
Zimbabwe	1995-2002	5.6	1.2	8.2	2.9	7.8	1.5	0.0	0.0	85.2	12.9
	2003-2011	6.8	7.0	8.6	2.1	10.9	1.8	2.8	2.7	77.2	22.8
Madagascar	1995-2002	1.7	7.6	13.5	3.9	6.0	2.2	1.2	9.9	63.5	36.5
	2003-2011	1.4	3.4	16.9	3.5	4.7	2.6	0.9	10.1	66.6	33.4
Malawi	1995-2002	5.6	2.4	5.4	2.1	3.3	2.1	0.9	4.2	30.3	69.8
	2003-2011	6.4	2.0	4.3	1.7	4.0	1.8	1.4	4.2	32.1	67.4
Mozambique	1995-2002	1.3	4.6	13.4	5.3	5.7	4.7	0.3	7.1	59.5	34.5
	2003-2011	0.5	2.3	8.7	4.3	3.0	3.3	0.1	2.4	39.1	28.0
Swaziland	1995-2002	2.4	0.8	12.6	0.7	4.0	0.4	2.2	4.7	48.2	17.5
	2003-2011	2.5	1.4	14.7	0.7	5.9	1.2	2.9	3.9	60.2	17.1
Botswana	1995-2002	4.3	1.6	10.0	3.5	5.2	0.5	0.7	1.5	67.3	32.7
	2003-2011	2.1	1.0	11.4	1.8	3.1	3.0	1.4	1.2	72.6	28.4
Mauritius	1995-2002	2.8	0.8	5.9	1.5	5.7	0.4	0.5	2.3	84.9	15.2
	2003-2011	2.4	0.3	2.8	1.5	7.6	0.8	2.1	1.6	88.5	12.8
Lesotho	1995-2002	2.6	3.5	7.6	4.7	4.9	2.8	2.7	0.2	80.2	20.3
	2003-2011	2.5	1.1	5.5	2.0	5.8	2.1	1.0	0.2	82.7	16.0
SADC	1995-2002	3.3	2.8	9.6	3.1	5.3	1.8	1.1	3.7	63.1	36.9
	2003-2011	3.1	2.3	9.1	2.2	5.6	2.1	1.6	3.3	62.2	37.8
SADC-LI	1995-2002	3.5	4.0	10.1	3.5	5.7	2.6	0.6	5.3	59.6	40.4
	2003-2011	3.8	3.7	9.6	2.9	5.7	2.4	1.3	4.8	53.7	46.3
SADC-MI	1995-2002	3.0	1.7	9.0	2.6	5.0	1.0	1.5	2.2	66.6	33.4
	2003-2011	2.4	1.0	8.6	1.5	5.6	1.8	1.9	1.7	70.8	29.2

Source: Computations by the authors based on SPEED DATA (IFPRI 2012).

TABLE 3.3 RECURRENT EXPENDITURE ON AGRICULTURE AS A SHARE OF TOTAL EXPENDITURE.

	Swaziland	Madagascar	Lesotho	Mauritius	Botswana	Malawi	Mozambique	Zimbabwe
1996	2.7	1.6	1.9	3.3	2.8	7.9	1.7	9.8
1997	2.9	1.6	2.1	3.0	2.6	6.0	1.7	6.9
1998	2.6	1.6	2.7	2.9	2.7	5.7	1.7	3.7
1999	2.1	1.1	2.7	2.9	3.6	4.1	1.7	3.5
2000	2.1	1.9	2.7	2.9	4.1	5.9	1.7	3.9
2001	2.1	1.9	3.0	2.7	16.4	3.7	1.2	0.3
2002	2.6	1.8	2.1	2.4	3.8	7.0	0.9	8.9
2003	2.4	2.1	3.7	2.5	4.2	4.4	0.9	7.6
2004	2.7	1.7	3.4	2.1	3.0	3.8	0.9	5.1
2005	3.1	1.2	3.1	2.1	2.6	5.2	1.1	2.5
2006	2.6	1.0	2.1	2.1	1.8	1.2	1.1	4.7
2007	2.1	1.6	2.5	2.0	1.9	5.5	1.1	10.3
2008	1.9	1.6	2.6	1.8	3.1	7.7	1.1	7.0
2009	1.7	1.6	2.4	3.5	2.9	11.8	0.7	4.1
2010	3.7	1.6	1.9	1.0	2.8	9.0	0.6	24.0
2011	2.8	1.6	2.0	4.5	2.0	5.1	0.8	2.2
2012	2.1	1.6	2.5	2.9	1.8	8.5	0.7	1.7
Average share pre-2003	2.41	1.66	2.48	2.87	5.12	5.77	1.53	5.28
Average share post-2003	2.52	1.56	2.61	2.43	2.58	6.23	0.92	6.89
Average growth rate pre-2003	-3.4	4.7	0.9	-3.8	24.1	-0.2	-11.0	-15.9
Average growth rate post-2003	-0.8	-0.2	-5.7	2.8	-4.8	11.5	-4.7	-5.2
Coefficient of variation pre-2003	13.89	16.78	16.62	9.32	98.11	25.64	21.44	63.84
Coefficient of variation post-2003	23.69	18.61	23.73	40.42	29.53	48.77	23.46	95.40

Source: ReSAKSS-SA data collected in individual countries in 2012.

TABLE 3.4 CAPITAL EXPENDITURE ON AGRICULTURE AS A SHARE OF TOTAL EXPENDITURE.

	Swaziland	Madagascar	Lesotho	Mauritius	Botswana	Malawi	Mozambique	Zimbabwe
1996	0.9	5.9	8.3	1.0	2.0	10.3	1.3	0.4
1997	1.1	5.9	0.8	1.1	2.9	1.9	1.3	0.2
1998	1.2	5.9	3.0	0.4	3.9	8.1	1.3	0.0
1999	1.2	15.4	3.6	0.7	1.2	11.8	1.3	0.8
2000	0.5	10.9	4.5	1.0	1.5	11.7	0.9	1.3
2001	1.1	4.3	3.3	0.7	1.4	12.2	10.9	0.1
2002	1.4	5.1	2.1	0.5	1.2	8.1	4.5	3.1
2003	1.2	4.2	2.1	0.5	1.0	11.8	5.5	3.4
2004	0.4	3.0	1.9	0.4	1.4	7.7	3.8	3.3
2005	1.3	3.8	1.9	0.8	1.1	6.8	4.3	4.0
2006	1.8	3.0	0.9	0.6	0.4	3.1	3.1	0.0
2007	0.2	3.9	1.3	0.4	1.3	3.1	3.1	8.3
2008	2.2	3.2	2.8	0.2	0.5	3.1	3.1	5.2
2009	3.4	3.2	0.4	0.1	1.1	3.1	3.1	2.7
2010	1.7	3.2	0.4	0.1	2.3	3.1	4.0	2.2
2011	1.3	3.2	0.4	0.1	1.1	3.1	2.8	36.0
2012	1.3	3.2	0.4	0.1	0.8	3.1	2.6	0.9
Average share pre-2003	1.05	7.62	3.66	0.79	2.02	9.16	3.08	0.84
Average share post-2003	1.47	3.43	1.26	0.33	1.09	4.80	3.54	6.61
Average growth rate pre-2003	-0.1	-5.6	17.5	-4.1	-18.7	27.3	42.1	62.9
Average growth rate post-2003	9.6	-1.7	-19.0	-21.7	1.7	-12.6	-5.5	29.1
Coefficient of variation pre-2003	26.90	53.20	64.71	34.77	50.26	39.43	119.42	129.01
Coefficient of variation post-2003	62.23	12.32	69.27	71.65	48.37	62.44	24.97	160.07

Source: ReSAKSS-SA data collected in individual countries in 2012.

also exhibited higher degrees of variability in some of the countries, both in the pre- and post-2003 periods. One important message emerging from this analysis is that growth in agricultural expenditure, in general, has been volatile, which is undesirable for sustainable agricultural growth and may signal the absence of real principles to guide agricultural investment.

Figure 3.11 shows recurrent and capital expenditures on agriculture over the period 1995-2011 for countries in the SADC region which had complete data. The results show that recurrent expenditure has generally been higher than capital expenditure on agriculture over the period under study. Not only has capital expenditure been lower than recurrent expenditure on agriculture, but it has also been declining over time. Low-income countries appear to have invested proportionately more in recurrent and capital expenditures on agriculture than middle-income countries, possibly because agriculture remains as one of their largest economic sectors. The policy implication for the SADC region is that, if more scarce public resources continue to be allocated to recurrent/consumption expenditure, the prospects for meeting the CAADP, SADC-RISDP and MDG targets could be slim. Agriculture-led economic growth, as witnessed elsewhere in the world, is based on sustained growth in productivity through corresponding investment in R&D and other critical public goods (Hazell 2008; Tsakok 2011). Of course, not all recurrent expenditure is a waste. Sustainable recurrent expenditure to maintain R&D facilities and equipment, generate more technologies, support extension and other requisite infrastructure, and for payment of salaries and other incentives for a productive public service, training of staff and farmers, targeted input subsidies, etc., is critical to agricultural transformation.

The first half of Table 3.5 shows that various countries spend differently across the agricultural expenditure streams (functions) under study, namely R&D, extension, irrigation, infrastructure, and grants and subsidies. The second half of Table 3.5 shows expenditure in the various streams as a share of agricultural GDP, in order to capture the intensity of expenditure in relation to the value of agriculture.

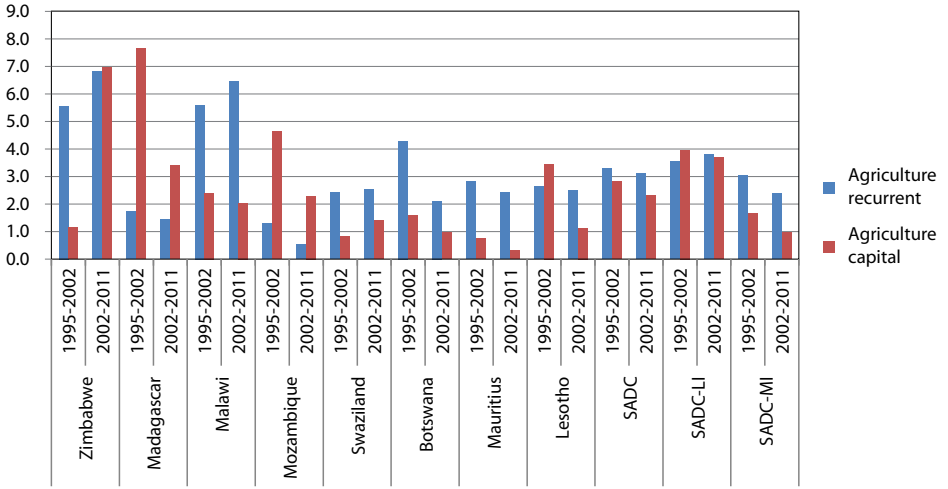


FIGURE 3.11 SHARES OF RECURRENT AND CAPITAL EXPENDITURE ON AGRICULTURE IN TOTAL NATIONAL SPENDING FOR THE PERIODS 1995-2002 AND 2003-2011 (ANNUAL AVERAGES).

Source: ReSAKSS-SA data collected from respective countries.

Madagascar and, to some extent, Swaziland spend considerable amounts relative to the values of their agricultural resources to finance agriculture. For instance, Madagascar spends at least 0.8% of its agricultural resources to finance grants and subsidies in the agriculture sector, 2.1% to finance extension services, 1.1% to finance R&D, 1.2% to finance irrigation and 1.8% to finance infrastructure.

The averages for the SADC region showed that extension services enjoyed more expenditure relative to agricultural value added (3.1%) than the other functions, followed by grants and subsidies (1.7%), infrastructure (1.4%), irrigation (0.7%) and R&D (0.6%) of agricultural GDP. These figures communicate a number of messages. First, there is still room for governments to increase their agricultural expenditure as a share of their agricultural GDPs. Second, expenditure on much-needed R&D and irrigation is still low, indicating that governments ought to increase their investments not only in agriculture, in general, but also in the important functions within the agriculture sector. The picture remains the same when we consider the SADC groups. Middle-income countries are characterized by shares of low expenditure on grants and subsidies. In the low-income countries, the higher shares of expenditure under grants and subsidies (3.0%) are based on the general need to subsidize the cost of inputs in the agriculture sector, which has led to extensive farm input subsidy programs in some countries, such as Malawi and Zambia. The R&D spending intensity ratios are comparable to world averages, and indeed those values observed for low- and middle- income countries elsewhere, which are about 1% and 0.6%, respectively. They are lower than the recommended 2% minimum and even the NEPAD target of 1%, with Botswana being an exception (see UNECA 2009).

Over time, expenditure across the various functions as a share of agricultural value added has generally showed a modest increase across the SADC region in the periods 2000-2002 and 2003-2012. The low increase in intensities of capital expenditure in the SADC low-income countries, relative to increases in subsidy intensities, indicate that countries are sacrificing investments in public goods to achieve short-terms gains. In other words, the quality investments these countries are making are low, especially considering that, in some countries, such as Malawi and Zambia, the financing of private goods (subsidies on inputs) rather than the financing of public goods (R&D and infrastructure) has generally favored the rich more than the intended beneficiaries - the poor.

Over the same period, an analysis of the shares of expenditure (as a ratio of total agricultural value added) for the low-income countries reveal that the decline in expenditure on infrastructure and the decrease in investments across other functions in the post-2003 period was due to a fall in the economies of low-income countries. Efforts should, therefore, be made to encourage policies favoring infrastructure, R&D and irrigation in those countries, as these functions still remain limited/inadequate and yet they are paramount for agricultural development in the region. In the middle-income countries, irrigation expenditure, as a share of agricultural GDP, increased from 4.3% to 5.8% in the post-2003 period. Expenditure on the different streams under study as a share of total agricultural expenditure show a similar pattern, in that various countries have invested their agricultural expenditure differently from one period to another across the expenditure streams (Table 3.5). In Malawi, for example, out of the total expenditure on agriculture, over 50% was used to finance farm input subsidy programs, whereas extension services (26.8%) had the second largest share over the period 2000-2012. Over the same period, Malawi's expenditure on irrigation and other infrastructure, as a share of total agricultural expenditure, was about 15%. Except in a few cases, extension services enjoyed, by far, the most investment/expenditure (averaging 33%) followed by irrigation and R&D, in the other countries. The order of expenditure is similar when looking at the SADC countries as a whole rather than in terms of the separate income groups.

Over time, though, it is pertinent to note that the shares of expenditure as a proportion of total agricultural expenditure have generally fallen in the SADC low-income countries. The R&D function, for example, has seen a decline from 16.4% to just 10%. This is a significant decline and threatens the ability of the agriculture sector to generate specific technologies to support long-term growth. Considering that investments in R&D have the potential to raise agricultural value added and rates of return in Africa by some 22% (Thirtle et al. 2003),

TABLE 3.5 AGRICULTURAL EXPENDITURE BY FUNCTION AS A SHARE OF TOTAL AGRICULTURAL EXPENDITURE, AND AS A SHARE OF TOTAL AGRICULTURAL GDP.

	Expenditure as a share of total agricultural expenditure (2000-2012, annual averages) (%)						Expenditure as a share of agricultural GDP (2000-2012, annual averages) (%)					
	R&D	Extension	Irrigation	Infrastructure	Grants/ subsidies	Other	R&D	Extension	Irrigation	Infrastructure	Grants/ subsidies	Other
Malawi	6.0	26.8	14.8	0.0	52.4	0.0	0.2	1.2	0.5	0.0	5.6	0.0
Mozambique	19.8	8.4	3.1	38.9	0.0	29.7	0.5	0.3	0.1	1.1	0.0	0.7
Zambia	6.9	33.5	0.0	0.0	59.6	0.0	0.2	1.2	0.0	0.0	2.1	0.0
Zimbabwe	7.9	10.9	11.3	9.2	26.0	34.7	0.8	3.1	1.7	0.9	6.4	10.3
Madagascar	17.0	28.8	18.8	24.4	11.1	0.0	1.1	2.1	1.2	1.8	0.8	0.0
Namibia	15.5	26.5	3.3	13.7	0.0	41.0	0.6	1.0	0.3	0.6	0.0	1.7
Lesotho	2.7	34.3	0.0	19.3	0.0	43.6	0.7	9.3	0.0	6.2	0.0	12.4
Botswana	12.6	83.8	0.1	0.1	3.4	0.0	4.6	32.2	0.0	0.0	1.3	0.0
Swaziland	10.8	48.1	18.3	18.3	4.4	0.0	1.1	6.5	2.2	2.2	0.4	0.0
SADC	11.0	33.9	7.8	13.6	17.5	16.3	0.6	3.1	0.7	1.4	1.7	2.7
SADC-MI	10.4	48.2	5.4	12.9	2.0	21.1	0.7	5.0	0.6	2.3	0.1	3.5
SADC-LI	11.5	22.0	9.7	14.2	30.4	12.3	0.6	1.5	0.7	0.8	3.0	2.1
SADC 2000-2002	14.1	36.7	10.8	19.0	7.6	11.8	0.5	2.1	0.4	1.3	0.2	1.4
SADC 2003-2012	10.1	33.0	6.8	12.0	20.4	17.6	0.7	3.4	0.8	1.5	2.1	3.1
SADC-LI 2000-2002	16.4	26.3	16.5	23.8	12.2	4.8	0.4	0.7	0.5	0.7	0.3	0.1
SADC-LI 2003-2012	10.0	20.8	7.7	11.5	35.5	14.4	0.6	1.8	0.8	0.8	3.7	2.7
SADC-MI 2000-2002	11.4	48.8	4.3	13.4	2.2	19.9	0.7	3.7	0.3	1.9	0.1	2.9
SADC-MI 2003-2012	10.1	48.0	5.8	12.7	1.9	21.5	0.7	5.4	0.7	2.4	0.2	3.7

Source: Computations by the authors based on ReSAKSS-SA data collected in 2012 from individual countries. In countries where the value for the functions 'other' and 'infrastructure' equals zero, this means that there is no data available in that category for that country.

and that this expenditure on R&D has high returns in terms of labor productivity (Fan et al. 2010), such a decline in investments is potentially detrimental. The same can be said about any decline in infrastructure (especially on feeder roads), which has also been found to increase returns on labor productivity.

The situation is similar for the extension stream in the low-income countries, which has seen a decline in the share of expenditure on extension services from 26.3% to 20.8% from the period 2000-2002 to the post-2003 period (2003-2012). There has also been a decline in the infrastructure and irrigation streams. A decline in the share of expenditure on extension services is undesirable because investments in agricultural extension facilitate technology adoption, and many studies have shown that investments in extension services have positive impacts on agricultural productivity and incomes. Extension services, through technology demonstration centers and extension visits, for example, can raise the demand for technology from farmers (Sun 2011). Of course, TFP does not depend on current levels of R&D expenditure, but rather on usable stocks from past R&D expenditure (Alston and Pardey 2001).

The only stream/function that has seen an increase in the share of expenditure during the study period is grants/subsidies. The share of grants/subsidies in the low-income countries more than doubled during the period 2003-2012 from the initial figure of 12.2% in 2000-2002 to an overwhelming 35.5% in the post-2003 period. This trend highlights that owing to rising input prices, erratic rainfall and unreliable, albeit increasing aid flows, low-income countries are perhaps realizing that administering subsidies to the agriculture sector is inevitable. Unfortunately, this is happening at the expense of other equally important functions within the agriculture sector. By their nature, subsidies appear to target addressing the short-term needs of the agriculture sector, for example, by supplying short-term inputs. Unless more finance can be channelled into the other sections of the agriculture sector, generating the much-needed infrastructure and technology for long-term growth of the sector will be very difficult for these countries.

Figure 3.12 shows the average shares of expenditure over the period 2000-2012 for different functions in the agriculture sector. As indicated earlier, personnel emoluments accounted

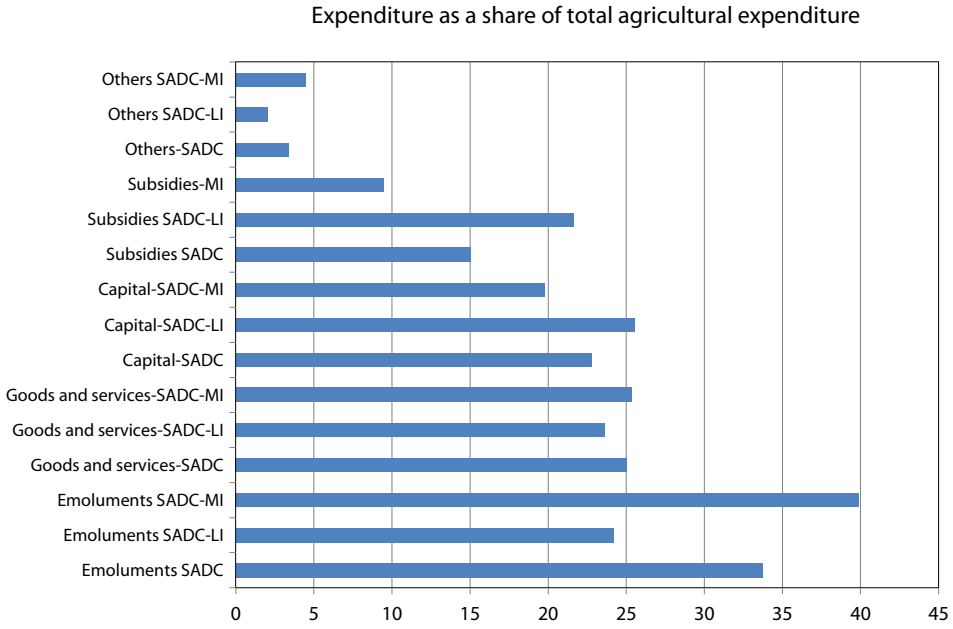


FIGURE 3.12 THE SHARE OF EXPENDITURE ACROSS DIFFERENT FUNCTIONS IN THE AGRICULTURE SECTOR IN THE SADC REGION (2000-2012, ANNUAL AVERAGES) (%).
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).

for the largest share of expenditure in the SADC middle-income countries followed by goods and services. The finding that capital expenditure falls short of the 25% mark in these countries is also corroborated.

Figure 3.13 shows that more than 50% of agricultural expenditure goes into the production of crops in the SADC countries, followed by expenditure on livestock, forestry and fisheries which are 20%, 18% and 12% of agricultural expenditure, respectively. This trend is also observed for SADC middle-income countries. However, the order of expenditure changes slightly when only low-income countries are considered. In low-income countries, the highest share of agricultural expenditure is observed in the crops sub-sector, followed by the forestry, livestock and fisheries sectors. In SADC low-income countries, which are plagued by low nutritional levels and high percentages of child wasting, expenditures on livestock production and fisheries, which constitute major sources of protein, were lamentably low and stood at 13% and 11%, respectively. Such low shares of expenditure in these important sub-sectors of agriculture are likely to generate long-term lopsided agricultural growth favoring crop production over the production of animal protein, which could lead to malnourishment and other nutritional problems for households dependent on agricultural livelihoods.

Landlocked countries and those that are highly dependent on agriculture, such as Malawi and Zambia (which should ideally be spending large shares of their agricultural budgets on fisheries and livestock), spend a high proportion of their budgets on crop production while investing just 5% or less in the livestock and fisheries sectors of agriculture. In these countries, more than 60% of agricultural expenditure is spent on crop production.

Once again, Table 3.6 shows that when SADC countries are taken as a whole, personnel emoluments stand out as the expenditure stream with the largest share (44.9%) followed by goods and services in 2000. However, when countries are disaggregated into economic groups (in order to account for income constraints facing individual economies), we note that most expenditures in the SADC low-income countries were incurred in the capital and subsidies categories. This, once again, highlights the leading role that subsidies have taken in recent years due to changing government priorities, which is partly dictated by recent global events.

It is clear from Table 3.6 that goods and services combined with personnel emoluments account for the largest shares of government expenditure, whereas investment spending (capital) has continued to be accorded low-priority status. The variations across both time and countries underline the need to prioritize spending that is consistent with long-term agricultural and economic growth.

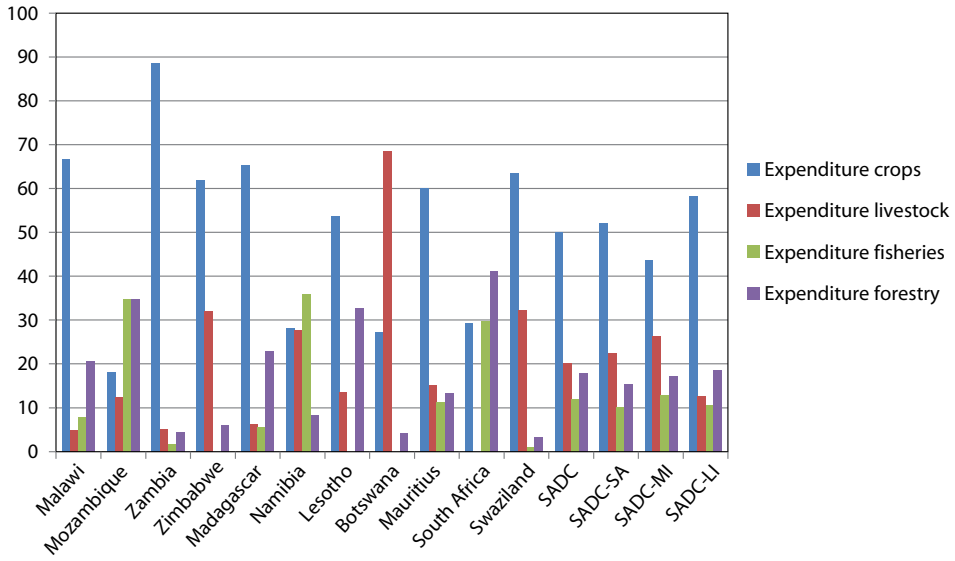


FIGURE 3.13 DISTRIBUTION OF PUBLIC EXPENDITURE AS A SHARE OF AGRICULTURAL EXPENDITURE ACROSS MAJOR COMPONENTS OF AGRICULTURE IN THE SADC REGION (2000-2012, ANNUAL AVERAGE).

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).

TABLE 3.6 AGRICULTURAL EXPENDITURE ACROSS FUNCTIONS AS A SHARE OF TOTAL AGRICULTURAL EXPENDITURE (2000-2012) (%).

	SADC					SADC-LI					SADC-MI				
	Emoluments	Goods and services	Capital	Subsidies /grants	Other	Emoluments	Goods and services	Capital	Subsidies /grants	Other	Emoluments	Goods and services	Capital	Subsidies /grants	Other
2000	44.9	22.2	20.6	8.6	3.7	41.4	12.5	19.2	26.2	0.7	40.4	26.5	18.3	9.2	5.6
2001	38.9	24.1	26.3	7.2	3.5	33.5	14.2	29.1	22.6	0.5	36.9	28.3	19.6	9.8	5.4
2002	32.4	30.0	20.6	13.8	3.2	23.7	31.9	21.9	22.4	0.1	38.2	28.8	19.7	8.0	5.3
2003	35.4	27.0	19.6	13.9	4.2	22.2	25.0	23.8	21.9	7.1	44.2	28.3	16.7	8.5	2.3
2004	37.7	25.9	19.2	15.5	1.6	30.6	22.7	20.8	24.6	1.2	37.3	27.9	20.3	9.8	4.7
2005	34.3	25.6	27.2	10.7	2.2	23.2	28.3	30.8	15.6	2.1	43.6	23.3	24.2	6.7	2.3
2006	34.3	21.7	22.5	19.9	1.5	18.7	14.0	31.4	34.8	1.1	47.3	28.1	15.2	7.6	1.8
2007	37.4	24.0	20.3	16.0	2.3	22.0	16.5	32.9	25.8	2.8	50.3	30.2	9.8	7.9	1.9
2008	33.5	27.7	27.8	8.6	2.3	24.0	32.8	33.3	6.7	3.2	41.4	23.4	23.3	10.3	1.6
2009	29.5	20.1	20.7	23.5	6.1	14.3	13.9	25.1	42.5	4.1	42.2	25.2	17.1	7.7	7.8
2010	27.9	30.6	20.3	15.8	5.3	20.2	35.2	19.2	24.4	1.0	34.4	26.9	21.3	8.6	8.9
2011	25.5	26.7	25.3	18.8	3.7	19.4	34.8	22.1	22.5	1.3	30.6	20.0	28.0	15.8	5.6
2012	26.9	20.1	25.6	22.7	4.6	20.7	25.6	21.9	30.9	0.9	32.1	15.6	28.6	15.9	7.7

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries.

Capital spending is more important for low-income and agriculture-dependent countries, as they need capital investment to spur long-term growth of the sector. Therefore, it is important to emphasize, once again, the need for additional capital investments. Table 3.6 shows the inter-temporal variation in the share of capital expenditure, as an average, in low-income countries. This highlights that, while capital expenditure increased as a share of agricultural expenditure between 2004 and 2008, it progressively decreased after 2008 (the height of the financial crisis in western countries). On the other hand, shares of capital expenditure in the SADC low-income countries have surpassed those in middle-income countries. While this bodes well for ensuring long-term food security in the low-income countries and the SADC region, the low-income countries need to do more.

Again, various countries have tended to spend differently across the various categories of expenditure over time. Over time, low-income countries in the SADC region have experienced an increase in expenditure on subsidies, but only a slight increase of about 1% in allocation of capital. This, again, confirms the trade-off between investment in subsidies and that made in long-term R&D and infrastructure, which has the potential to cripple long-term economic and agricultural growth.

Therefore, the general message from this and the previous analysis is that expenditure patterns across these streams have tended to vary both dynamically (over time) and spatially (across countries), with most agricultural allocations going towards personnel emoluments and goods and services, and capital expenditure enjoying less than a quarter of the expenditure in the agriculture sector. Capital expenditure is crucial for long-term agricultural growth, and governments ought to find ways of intensifying efforts to re-allocate expenditure in favor of capital accumulation in the sector.

Table 3.7 shows the distribution of expenditure across different components of agriculture in the SADC region as a whole, and in low- and middle-income countries.

Looking at Table 3.7, it is clear that not only has crop production had the highest share of expenditure over the period under study, but this has been increasing over time. For instance, the share of expenditure on crop production in total agricultural expenditure increased from 42% in the pre-Maputo Declaration period (2000-2002) to 52% in the period 2003-2012. Within the SADC region, low-income countries spend more on crop production, and also had the highest increase in the share of expenditure (more than 25%) in the period 2003-2012. The increase in the share of expenditure on crop production in the SADC middle-income countries between the periods 2000-2002 and 2003-2012 was much smaller (less than 1%).

TABLE 3.7 DISTRIBUTION OF EXPENDITURE AS A SHARE OF AGRICULTURAL EXPENDITURE ACROSS MAJOR COMPONENTS OF AGRICULTURE IN THE SADC REGION (2000-2002 AND 2003-2012) (%).

	Expenditure crops	Expenditure livestock	Expenditure fisheries	Expenditure forestry
SADC 2000-2002	41.79	20.01	14.31	23.88
SADC 2003-2012	52.05	20.36	11.32	16.27
SADC-LI 2000-2002	37.37	10.50	14.62	29.82
SADC-LI 2003-2012	62.63	12.94	9.20	15.23
SADC-MI 2000-2002	43.55	25.26	13.17	18.01
SADC-MI 2003-2012	43.95	26.32	12.87	16.86

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).

In low-income countries, the shares of expenditure on fisheries and forestry decreased over the period under study, while the share of expenditure on livestock only increased marginally. It is evident from these figures that the largest share of expenditure in the agriculture sector of the SADC region still remains in the crop production sub-sector, whilst less and less expenditure has gone into the fisheries, forestry and livestock sectors. Depending on the comparative advantage of each SADC country, there appears to be an urgent need to explore the potential of sub-sectors, such as livestock and fisheries, to improve nutrition. The sections that follow present details of expenditure within the four major components of crops, livestock, fisheries and forestry, which together constitute agriculture.

3.4 Expenditure within Agricultural Sub-sectors

Table 3.8 shows that subsidies within the crop production sector enjoyed higher shares of expenditure, especially in Malawi, Mauritius, Zambia and Zimbabwe. Capital expenditure in the SADC region has been about a quarter of the expenditures in the crops and livestock sub-sectors. The share of capital expenditure in the crop production sub-sector was higher in Madagascar, Swaziland and Malawi, but emoluments were still the stream with the largest share of expenditure in the SADC region. In the livestock sub-sector, the shares of capital expenditure were high in Madagascar, Malawi and Mozambique. In general, the share of subsidies for the crop production sub-sector is higher, possibly because the requirement for subsidies often arises from an immediate need to arrest food shortages, and increasing crop production is key in that regard.

The SADC middle-income countries spent more on emoluments and goods and services than the low-income countries, even in the fisheries and the forestry sub-sectors (see Table 3.9). The pattern was the same for capital allocation in the forestry stream, with only 25% of expenditures being invested in capital.

TABLE 3.8 EXPENDITURE IN THE CROPS AND LIVESTOCK SUB-SECTORS AS A SHARE OF EXPENDITURE IN THE AGRICULTURE SECTOR (2000-2012, AVERAGE) (%).

	Crops					Livestock				
	Emoluments	Goods and services	Capital	Subsidies/grants	Other	Emoluments	Goods and services	Capital	Subsidies/grants	Other
Malawi	2.7	3.5	33.9	59.9	0.0	39.6	14.6	44.6	0.6	0.6
Mozambique	3.8	71.5	13.5	0.0	11.3	1.4	58.6	36.8	0.0	3.2
Zambia	7.0	53.9	1.1	35.9	2.1	34.2	52.7	7.0	3.7	2.4
Zimbabwe	41.7	20.7	11.0	24.4	2.3	34.6	31.2	11.6	16.0	6.6
Madagascar	9.8	3.2	80.5	6.5	0.0	20.0	10.7	68.1	1.2	0.0
Namibia	53.5	20.4	26.1	0.0	0.0	49.2	20.0	14.3	2.9	13.6
Lesotho	19.1	39.1	30.5	9.1	2.2	46.5	46.4	7.1	0.0	0.0
Botswana	61.7	34.7	2.7	0.9	0.0	62.1	30.9	1.9	5.0	0.0
Mauritius	35.0	8.3	14.6	18.3	23.7	32.7	22.5	7.3	33.3	4.3
Swaziland	23.5	16.9	57.9	1.7	0.0	61.2	28.5	10.3	0.0	0.0
SADC	28.0	24.5	26.2	17.2	4.1	39.8	29.8	20.7	6.6	3.1
SADC-SA	27.3	24.5	28.6	15.7	3.9	39.8	29.8	20.7	6.6	3.1
SADC-MI	37.9	24.0	22.5	10.3	5.2	50.3	29.7	8.2	8.2	3.6
SADC-LI	14.2	25.2	31.2	26.9	2.5	27.6	30.0	35.2	4.7	2.5

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).

TABLE 3.9 EXPENDITURE IN THE FISHERIES AND FORESTRY SUB-SECTORS AS A SHARE OF EXPENDITURE IN THE AGRICULTURE SECTOR (2000-2012, AVERAGE) (%).

	Fisheries					Forestry				
	Emoluments	Goods and services	Capital	Subsidies/grants	Other	Emoluments	Goods and services	Capital	Subsidies/grants	Other
Malawi	27.5	21.4	50.6	0.2	0.3	65.3	10.8	23.8	0.0	0.1
Mozambique	68.1	27.5	0.3	1.6	2.4	68.3	27.5	0.3	1.6	2.2
Zambia	30.5	49.9	1.5	0.2	17.8	21.7	40.5	0.0	26.2	11.6
Zimbabwe						81.4	6.7	6.2	0.0	5.7
Madagascar	7.8	8.1	65.8	18.3	0.0	10.8	3.2	83.0	3.0	0.0
Namibia	44.9	31.6	22.1	1.3	0.0	66.2	17.6	16.2	0.0	0.0
Lesotho						27.9	44.3	27.9	0.0	0.0
Botswana						42.0	22.4	1.5	34.1	0.0
Mauritius	46.6	17.5	23.3	4.8	7.7	67.0	16.0	3.3	0.7	13.0
South Africa						52.5	24.2	1.9	18.1	3.3
Swaziland	38.1	18.0	43.9	0.0	0.0	31.9	13.1	55.1	0.0	0.0
SADC	36.4	23.1	29.4	7.9	3.2	50.4	19.5	22.2	4.9	3.1
SADC-SA	38.0	23.7	31.0	3.9	3.4	50.1	19.0	24.4	3.4	3.1
SADC-MI	38.9	21.6	27.0	10.2	2.3	48.7	23.0	19.8	5.5	3.1
SADC-LI	33.7	24.8	31.9	5.5	4.1	52.3	15.4	25.0	4.1	3.1

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).

Table 3.10 shows that an annual average of around BWP 23.7 million was spent on research and development between 2000 and 2012 in Botswana, which is about seven times less than the amount spent on extension (BWP 168.76 million). Expenditure on infrastructure grew at an average annual growth rate of 2.9%, while the corresponding rate for investments in R&D was 9.4%. Notably, among the five core government functions included in Table 3.10, irrigation received the least spending between 2004 and 2010. In fact, spending on irrigation declined at an average annual growth rate of close to 0.2%. Also of concern is that investments in irrigation have been highly variable, with the highest coefficient of variation (CV) being around 44.09%.

These patterns of spending are consistent with those of Mozambique between 2001 and 2009, where the least investment spending, on average, was in irrigation (Chilonda et al. 2013). The negative annual growth rate for investments in irrigation in Botswana is of particular concern, because this limits the potential for crop production owing to a disproportionate reliance on rain-fed crop production. It could also be due to the fact that livestock production is the dominant sub-sector in Botswana, which implies the reduced priority for investment in irrigation. Further, as a dry country faced with several competing users of limited and scarce water resources, low investment in irrigation could be a rational economic policy. In addition, in a water-scarce country such as Botswana investment in irrigation requires a critical examination of concerns such as sustainability and macroeconomic stability.

TABLE 3.10 AGRICULTURAL INVESTMENT EXPENDITURE BY CORE GOVERNMENT FUNCTIONS IN BOTSWANA (IN BWP MILLIONS) (2000-2012, CONSTANT 2005 PRICES).

	Research and development	Extension	Irrigation	Infrastructure	Subsidies, grants and social benefits
2000	11,208,318	105,551,600	83,958	186,438	5,218,313
2001	12,755,108	111,067,011	120,273	162,993	5,784,997
2002	15,672,883	137,424,465	134,552	159,648	6,378,776
2003	22,570,770	171,688,884	166,175	142,685	5,293,626
2004	16,178,185	149,549,782	50,384	73,380	5,922,556
2005	20,902,756	160,416,229	11,935	155,146	5,437,349
2006	24,049,084	165,818,393	61,072	83,515	6,446,369
2007	25,635,272	179,050,584	97,805	141,156	7,397,213
2008	26,553,119	158,039,290	68,980	199,919	12,227,285
2009	34,553,237	179,952,072	136,722	215,243	9,858,113
2010	35,148,325	218,803,986	100,752	183,138	8,024,223
2011	32,018,088	208,035,385	78,164	161,218	8,024,223
2012	31,015,458	248,451,720	96,560	241,272	12,104,823
Annual average spending	23,712,354.18	168,757,646.35	92,871.58	161,980.98	7,547,528.24
Average annual growth (%)	9.4	5.9	-0.2	2.9	6.4
Coefficient of variation	34.21	23.89	44.09	29.00	32.40

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).
Note: BWP – Botswana Pula.

In the case of Swaziland, Table 3.11 shows that the highest annual average spending was SZL 145.07 million on extension services, followed by about SZL 38.01 million on infrastructure, SZL 10.61 million on irrigation, SZL 10.2 million on research and development, and SZL 4.2 million on subsidies, grants and social benefits.

Expenditure on irrigation and extension services grew at an average annual growth rate of 13% and 14.4%, respectively. Spending on research and development has a low average annual growth rate (2%), while spending on extension services had the highest at 14.4%. There is high variability in spending on extension services as well as infrastructure with CVs of 119% and 68%, respectively.

Overall, the variability of investment expenditure is of concern, because it implies that countries such as Swaziland and Botswana are not investing capital consistently to enable an increase in, and to sustain growth, in agricultural output. Variability in agricultural expenditure could lead to increased variability in agricultural productivity and production, and this could compromise the sector's ability to contribute to reducing poverty and hunger. It has been shown that investments in agricultural research and extension provide the highest returns of any form of agricultural spending, particularly in SSA (World Bank 2007; Alene and Coulibaly 2009). Thus, the positive annual growth rates in extension services, and research and development, in Botswana and Swaziland between 2000 and 2010 should be maintained.

TABLE 3.11 AGRICULTURAL INVESTMENT EXPENDITURE BY CORE GOVERNMENT FUNCTIONS IN SWAZILAND (SZL MILLIONS) (2000-2012, CONSTANT 2005 PRICES).

	Research and development	Extension	Irrigation	Infrastructure	Subsidies, grants and social benefits
2000	6,430,011	50,072,966	6,075,228	16,658,823	1,054,113
2001	6,462,742	52,792,710	6,206,821	20,555,619	1,868,302
2002	8,683,684	42,878,157	6,009,431	12,791,617	2,657,818
2003	9,323,824	56,370,607	12,669,518	37,965,708	959,754
2004	12,405,379	69,927,192	8,246,518	43,130,943	792,501
2005	11,199,968	55,860,508	16,164,053	26,449,264	394,752
2006	10,813,756	45,097,492	14,628,797	22,478,028	1,773,178
2007	10,693,162	109,067,942	16,405,308	17,791,859	3,331,492
2008	18,028,624	75,676,692	17,384,947	63,750,259	2,244,943
2009	12,659,999	283,487,956	17,618,891	84,659,613	9,901,391
2010	10,662,681	526,839,361	16,514,969	69,966,273	9,978,902
2011	8,636,592	483,336,237	0	70,971,237	9,119,584
2012	6,131,298	34,536,315	0	6,982,564	10,892,683
Annual average spending	10,163,979	145,072,626	10,609,575	38,011,677	4,228,416
Average annual growth (%)	2.0	14.4	13.0	6.0	23.5
Coefficient of variation	31.66	118.91	39.11	68.41	96.47

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).
Note: SZL – Swaziland Lilangeni.

3.5 Domestic Private Sector Investment in Agriculture

Historical data on domestic private sector investments and foreign direct investments (FDIs) in SSA countries are very limited, particularly data that are disaggregated by sector. This is partly due to underdeveloped information and data management systems, and the scale of agribusiness operations, with a significant proportion of businesses being small- to medium-scale producers and enterprises. In addition, a large proportion of businesses tend to be informal and as a result are often not captured in national statistics.

Table 3.12 shows data on private sector investments from the Investment Promotion Centre in Mozambique. In addition to providing details of total investments from the private sector, the table also indicates how much of the total investments were allocated to infrastructural developments. Infrastructure is defined as including mainly construction investments such as feeder roads. An annual average of USD 1,478,592,282 was invested by the private sector in agriculture between 2000 and 2010. The annual average that went into infrastructural developments was only USD 34,077,248, which constitutes close to 2.3% of total private sector investment.

Table 3.12 shows a negative average annual growth in private sector investments, with infrastructural investments reducing by an annual average of 7%, while total investments grew by 15%. However, Table 3.12 suggests that there is a relatively high variability in levels of investment: the CV of infrastructural investments is 137.9% and the corresponding value for total private sector investments is 110%, and the share of investments in infrastructure in total also varied considerably.

In general, research shows that private sector spending on agriculture is low, particularly in relation to other sectors. For example, Mhlanga (2010), using data on commercial bank lending to the agricultural sector in four SADC countries (Botswana, Malawi, Mozambique and Tanzania), showed that private sector agribusiness investment in these countries constitutes a low and rather variable proportion of total lending by commercial banks to agribusinesses.[4] In fact, in the case of Botswana, for example, credit to the agriculture sector has never risen above 2% of total credit (Mhlanga 2010). Further, it has been found that private investments in the agriculture sector are mainly concentrated in high-value crops and non-traditional products, such as cut flowers, destined for markets in industrialized countries.

TABLE 3.12 PRIVATE SECTOR EXPENDITURE ON AGRICULTURAL INFRASTRUCTURE AT THE NATIONAL LEVEL IN MOZAMBIQUE (USD MILLIONS) (2000-2010, CONSTANT 2005 PRICES).

Year	Infrastructure	Total	Share of spending on infrastructure in total (%)
2000	155,884,645	612,309,603	16.82
2001	86,198,925	848,448,419	6.71
2002	16,513,204	1,085,000,000	1.01
2003	3,302,640.8	568,714,744	0.38
2004	3,963,168.9	345,456,227	0.76
2005	3,302,640.8	359,987,846	0.61
2006	5,284,225.3	561,448,935	0.62
2007	11,889,507	5,332,000,000	0.15
2008	28,402,711	713,370,411	2.63
2009	34,347,464	3,797,000,000	0.60
2010	25,760,598	2,041,000,000	0.83
Average	34,077,248	1,478,592,282	2.83
Average annual growth (%)	-7.2	15.4	-19.5
Coefficient of variation	137.91	110.37	176.90

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).

3.6 Investment in Agricultural Human Capital

Another important factor that can help determine the pace of agricultural growth outcomes is human capital. Although anecdotal evidence from our national collaborators (who have considerable knowledge of this) indicates that there is a sizable movement of labor from

[4] Though an imperfect measure, given that it does not capture the informal agribusiness sector, commercial bank lending to agriculture is generally used to proxy domestic private agribusiness investment.

the agriculture sector to other sectors due to the overlap in the skills needed across sectors, aggregate data on the number of people formally trained in agriculture is available and is presented in Table 3.9 above for selected countries and periods. Although there are no known internal benchmarks against which this data can be evaluated, the proportion of PhDs (as a proxy for researchers) and the staffing intensity (number of researchers per million people) shows that different countries have tended to invest differently in human capital in the agriculture sector. Of the countries presented in Table 3.13, Botswana exhibits high staffing intensity (0.2%) and hence more investment in human capital than the other countries. This is followed by Swaziland and Lesotho at 0.09% and 0.04%, respectively. Although countries with high populations, such as Mozambique and Madagascar, exhibit high absolute annual levels of staffing, these figures are insufficient when considered in the context of their total population.

The absolute numbers also vary greatly from one country to another, but there is not much inter-temporal variation at country level. The intensity figures suggest that low-income countries need to increase expenditure in human capital as one way of enhancing research in the sector.

3.7 Foreign Direct Investment in Agriculture

One can define foreign direct investment (FDI) broadly as investments that are made to serve the business interests of the investor in an enterprise which is in a country that is different from their country of origin. FDI is important in fostering agricultural production and development particularly in SSA economies (UNCTAD 2009). The policy reforms adopted by several African countries have created a more conducive environment for FDI, resulting in an increase in FDI inflows in 2008. In addition, the increase in FDI was partly due to good returns on investment following high commodity prices. However, FDI flows to the agriculture sector were limited, with world inward FDI stock in agriculture making up only 0.2% of the total inward FDI stock in 2007 (UNCTAD 2009). FDI flows to the

TABLE 3.13 ABSOLUTE NUMBERS AND INTENSITY OF AGRICULTURAL SPECIALISTS.

Year	Country	PhDs	MScs	BScs	Diplomas	Total staffing	Proportion of PhDs	Staff per million
2012	Botswana	142	196	1,637	1,662	3,637	3.90	0.19
2009	Botswana	90	295	1,360	1,689	3,434	2.62	0.19
2010	Botswana	88	289	1,418	1,677	3,472	2.53	0.19
2008	Botswana	92	301	1,326	1,661	3,380	2.72	0.19
2011	Botswana	93	171	1,535	1,652	3,451	2.69	0.17
2007	Botswana	89	176	998	1,571	2,834	3.14	0.16
2011	Swaziland	40	64	100	750	954	4.19	0.09
2009	Swaziland	47	55	85	739	926	5.08	0.09
2008	Swaziland	47	61	65	721	894	5.26	0.09
2010	Swaziland	39	54	82	737	912	4.28	0.09
2012	Swaziland	42	63	109	699	913	4.60	0.08
2007	Swaziland	42	59	66	686	853	4.92	0.08
2010	Lesotho	21	65	188	481	755	2.78	0.04
2007	Madagascar	78	918	248	5,407	6,651	1.17	0.04
2008	Madagascar	85	690	361	5,569	6,705	1.27	0.03
2010	Madagascar	110	1,022	353	3,733	5,218	2.11	0.03
2009	Madagascar	84	2,063	335	2,398	4,880	1.72	0.02
2011	Madagascar	125	1,007	347	3,279	4,758	2.63	0.02
2012	Madagascar	139	974	332	3,145	4,590	3.03	0.02
2007	Lesotho	1	20	100	237	358	0.28	0.02
2009	Lesotho	1	17	105	230	353	0.28	0.02
2008	Lesotho	1	18	108	224	351	0.28	0.02
2008	Mozambique	33	84	908	2,641	3,666	0.90	0.02
2007	Mozambique	24	72	883	2,577	3,556	0.67	0.02
2011	Mozambique	61	220	929	2,396	3,606	1.69	0.02
2012	Zambia	28	361	841	579	1,809	1.55	0.01
2010	Mozambique	42	121	577	2,279	3,019	1.39	0.01
2011	Zambia	27	339	734	453	1,553	1.74	0.01
2012	Mozambique	46	158	581	1,458	2,243	2.05	0.01
2009	Mozambique	35	106	378	1,082	1,601	2.19	0.01

Source: Computations by the authors based on ReSAKSS-SA data collected in 2012.

agriculture sector have been constrained by the sector's regulatory environment, which often places restrictions on ownership of agricultural land by foreigners.

The recent rise in FDI in agriculture can be attributed to the increase in agricultural land investments in the SADC region by rich but land/water-constrained countries (Cotula et al. 2009). Agricultural land investments have, however, been criticized for their focus on the cultivation of biofuel crops and their tendency to give investors full export rights to the production. As a result, land deals are perceived as being a threat to local food security. Also of concern are the possible environmental impacts of such investments. The clearing of land to make way for farming (biofuel crops) can cause deforestation and lead to a loss of biodiversity. The social cost could also be great, especially if local communities are evicted to make way for foreign investors or if agricultural land is used for biofuel production at the expense of food production. Unequal bargaining power in negotiating purchase agreements can also have a great social cost.

Trends in inward FDI flows to the agriculture sector are presented in Figure 3.14 for five SADC countries selected because of the data available. The five countries are Lesotho, Mozambique, Namibia, Swaziland and Zambia. Overall, there is an upward trend in FDI in agriculture across all the countries. Figure 3.14 illustrates that trends vary from country to country, as expected.

Table 3.14 shows that among the five countries, FDI in agriculture grew the fastest in Zambia, at an annual average growth rate of 13.6%. This is followed by Mozambique with an annual average growth rate of 10.2%. Namibia had the lowest annual average growth of 1.2%. Table 3.14 also highlights the variability in terms of CV of FDI in agriculture in these countries. Mozambique had the highest variability with a CV of 171.04%, followed by Zambia with a CV of 137.6%. The variability in FDI in agriculture partly captures the inconsistent flows of FDI in response to the changing external investment environment, and particularly the uncertain economic environment that foreign investors experience from time to time.

TABLE 3.14 ANNUAL AVERAGE GROWTH RATES AND VARIABILITY OF FDI IN AGRICULTURE (2000-2010).

	Annual average percentage change	Annual average growth (%)	Coefficient of variation (%)
Lesotho	6.24	3.30	34.74
Mozambique	26.34	10.16	171.04
Namibia	2.75	1.18	53.58
Swaziland	6.83	2.87	26.64
Zambia	36.76	13.60	137.60

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012) and Chilonda et al. 2013.
Notes: Figures for Mozambique are for the period 2002-2010, and for Namibia, the figures are for the period 2000-2009.

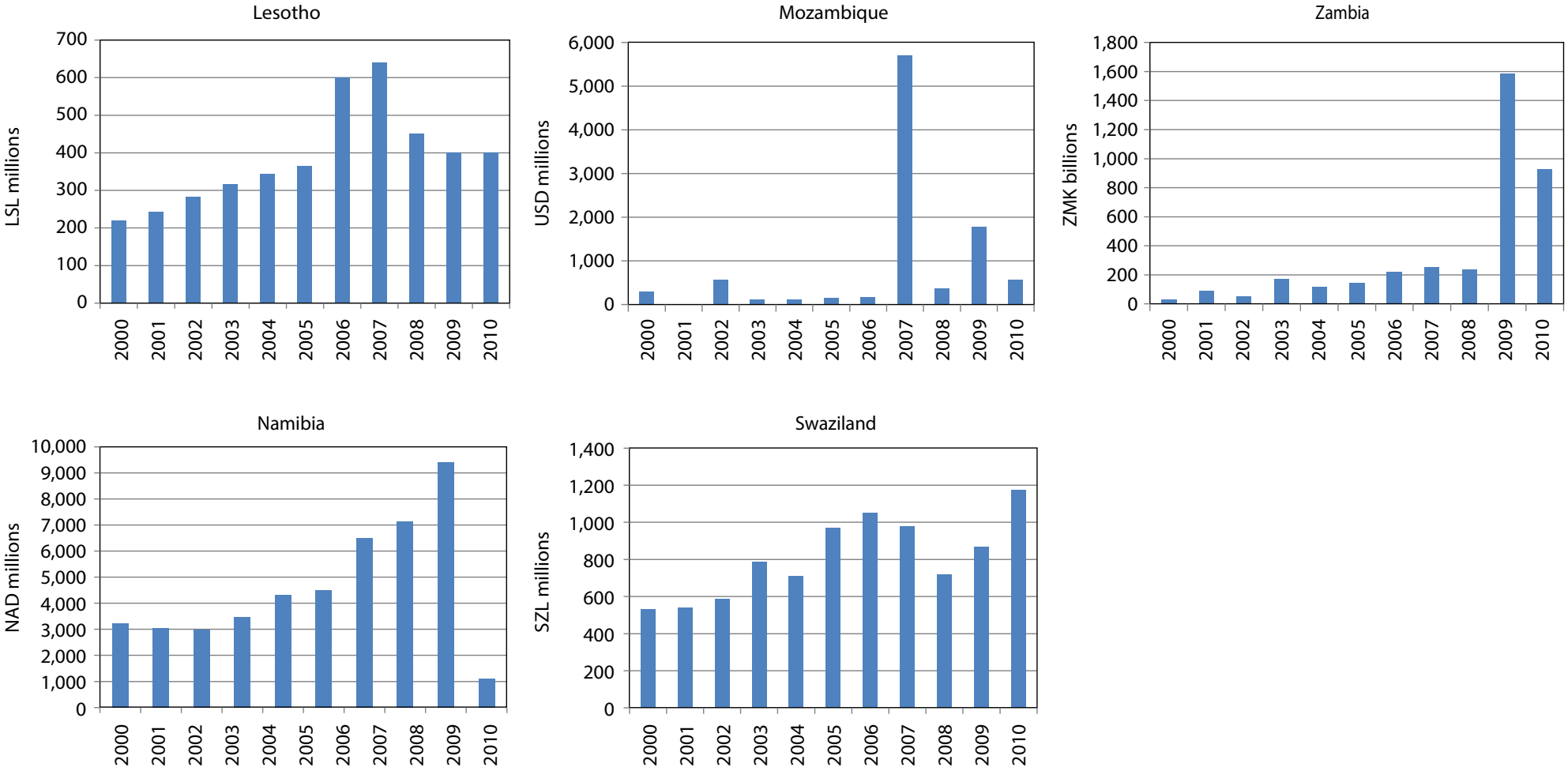


FIGURE 3.14 INWARD FDI FLOWS TO THE AGRICULTURE SECTOR FOR SELECTED COUNTRIES (2000-2010).
Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012) and Chilonda et al. 2013.

To assess the proportion of FDI that goes into agriculture, Figure 3.15 provides the percentage of inward FDI to agriculture in relation to the total inward FDI in selected countries in the SADC region, namely Mozambique, Zambia, Lesotho, Namibia and Swaziland.

In Mozambique, the share of inward FDI to agriculture fluctuated between a minimum of 1.5% and a maximum of 52%. The highest share of 52% in 2007 indicates a huge FDI inflow to Mozambique's agriculture sector in that year. For Zambia, huge shares of 35% and 45% occurred in 2001 and 2009, respectively, and the lowest share of inward inflows to agriculture (4%) in relation to total FDI occurred in 2002. For Lesotho, the shares of inward FDI into agriculture were in the range of 4.7 to 15%. Namibia's positive values for the share of inward FDI to agriculture ranged from 0.3% to 14%. For Swaziland, the positive values of shares were from 6.2% to 37.2%, but most values were below 15%.

One can note that Namibia recorded a negative FDI flow in 2006 and Swaziland had negative FDI values in 2003 and 2005. The negative values of FDI imply a net capital flight out of these countries, for example, in the form of closure of agriculture-based industries and the movement of assets out of the country. One example was the closure of the multi-million dollar Ramatex textile and clothing factory in Namibia in 2008. (www.sask.fi/english/magazine/ramatex/ [accessed on December 28, 2012]).

In general, although the total values of inward FDI to agriculture showed an increasing trend for all five countries, inward FDI into agriculture as a percentage of total FDI was erratic and generally low. This suggests that the non-agricultural industries such as mining, energy, transport, manufacturing and services continue to enjoy higher shares of total FDI compared to agriculture. However, FDI is required in agriculture for employment creation, skills transfer, human resource development, productivity improvement, and for stimulating economic growth and poverty reduction.

FDI in agriculture in the SADC countries flows from various countries within and outside the region. Table 3.15 shows some of the FDI flows in various SADC countries. The focus on Chinese investments is warranted as it is emerging as an important force in Africa's development efforts. Table 3.15 shows that Chinese investments in agriculture in Africa cut across various branches of agriculture, and are spread across various countries in the SADC region. China appears to be active in establishing technology demonstration centers. Besides the projects listed in Table 3.15, China had a total of 142 agricultural investment projects in Africa by 2009. China's agricultural investments in Africa to date include farms, demonstration centers and post-harvesting technologies. Foreign investment dominates the documented cases of investment within the SADC region, and although anecdotal evidence suggests that domestic investors are also playing a major role in land acquisitions, this has received far less international attention so far (see Sun 2011).

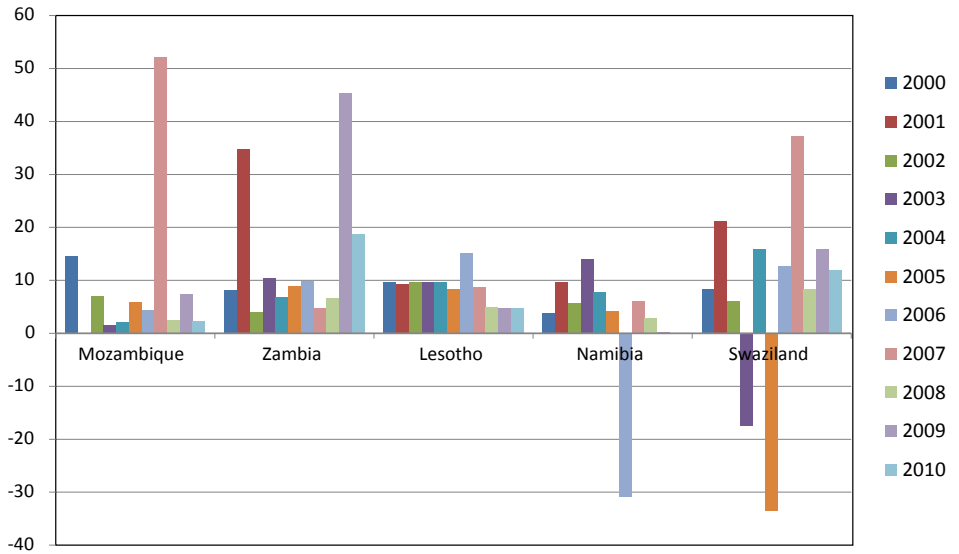


FIGURE 3.15 SHARE OF NET FDI FLOWS TO THE AGRICULTURE SECTOR IN RELATION TO TOTAL FDI IN SELECTED COUNTRIES IN THE SADC REGION (2000-2010).
Source: Authors' calculations based on World Bank 2012b; ReSAKSS-SA country surveys in 2012; and Chilonda et al. 2013.

FDI involving land purchases also raises the question of land grabs, which are spreading in Africa (Cotula et al. 2009). Studies of quantitative inventories in five SADC countries have shown a total of 2,492,684 ha of land allocations to foreign nationals since 2004, excluding allocations below 1,000 ha. This serves to show the extent of the emerging picture of land grabs in Africa (Cotula et al. 2009). Within Africa, there is an upward trend in both project numbers and allocated land areas (Cotula et al. 2009). The real impact of such investments, in terms of their power to reduce poverty and suffering of different groups of people including women and youth, has not been studied. There are possibilities of both negative and positive effects from these land investments. More detailed research is necessary into appropriate policy intervention in order to address the goals and targets of SADC CAADP, RISDP and MDGs.

3.8 Factors Explaining the Differences in Investments

The preceding analysis shows that the size of investments depends partly on the perceived importance of the agriculture sector. For example, the crops sub-sector appears to have received more investments than any of the other sectors, which is perhaps due to the importance of crops in the agriculture sector. In countries where agriculture is the mainstay of the economy or where it constitutes a larger share of the economy, larger proportions (relative to total national expenditure) of expenditure are channelled to the agriculture sector compared to countries where agriculture is perceived to only play a minor role. Two examples illustrating this would be South Africa, on the one hand, and Malawi, on the other. Furthermore, in general, low-income countries appear to have invested relatively more of their GDPs in the agriculture sector, although the story changes when we consider the shares of AgGDPs invested in agriculture itself, as previously discussed. Again, low-income countries spent more on subsidies, perhaps to realize immediate impacts, and more substantial amounts of their expenditures were allocated to capital investments relative to middle-income countries.

TABLE 3.15 CHINESE FDI IN AGRICULTURE IN THE SADC REGION.

Country	Type of project/ farm/investors	Comments/focus
Mozambique	Technology demonstration Center (China) Hubei Agribusiness Group	Soybean, corn cultivation and processing, demonstration and training. Established in 2005, involved a 1,000 ha area cultivated with rice, cotton, soybean and vegetables, and targets the local market in Mozambique.
Democratic Republic of Congo	ZTE Corporation (China)	Established in 2009, this investment covers over 100,000 ha cultivated with oil palms, targeting the world market.
South Africa	Technology demonstration center (China)	Research, technology demonstration and training on freshwater aquaculture.
Tanzania	Technology demonstration center (by China) Mubarali Rice Farm (1969), Ruvu Rice farm (1970), Morogoro (1970), Sino-Tanzania Corporation (1999) and Chongqing Seed Corporation (2009)	Crop cultivation demonstration, development of improved plant varieties and training. The four investment projects together cover over 20,000 ha dedicated to rice, sisal, pigs, cows and poultry, generally targeting the local Tanzanian market, except for sisal, some of which is targeted for world markets.
Zambia	Technology demonstration center (China) Zhong Ken, Friendly Farm acquired in phases (1990, 1994 and 1999)	Agricultural technology demonstration and training. These investment projects cover an area of about 7,000 ha dedicated to wheat, vegetables, cow's milk, poultry, fishery, beef, pigs, maize and soybean, targeting largely the local market and the DRC.
Zimbabwe	Technology demonstration center (China)	Corn cultivation technology demonstration and training.

Source: Sun 2011; Chaponniere et al. 2010.

4. How Trends in Public Investments have Affected Agricultural Productivity and Poverty

Table 4.1 shows pair-wise correlation coefficients between different variables proxying agricultural expenditure and investments, and agricultural productivity, income growth and poverty in order to approximately show the interdependence between investments and outcome variables of interest. The choice of the variables correlated is based on the understanding of the theoretical linkages between investments and output as well as outcome variables, as partly discussed in the opening sections of this report.

4.1 Correlations between Public Expenditure and Agricultural Productivity

As discussed above, although not all public spending qualifies as investment spending, a correlation with agricultural productivity (depending on the nature of spending) could be established because public investments and private investments at the farm level are complementary. Table 4.1 shows that public expenditure on goods and services and on personal emoluments (generally recurrent expenditure) had a negative correlation with agricultural land and labor productivity. This is particularly the case for personal emoluments and implies that an increase in this generally correlates negatively with agricultural productivity, possibly because such an increase entails a reduction of expenditure in the other more immediately beneficial streams of expenditure. Although expenditure on goods and services has correlations that are not significant at the 5% level, they are negative; underscoring that recurrent expenditure over some thresholds may not entirely be beneficial to agricultural productivity.

TABLE 4.1 CORRELATION MATRIX SHOWING ASSOCIATION BETWEEN EXPENDITURE, PRODUCTIVITY, INCOME AND POVERTY IN THE SADC REGION (2000-2012, AT 2005 CONSTANT PRICES)

	Goods and services	Emoluments	Capital	Subsidies	Labor	Land	GDP per capita for rest of the sectors	GDP per capita services	Agricultural GDP per capita	Manufacturing GDP per capita	GDP per capita	Agricultural exports per capita	Non-agricultural GDP per capita
Labor	-0.2948	-0.6934*	0.258	0.5680*	1								
Land	-0.2634	-0.7317*	0.2379	0.6056*	0.9958*	1							
GDP per capita for rest of the sectors	-0.3765	-0.6259*	0.156	0.4346	0.6951*	0.6867*	1						
GDP per capita services	-0.4317	-0.5414*	0.1632	0.3798	0.6217*	0.6060*	0.9897*	1					
Agricultural GDP per capita	-0.4064	-0.5667*	0.1302	0.4057	0.6267*	0.6131*	0.9931*	0.9979*	1				
Manufacturing GDP per capita	-0.4029	-0.5947*	0.148	0.4264	0.6690*	0.6576*	0.9978*	0.9963*	0.9978*	1			
GDP per capita	-0.4066	-0.5896*	0.1557	0.42	0.6607*	0.6487*	0.9968*	0.9976*	0.9983*	0.9997*	1		
Agricultural exports per capita	-0.2763	-0.6603*	0.0389	0.442	0.5243*	0.5453*	0.2482	0.1412	0.1876	0.2096	0.1963	1	
Non-agricultural GDP per capita	-0.1571	-0.8617*	0.4259	0.5329*	0.7961*	0.8118*	0.7414*	0.6829*	0.6902*	0.7186*	0.7168*	0.5290*	1
Head count poverty	0.3638	0.3697	-0.444	-0.1376	-0.566*	-0.562*	-0.704*	-0.697*	-0.6789*	-0.6963*	-0.697*	-0.1745	-0.6395*

Source: Computations by the authors based on ReSAKSS-SA data collected from individual countries (2012).
Note: * implies significance at 5% level.

Interestingly, and perhaps not surprisingly, capital expenditure and subsidies in the agriculture sector appear to have a positive correlation with land and labor productivity. The relationship between the two is even stronger and statistically significant between investments in subsidies and agricultural productivity. This differential impact of types of agricultural expenditure on land and labor productivity, points to the importance of disaggregating public expenditure data into productive and non-productive spending when considering their expected impact on the agriculture sector or even the economy. Capital expenditure and subsidies are useful for creating both long-term and short-term capital that is useful for improving agricultural productivity. Expenditure on tractors, irrigation systems, roads and other functions, for example, improves the productivity of land and labor, while subsidies (which have tended to focus on short-term technologies, such as fertilizer and modern seeds, in the SADC region) improve short-term agricultural productivity. The often quoted success story about maize production in Malawi hinges on the government subsidizing agricultural inputs for the benefit of the poorest farmers, who constitute a large share of the farming population in that country. Without input subsidies, these farmers would not be able to increase maize production.

4.2 Correlations between Expenditure, Trade, Incomes and Poverty

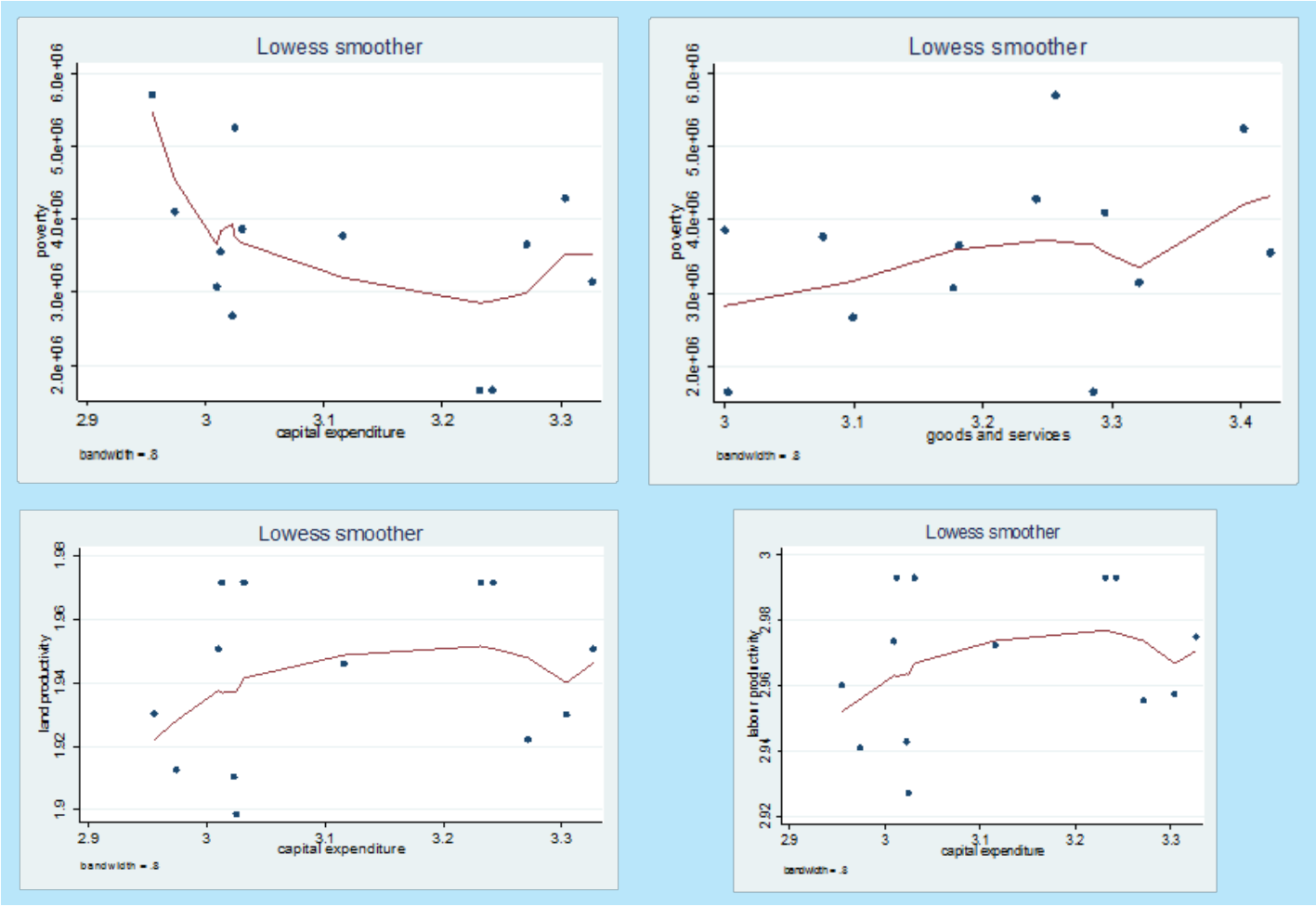
Table 4.1 also shows high pair-wise Spearman correlations between categories of public expenditure, international agricultural and non-agricultural trade, incomes and poverty head counts. Goods and services and personal emoluments consistently correlate negatively with trade and incomes, and increase poverty. However, capital expenditure and subsidies appear to correlate positively with international trade in both agricultural and non-agricultural goods, and these expenditures also reduce poverty. It is interesting to note that investments in the agriculture sector correlate positively with trade in non-agricultural sectors, possibly through its strong forward and backward linkages. The quantities used here to proxy international trade include the value of exports for non-agricultural goods per capita and the value of total agricultural exports per capita. Incomes are also measured by manufacturing GDP per capita, GDP per capita for all sectors excluding agriculture, GDP per capita for the services sector, agricultural GDP per capita and overall GDP per capita. Interestingly, albeit not surprisingly, all these have high positive correlations with capital expenditure and subsidies, but they have negative associations with recurrent expenditure. Agricultural exports and trade variables, in general, have higher correlations with incomes and, specifically, they have negative correlations with head count poverty. From this matrix of correlations, although no causality is established with this analysis, using theory, it can be said that the possible mechanisms dictating these findings could include: investments in productive and non-productive expenditure leading to improvements in agricultural productivity, which in turn leads to trade expansion and increases in incomes both through trade and directly, thereby reducing poverty.

To further examine the relationship between some of the variables discussed in the preceding section and expenditure, we employed a nonparametric smoothing method, the locally weighted scatterplot smoothing (Lowess) estimation. This is a local linear regression estimator that calculates a local estimate of the regression curve at each point by using only points within the neighborhood, and then weighting them based on how close they are to the point in question (see Cleveland 1979). In essence, it uses a rolling local average of the dependent variable over a wide window around each value of an independent variable to produce a smoother estimate. The results of the estimate come with an indication of a bandwidth, which is the proportion of the full sample used in each regression. The bandwidth determines the range of the independent variable and the standard practice is to use a bandwidth of 0.8, implying that 80% of the sample is employed in the estimation.

According to Cameron and Trivedi (2005), the merit of Lowess estimation is that it imposes minimal structure on the data; it is locally robust, since outliers in the sample have no influence on the estimated local relationship; it has a variable bandwidth range; and it uses a local polynomial estimator to minimize boundary problems (see Cameron and Trivedi

2005). However, the major limitation of Lowess is that it does not allow controlling for other possible determinants of poverty and child malnutrition. Specific to this study, the Lowess estimator is used to give a smoother estimate based on a rolling local average of land and labor productivity, as well as poverty, over a wide window around each value of public agricultural investments. The results of the Lowess smoothing procedure are presented in Figure 4.1.

FIGURE 4.1 LOWESS ESTIMATES FOR POVERTY, PRODUCTIVITY, AND RECURRENT AND CAPITAL INVESTMENTS IN THE SADC REGION (2000-2012).



Source: Authors' calculations based on ReSAKSS-SA data collected from individual countries.

Figure 4.1 shows that poverty head counts and capital expenditure had an inverse relationship, such that an increase in capital expenditure was associated with a reduction in poverty head counts. This confirms the earlier findings in this study that showed stronger correlations between poverty and investment spending, and corroborates previous findings discussed in the literature. Once again, Figure 4.1 confirms our earlier proposition that not all spending reduces poverty, and indeed an increase in expenditure on goods and services was associated with an increase in poverty, or at least such expenditure did not reduce poverty head counts. This, again, confirms the earlier findings using Spearman's correlations.

Capital expenditure appeared to be associated with an increase in land and labor productivity, so that the finding that investment spending is good for agricultural productivity appears to be supported as well. These results together with the previous findings have important policy implications for governments, which need to recognize that unless they have a good understanding of how different types of expenditure impact on outcomes of interest, an increase in expenditure may not in itself lead to any meaningful and desired changes in the agriculture and perhaps other sectors. For example, an increase in government expenditure that is biased towards recurrent expenditure may contribute little or nothing to poverty reduction.

It should also be said that some types of government expenditure require a longer time lag to manifest impacts on outcome variables. For example, an increase in R&D expenditure normally takes longer than five years before its positive impacts may be felt in an economy and so do other forms of capital expenditure. Governments generally know this and, in some cases, the bias towards subsidies (which finance short-term investments such as fertilizer, and the purchase of seeds and pesticides) is based on this realization. The urgency for high agricultural performance to address abject poverty in developing countries influences investment decisions in favor of investments that have high returns over a shorter time period, but may be unsustainable.

It is also interesting to note that, at the aggregate level, the rate of growth of agricultural expenditure for Southern African countries shows a marked relationship with the rate of growth of incomes per capita, implying that these expenditures are good for poverty reduction.

To further examine the association that agricultural expenditures may have with incomes, and hence poverty, we computed the growth rate of agricultural public spending in the SADC region and compared it to the growth rate of per capita income for the region (Figure 4.2). Interestingly, for the 12 years over which we examined the relationship, we noted that agricultural expenditures in a particular year appeared to correlate with the growth in agricultural incomes for the following year. This makes sense, considering that the earliest period over which investments can be felt in the agriculture sector is one year. The curve displays an upward pattern, although the R-squared is not large. This result suggests that the two indicators follow each other (co-movement). Together with the results of the previous section, these results solidify the notion that investments in the agriculture sector have an important role to play in poverty eradication in the region. The results corroborate the findings of von Cramon-Taubadel et al. (2009), who found (through a similar analysis) that annual rates of growth in agricultural capital stock (ACS) (i.e., investment or capital accumulation) had a high correlation with poverty reduction in developing countries.

4.3 Investments in Agriculture and Progress Made Towards Achieving the SADC RISDP 7% GDP Growth Target

To assess the progress made by countries in the SADC region towards achieving the 7% GDP growth target set under the SADC RISDP, Figure 4.3 provides the trends in GDP growth rates over the period 2003-2010.

Overall, GDP growth in the SADC region has been moderate during the period 2003-2010. It increased from 3% in 2003 to 6.8% in 2007, and then declined to 3.7% in 2010. The GDP growth rate for the SADC region excluding South Africa increased from 3.2% in 2003 to 6.9% in 2005 and reached the 7% GDP growth target (the dashed red line) in 2006 and 2007 before decreasing to 5.2% by 2010. The middle-income countries showed a steady increase in GDP growth rates between 2003 and 2007, and achieved the 7% GDP target in 2007. In the low-income countries, GDP growth rates increased from 2.6% in 2003 to 6.1% in 2007, and reached 6.7% in 2010 but failed to reach the 7% GDP target.

At country level, Angola achieved the 7% GDP growth target five times – every year from 2004 to 2008. Botswana achieved the 7% GDP growth target in 2010. Madagascar reached the target twice in 2003 and 2008 Mozambique's GDP growth rate increased from 6% in 2003 to reach 7.9% in 2004. It achieved the 7% GDP target from 2004 to 2007 and again in 2010. Malawi achieved the 7% GDP growth target four times – in 2006, 2008, 2009 and 2010. Seychelles achieved the target thrice in 2005, 2006 and 2007. The DRC, Zambia and Zimbabwe achieved the 7% GDP growth target once in 2010. Before reaching the 7% GDP growth target in 2010, Zimbabwe had experienced the largest negative growth rates in the region for the period studied of slightly over 17% in 2003 and 2008. Tanzania's GDP growth rates ranged from a minimum of 6% to a maximum of 7.8%, and it achieved the 7% GDP growth target in all the years between 2003 and 2010 except in 2006 and 2009. The countries which failed to reach the 7% GDP growth target in any year between 2003 and 2010 include Lesotho, Mauritius, South Africa and Swaziland.

Most recently, GDP growth rates of 7% and above were achieved during 2009 and 2010, compared with lower rates in 2009, in several countries. These positive average GDP growth rates of more than 7% per year indicate that the region is home to several dynamic economies, and this creates a favorable environment for investment in the agriculture and non-agriculture sectors in the region.

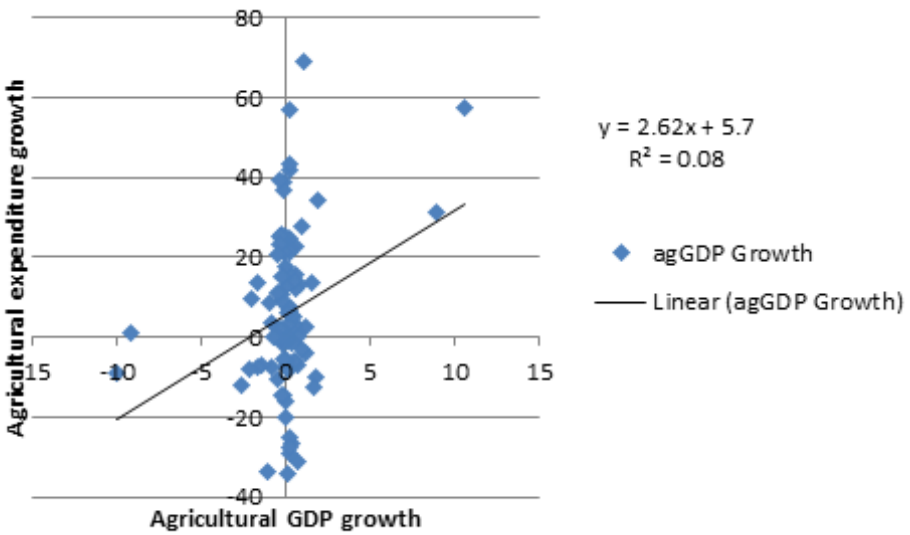


FIGURE 4.2 THE RELATIONSHIP BETWEEN PER CAPITA INCOME GROWTH AND AGRICULTURAL SPENDING GROWTH IN THE SADC REGION (2000-2012).
Source: ReSAKSS-SA data collected from individual countries in 2012.

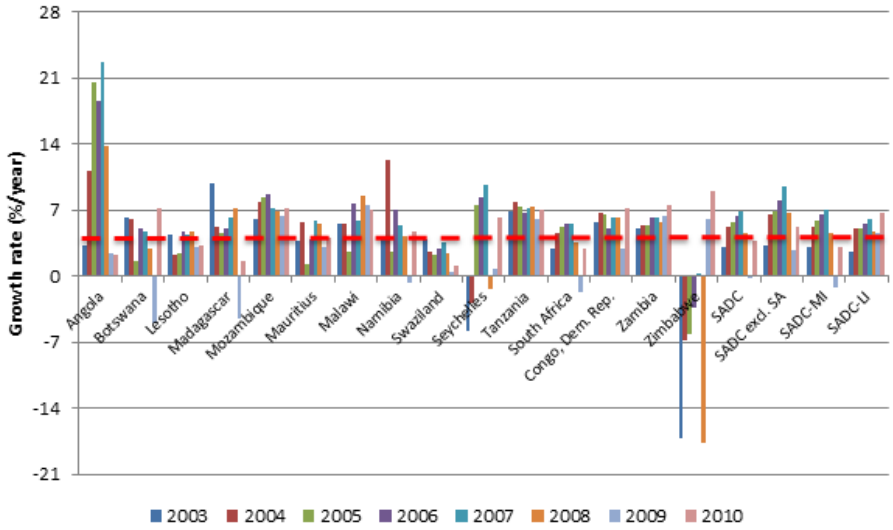


FIGURE 4.3 TRENDS IN ANNUAL GDP GROWTH RATES OF COUNTRIES IN THE SADC REGION (2003-2010) AGAINST THE 6% GROWTH TARGET.
Source: Authors' calculations based on World Bank 2012b.

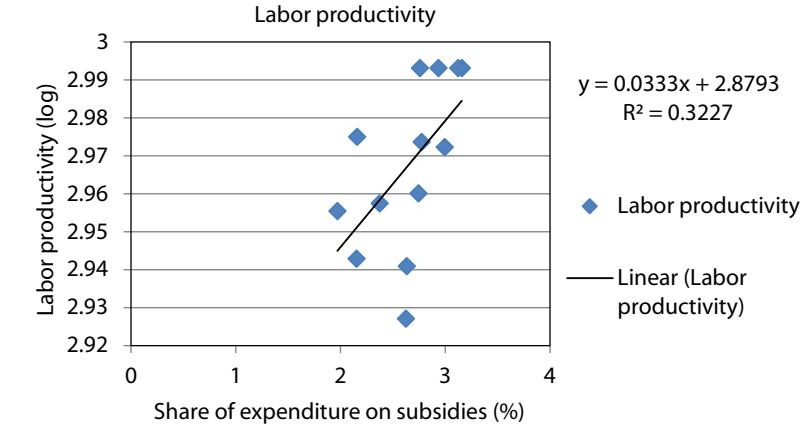
Figures 4.4 and 4.5 give some pointers to the possible relationships between different kinds of public agricultural expenditures and outcomes of land/labor productivity, as well as the growth rate of agricultural GDP. Although a rigorous multivariate analysis would be needed to establish causality between the variables under study, the scatterplots suggest important linkages between investments in agriculture, and the outcomes of productivity and agricultural income growth.

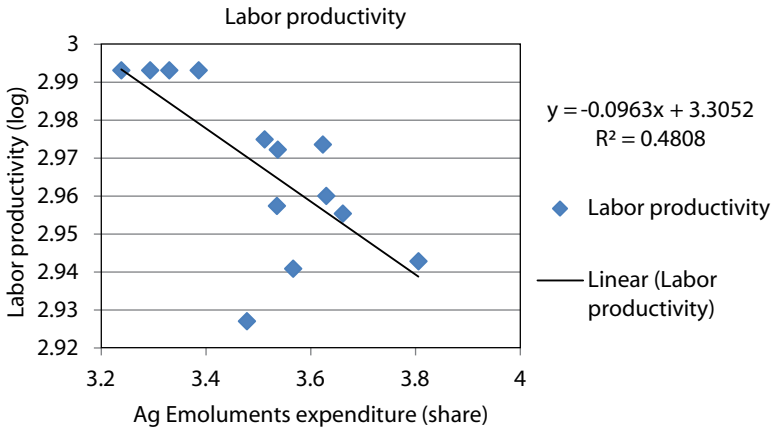
Agricultural subsidies are again found to be associated with higher land and labor productivity and agricultural growth rates. This also appears to be supported by literature and what is observed in practice, at least in the short term. In Malawi, for example, the government's emphasis on subsidy programs has been followed by an increase in agricultural growth, and an increase in production and land productivity (see Chinsinga and Chirwa 2011).

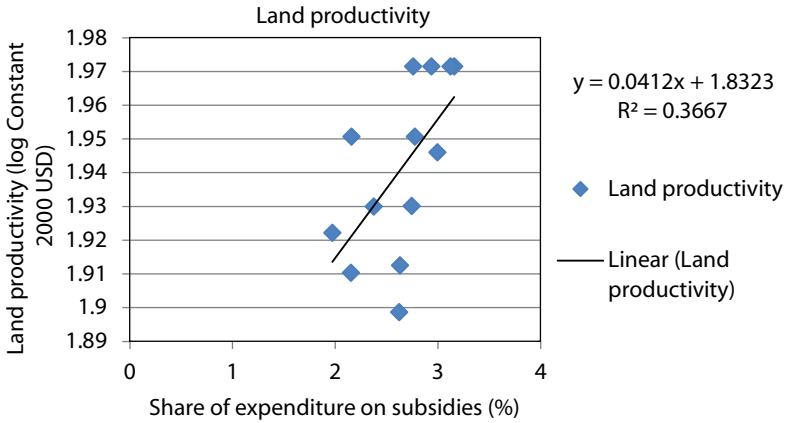
Agricultural GDP growth rates appear to correlate positively with expenditure on extension and irrigation. However, the relationship between expenditure on irrigation and agricultural GDP appears to be more U-shaped, with lower levels of spending on irrigation investments not having a positive effect on agricultural growth, but with positive effects being ensured once very large investments have been made.

One issue that cannot be resolved using the data available though, is the fact that many of the other investments in agriculture, including R&D, extension and infrastructure, are only likely to have an effect after a long period of time. For instance, investment in research in a particular year to generate a new plant breed can only be expected to yield results after the release of the breed, which often takes longer than four years. As the available data only spans a decade, such time lags cannot be easily accommodated. As a result of this, the positive effects of investments in such functions on productivity and agricultural growth may turn out to be empirically weak.

Again, the non-productive part of spending (in this case, emoluments) appears to be negatively related to partial measures of productivity. Although these results cannot be considered conclusive due to limitations of the study in terms of data, they should serve to stimulate wider debates about how public spending should be carried out. A clear message that is implicit in these results is that disaggregated measures of expenditure add value to studies that seek to understand the spending-productivity-poverty nexus.







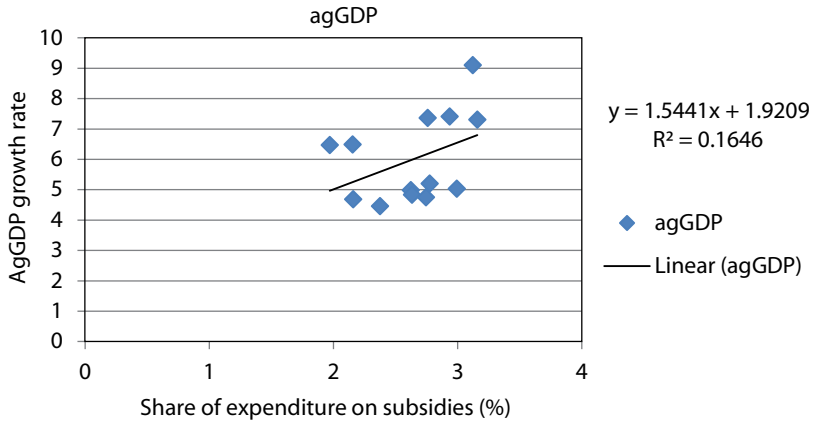


FIGURE 4.4 PUBLIC EXPENDITURE, PRODUCTIVITY AND AGRICULTURAL GDP.
Source: Authors' calculations based on ReSAKSS-SA data collected for individual countries.

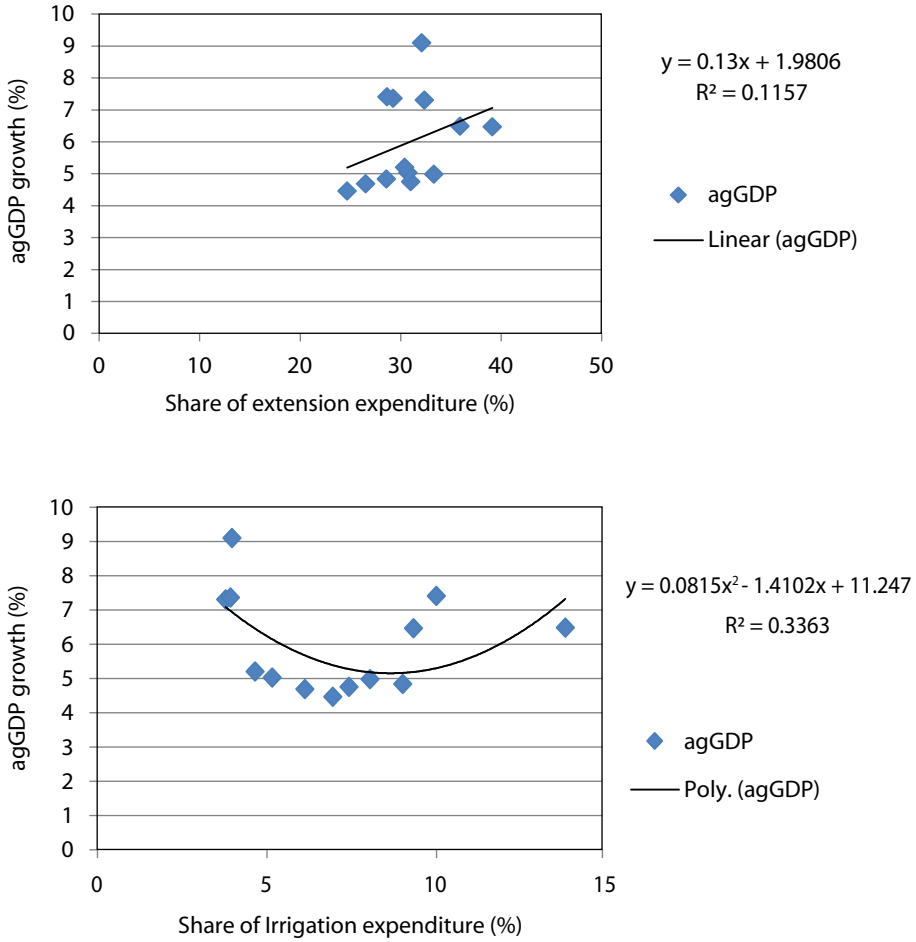


FIGURE 4.5 PUBLIC EXPENDITURE IN IRRIGATION AND EXTENSION, AND AGGDP GROWTH.
Source: Authors' calculations based on ReSAKSS-SA data collected from individual countries.

5. Conclusions and Recommendations

Agricultural performance in the SADC region is critically important, because a majority (70%) of the 274 million people live in rural areas and earn a living from agriculture directly or indirectly. The many challenges that deter African agricultural performance include limited markets for inputs and outputs, absence of sufficient and modern farm technology, poor land access by households, over-reliance on rain-fed agriculture, limited extension services, underdeveloped communication and general rural infrastructure as well as poor access to sources of farm finance. Our focus on investments in the agriculture sector is grounded on the recognition that well-planned agricultural investments, through their impacts on technology development, knowledge generation and dissemination, market and physical infrastructural development and institutions, have the potential to improve agricultural performance and have a positive impact on livelihoods. This is in line with Mogues et al. (2012) who argue, for example, that government expenditures on agriculture have a strong poverty reduction basis, given that the poorest are concentrated in this sector in the developing world.

The major findings from this study are that, across the SADC region, various countries have tended to invest in their agriculture sectors differently across time, but there appears to be an interesting dichotomy between middle- and low-income countries as defined by the World Bank and discussed at the start of this report. This finding corroborates the findings by Evenson (2001). Considering public expenditure alone and in its crude form, the results here show that over the period 2000-2012 (for which complete data were available), the SADC region as a whole spent just above 3% of its total expenditure on agriculture, but this proportion of expenditure increases to 7% when only the low-income countries are considered. These results are in accordance with FAO (2012), which suggests that investment in the agriculture sector has been very low in Africa.

The general message from our analysis is that, to date, investments targeted to the agriculture sector have been limited in the region, even in the low-income countries where agriculture remains the mainstay of the economy and of livelihoods. This, of course, calls for concerted post-2015 efforts to ensure that the agriculture sector receives more funding as one way of reducing poverty. Although some countries are investing more in agriculture, overall, investments appear very low and remain below the levels required to sustain viable programs that address both current and future priorities.

The other clear message is that, it is important in the case of the SADC region to differentiate between recurrent and capital expenditure when examining the association between expenditure and outcome variables, such as incomes, productivity or even agricultural trade. Examining the impacts of disaggregated expenditure has the potential to guide policymakers on how they should prioritize expenditure, not only across ministries but within ministries.

For instance, the results have consistently shown at both regional and country level that investing in short-term inputs through subsidies in agriculture, various forms of capital, and spending on emoluments and goods and services have potentially different impacts on the agriculture sector. Investment spending geared towards capital accumulation appears beneficial to incomes, productivity and even international trade, whereas non-productive spending, such as that made on goods and services and emoluments, correlates negatively with the ability of the economy to increase agricultural performance. Studies that do not disaggregate expenditure and instead treat all public expenditure as investment spending run the risk of generating confusion or misleading policy prescriptions.

Spending on capital across the region accounted for less than that made on recurrent expenditure in both low- and middle-income countries, although middle-income countries were associated with even more spending on recurrent expenditure (especially emoluments). Although spending on capital items accounted for a modest proportion of total spending in the agriculture sectors of low-income countries, such spending has been increasing over time, which is a good step forward, but more should to be done to increase capital spending.

Although FDI is flowing into the Southern African region, data to capture the flows is still scanty, and while ODA accounts for a good proportion of expenditure in the agriculture sector, disaggregated data on expenditures at sector level is not readily available, and data on private sector domestic investments is also hard to find. As such, given the data at hand, it appears that public expenditure constitutes a very important part of agricultural expenditure followed by the other sources.

Agriculture is still predominantly focused on crops, and expenditure on crop production is often more than 50% of the agricultural budget, followed by livestock, forestry and fisheries in that order, which has implications for nutrition and food security. This distribution reflects the importance that the crops sub-sector has in the everyday life of many people in the SADC region. Over the period 2000-2012, the crops sub-sector received just over 50% of the total agricultural expenditure, followed by the livestock, forestry and fisheries sub-sectors with 20%, 18% and 12%, respectively. If food security is to be improved significantly, agricultural investment plans should also cover the growth of the fisheries and livestock sub-sectors based on each country's resource endowment or comparative advantage.

Implications

The implications of the findings discussed in this report include the following points. There is a need for concerted efforts to mobilize greater government, private sector and foreign support for more and well-targeted capital investments in agriculture (improving the quality of investments), because this is important for long-term agricultural growth. In order to achieve this research, we must endeavor to demonstrate the link between investment in R&D and other desirable outcomes both in the short term and long term. This is important because as national budget lines become tighter due to the effects of global financial problems, developing nations, which often rely on ODA funds, will need to finance larger portions of their budgets on their own and issues of prioritization will be paramount. Further, the 10% CAADP target (allocating 10% of national budgets to agriculture) should not be the only thing that governments try to achieve in their agricultural expenditures; there is a need for country-specific guidelines on what sub-sectors and functions may be more viable and sustainable to invest in within the agriculture sector.

Although some mainstream literature on real interest rates and development appears to suggest that higher interest rates are good for financial intermediation (e.g., McKinnon and Shaw 1973), there is also ample literature suggesting that for developing countries seeking investments across the board, lower interest rates signify a lower cost of borrowing which are desirable to make funds available for development. There is, hence, a need to ensure that real interest rates are kept reasonably low to improve private sector agricultural expenditure. The data available for the SADC region confirm the inverse relationship between private sector investments or investments, in general, and real investments per capita (see Figure 5.1).

Figure 5.1 shows that while real interest rates have been changing from year to year within the SADC region, middle-income countries have lower interest rates than low-income countries. This indicates that it is expensive to access investment finance in low-income countries where it is needed badly. Through Lowess estimates, the other graphs in Figure 5.1 show that real interest rates and public as well as private expenditure are negatively related. This is intuitive because real interest rates are a cost of borrowing.

At some point, governments should endeavor to increase spending through expansion of taxation within their countries rather than through borrowing. This is because borrowing could be unsustainable, as an increase in borrowing reduces national savings and thereby dictates a rise in real interest rates and leads to crowding out private investments. It is important to endeavor to achieve this because the SADC region, as well as sub-Saharan Africa, exists in a dynamic and integrating world economy where there are faster changes in global geopolitics (e.g., Western economies shrinking in size, as others are emerging), world food stocks are dwindling, climate change effects are becoming more conspicuous, ODA is shrinking or becoming unreliable and financial markets are becoming more uncertain than ever. These dynamics imply that African countries must strive to execute many of their crucial programs on their own or at least independent of external support. Thus, issues of broadening the tax base and enhancing international and regional trade are very crucial for the SADC region and must be among the key focus areas in Africa's development policy.

To the extent that data systems in the SADC countries are not strong enough to track sectoral performance, there is a need to strengthen country-level M&E and analytical capacity to inform processes better. To this extent, the work that ReSAKSS-SA is carrying out on capacity building, through the Strategic Analysis and Knowledge Support System (SAKSS) nodes in the individual countries, is useful and should be maintained.

Because investments in agriculture in the form of FDI or private sector investment are important, there is a need for thorough studies on land grabs in the SADC region, in order to understand their extent and implications for the region.

It is clear from the inter-temporal regional trends in expenditures that public expenditure as a share of GDP of individual nations has increased over time. Despite this increase, questions regarding what types of expenditure are crucial for specific economies and sectors within the region remain unanswered. While an attempt exists to distinguish between productive and unproductive expenditure in literature, these distinctions are often less clear in practice and policymakers constantly find themselves grappling with questions of where to increase or reduce funding across ministries as well as within the sub-sectors of their ministries. The existing literature on government expenditure and growth in the SADC region ignores the valued added that results from disaggregating data into functions and, as such, some of the policy recommendations tend to rely on assumptions and are unconvincing. This is because the lack of disaggregation hides variation at the expense of statistical precision, leading to findings that do not suggest any linkages between investments and outcome indicators of interest. Going forward, it is important to study the impacts of disaggregated expenditure on various outcome and output indicators in more detail, including agricultural productivity and poverty. This calls for strong data collection systems in each of the SADC countries.

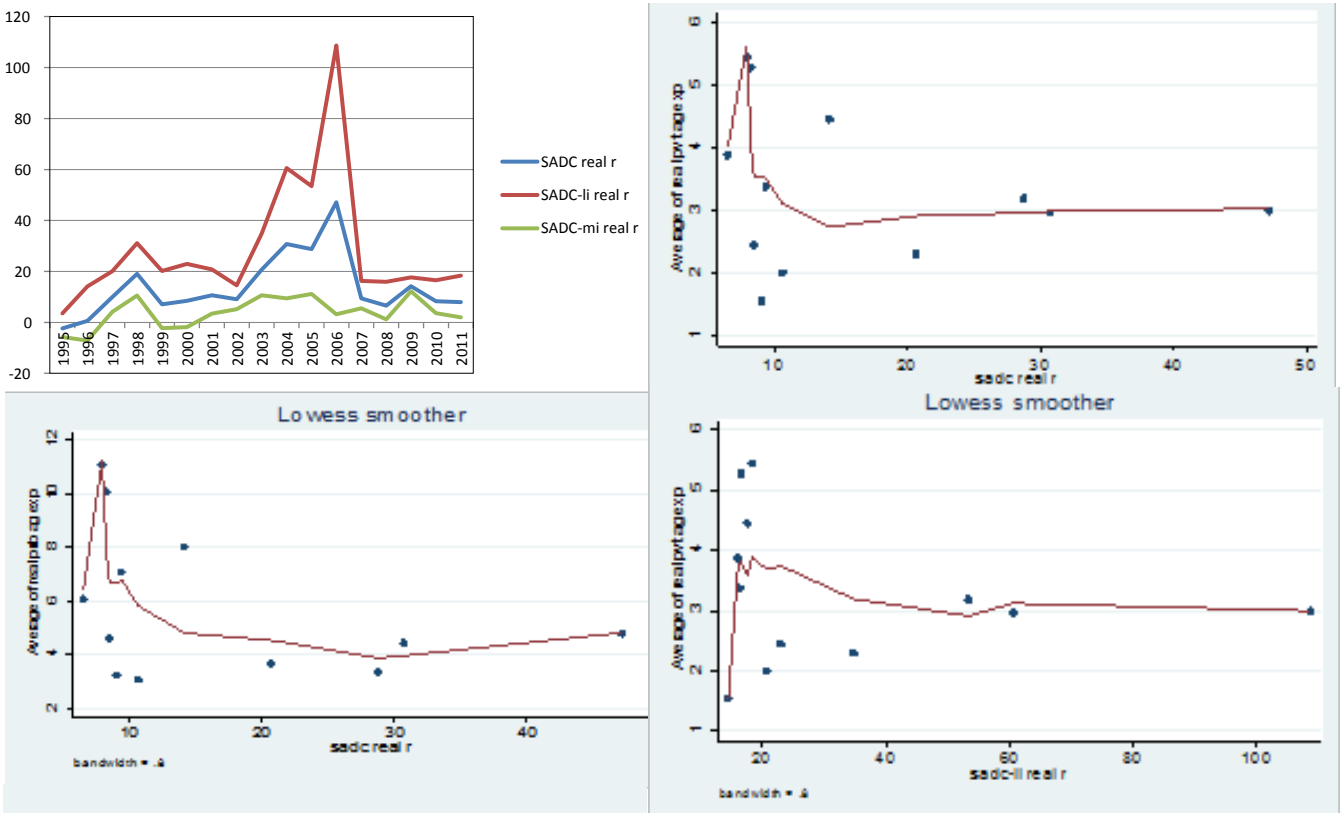


FIGURE 5.1 REAL INTEREST RATES AND REAL INVESTMENTS PER CAPITA IN THE SADC REGION.
Source:ReSAKSS-SA data collected from individual countries in 2012, and World Bank 2012a.
Note: Real-r - interest rate.

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Annexes: Core CAADP Monitoring and Evaluation Indicators

Annex A. Enabling Environment.

TABLE A1. TOTAL ODA PER CAPITA, GROSS DISBURSEMENTS (USD 2008).

REGION/COUNTRY	ANNUAL AVERAGE (1990-1995)	ANNUAL AVERAGE PERCENTAGE CHANGE (1990-1995)	ANNUAL AVERAGE (1995-2003)	ANNUAL AVERAGE PERCENTAGE CHANGE (1995-2003)	2003	ANNUAL AVERAGE (2003-2009)	ANNUAL AVERAGE PERCENTAGE CHANGE (2003-2009)
Sub-Saharan Africa	58.9	-10.8	38.2	0.7	43.6	48.7	-10.3
Angola	46.9	6.1	43	-3.9	58.1	34.5	-27.7
Botswana	137.1	-13	66.8	-14.3	38.3	90.5	-7.2
DRC	17.5	-32.1	24.3	38.5	72.7	45.4	-23.2
Lesotho	123.4	-6.3	67.5	-5	68	58.2	-6.9
Madagascar	54.5	-15	49.9	-1.6	61.9	75.4	-24.2
Malawi	77.4	-7.9	59.1	-1.1	53.5	87.9	-7.6
Mauritius	99.1	-15.5	74.6	-4.7	62.9	65.2	-21.4
Mozambique	133.9	-3	109.6	1.9	117.3	88.6	-7.6
Namibia	153.7	-2.2	140.4	-4.5	115.8	94.1	-8.5
Seychelles	516.3	-17.5	329.9	-8.9	173.8	157.9	-39.5
South Africa	6.3	9.9	17.3	4	18.4	18	-11.4
Swaziland	102.8	-1.9	59.7	-5.4	47.3	52	-6.2
Tanzania	64.9	-11.5	51.7	6.5	63.7	72.9	-7.2
Zambia	191	4.7	128.6	-1.5	140.3	160.8	-20.6
SADC low-income countries	87.6	-8.7	65.9	4.2	76	80	-13.2
SADC middle-income countries	148.2	-5.1	99.9	-5.3	72.8	71.3	-16.1
SADC excluding South Africa	128.0	-7.9	88.8	-1.3	78.3	79.5	-14.9

Source: Authors' calculations based on World Bank 2012b.

TABLE A2. SHARE OF AGRICULTURAL OFFICIAL DEVELOPMENT ASSISTANCE IN TOTAL ODA.

Region/Country	2002	Annual average level (2002-2009)	Annual average percentage change
Angola	1.4	3	31
Botswana	0.6	2	16
DRC	0.3	1	47
Lesotho	4.6	2	-36
Madagascar	7.8	6	0
Malawi	3.5	7	8
Mozambique	1.4	4	20
Namibia	3.2	3	-9
South Africa	2	2	-8
Swaziland	1.3	8	-3
Tanzania	2.4	5	14
Zambia	3.1	3	10
Zimbabwe	3.7	4	0
SADC	2.7	3.8	6.9
SADC excluding South Africa	2.8	4.0	8.2
SADC middle-income countries	2.2	3.3	-1.5
SADC low-income countries	3.7	5.0	16.5

Source: Authors' calculations based on World Bank 2012b.

TABLE A3. SHARE OF EMERGENCY FOOD AID IN TOTAL ODA (PERCENTAGE).

Region/Country	2003	Annual average (2003-2009)	Annual average percentage change (2003-2009)
Africa	3.77	3.99	-16.31
Sub-Saharan Africa	3.98	4.18	-17.32
Angola	17.02	6.97	-64.47
DRC	1.82	3.40	10.34
Lesotho	0.84	3.61	34.91
Madagascar	0.32	0.52	10.75
Malawi	1.13	0.73	-6.77
Mozambique	0.09	0.25	84.33
South Africa	0.26	0.06	-20.96
Swaziland	1.72	2.27	171.90
Tanzania	0.99	1.03	-12.84
Zambia	1.03	0.42	-15.97
Zimbabwe	13.35	16.81	6.59
SADC	2.01	1.89	-3.37
SADC excluding South Africa	2.04	1.99	-8.15
SADC middle-income countries	8.16	3.05	-53.20
SADC low-income countries	1.17	1.72	3.02

Source: Authors' calculations based on World Bank 2012b.

TABLE A4. GDP PER CAPITA GROWTH (ANNUAL PERCENTAGE).

Region/Country	Annual average level (2003-2006)	Average annual level (2007-2010)
Angola	9.7	7.2
Botswana	3.5	1.1
DRC	2.9	2.8
Madagascar	3	-0.4
Malawi	2.5	4.1
Mauritius	2.8	4
Mozambique	5	4.5
Namibia	4.7	1.5
Seychelles	1.4	3.3
South Africa	3.4	1.4
Swaziland	2.2	1.1
Tanzania	4.3	3.9
Zambia	3.1	4
Zimbabwe	-8.2	-0.7
SADC	2.9	2.7
SADC excluding South Africa	2.8	2.8
SADC middle-income countries	4.0	2.8
SADC low-income countries	1.8	2.6

Source: Authors' calculations based on World Bank 2012b.

TABLE A5. GDP PER CAPITA (CONSTANT 2000 USD PRICES).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2011)	Annual average percentage change (2004-2011)
Angola	326.8	9.61	301.1	2.4	337.2	536.2	8.9
Botswana	2,424.86	0.86	3,131.67	4.98	3,688.65	4,086.0	1.5
DRC	154.8	-11.47	94.51	-4.68	85.29	98.9	2.9
Lesotho	326.76	2.53	376.17	1.93	403.82	457.1	3.5
Madagascar	260.03	-2.89	243.09	-0.67	234	247.0	0.0
Malawi	136.01	0.65	151.33	-1.23	146.37	163.7	3.5
Mauritius	2,837.09	3.66	3,688.13	3.45	4,068.79	4,755.9	3.6
Mozambique	183.75	0.17	237.39	5.09	278.14	346.7	4.5
Namibia	1,930.01	1.32	2,054.51	0.9	2,150.84	2,566.5	2.1
Seychelles	6,008.77	1.77	7,123.25	1.23	6,913.01	8,058.9	4.1
Swaziland	1,203.58	0.56	1,343.59	2.47	1,461.89	3,623.3	2.1
Tanzania	172.65	-1.3	288.72	4.88	324.82	1,749.1	1.6
Zambia	357.42	-3.63	324.72	0.26	337.11	418.9	3.9
Zimbabwe	522.18	-1.26	525.47	-3.89	401.9	393.8	3.6
SADC excluding South Africa	1,270.6	-0.7	1,506.4	1.1	1,576.5	335.5	(2.3)
SADC middle-income countries	2,455.2	1.8	2,952.9	2.5	3,114.5	1,855.8	3.0
SADC low-income countries	255.3	-2.8	266.5	0.0	258.2	1,729.6	3.1

Source: Authors' calculations based on World Bank 2012b.

TABLE A6. INFLATION, GDP DEFLATOR (ANNUAL PERCENTAGE).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2011)	Annual average percentage change (2004-2011)
Angola	950	172	854	(24)	103	19.1	(5.43)
Botswana	9	15	8		(2)	10.9	(0.54)
DRC	5,880	49	281	(28)	13	18.7	10.4
Lesotho	12	(8)	8	(12)	2	7.4	(8.7)
Madagascar	23	34	9	(11)	3	11.0	(9.8)
Malawi	28	46	33	(7)	10	11.5	(16.9)
Mauritius	8	(9)	6	(2)	6	5.1	(4.41)
Mozambique	47	6	16	(15)	5	8.5	1.3
Namibia	10	18	11	(16)	1	6.3	(3.3)
South Africa	13	(10)	8	(1)	6	12.0	(5.41)
Swaziland	18	(9)	6	(7)	6	7.3	4.8
Tanzania	26	3	13	(18)	8	7.1	(4.52)
Zambia	102	(17)	23	(1)	21	7.7	4.1
SADC	475	59	85	(23)	13	13.8	(6.5)
SADC middle-income countries	128	92	113	(24)	16	9.2	18.32
SADC low-income countries	1,017	36	62	(16)	11	10.4	(3.2)

Source: Authors' calculations based on World Bank 2012b.

TABLE A7. GENERAL GOVERNMENT GROSS DEBT AS A PERCENTAGE OF GDP.

Region/Country	Annual average (2000-2003)	Annual average percentage change (2003-2009)	2003	Annual average (2003-2009)	Annual average percentage change (2003-2009)
Africa	71.1	1.1	69.8	54.9	-8.2
Sub-Saharan Africa	69.4	-3.8	63.7	45.6	-10.8
Angola	86.3	-17.1	62.8	37.3	-8.7
Botswana	8.4	7.6	9.1	8.7	0.3
DRC	199.5	-15.8	198.9	155.2	-6.4
Lesotho	102.1	-11.0	78.1	60.7	-6.4
Madagascar	115.5	-6.3	104.1	59.4	-20.4
Malawi	132.4	9.0	129.3	73.8	-22.6
Mauritius	51.5	10.5	55.9	52.3	-3.8
Mozambique	112.0	-15.2	82.8	52.8	-21.2
Namibia	22.2	6.7	24.7	22.0	-9.2
Seychelles	150.2	4.9	159.8	142.6	-3.8
South Africa	39.1	-6.0	35.7	31.5	-4.5
Swaziland	21.5	-2.8	20.1	17.0	-3.7
Tanzania	76.7	-4.6	76.0	60.9	-11.0
Zambia	206.4	-12.6	177.4	75.2	-30.8
Zimbabwe				74.1	12.5
SADC	50.1	-0.3	48.5	38.9	-7.1
SADC excluding South Africa	82.2	1.8	79.4	106.8	9.5
SADC middle-income countries	41.2	-6.4	37.2	31.8	-4.7
SADC low-income countries	72.0	180.3	128.7	74.7	-16.9

Source: Authors' calculations based on World Bank 2012b.

TABLE A8. GENERAL GOVERNMENT REVENUE AS A PERCENTAGE OF GDP.

Region/Country	Annual average (2000-2003)	Annual average percentage change (2000-2003)	2003	Annual average (2003-2009)	Annual average percentage change (2003-2009)
Africa	27.2	-1.1	27.2	29.7	1.7
Sub-Saharan Africa	24.9	-1.9	24.5	26.3	0.7
Angola	44.3	-10.2	39.0	41.5	0.3
Botswana	38.6	-5.2	36.5	35.9	-2.3
DRC	7.4	24.5	9.8	17.0	15.2
Lesotho	48.3	-1.1	49.5	57.6	5.1
Madagascar	13.7	-3.0	15.3	22.3	-4.0
Malawi	18.7		20.9	28.1	5.0
Mauritius	18.2	0.2	18.5	19.6	2.1
Mozambique	22.1	0.0	21.4	23.4	4.7
Namibia	27.5	-2.8	26.3	27.8	3.1
Seychelles	34.5	5.1	38.1	39.1	-2.2
South Africa	23.9	0.7	24.3	26.4	2.5
Swaziland	26.3	1.2	27.9	34.8	5.9
Tanzania	17.6	7.2	19.8	22.5	4.3
Zambia	24.9	1.8	24.9	25.8	-3.0
Zimbabwe				11.4	-8.3
SADC	24.6	-0.3	24.7	27.1	2.4
SADC excluding South Africa	26.2	-2.7	25.8	28.5	2.0
SADC middle-income countries	25.8	-0.7	25.8	28.2	2.5
SADC low-income countries	17.2	5.1	18.7	21.5	2.9

Source: Authors' calculations based on World Bank 2012b.

Annex B. CAADP Implementation Processes.

TABLE B1. PROGRESS IN CAADP ROUNDTABLE PROCESS AT THE END OF AUGUST, 2013.

Country	Focal point appointed	Technical Committee (TC) appointed	Experts engaged for Stocktaking Report	Stocktaking Final Report completed	Experts engaged for Growth and Investment Report	Growth and Investment options final reports completed	Experts engaged for Brochures and Briefs for roundtable	Brochures and Briefs for Roundtable final report completed	CAADP stakeholder validation workshop held	CAADP Compact signed	Investment Plan developed	Technical review completed	Business meeting held
Malawi	2008									Apr-2010	Aug-2010	Sep-2010	Oct-2011
South Africa	Aug-2011	Oct-2011	Aug-2012										
Zimbabwe	Aug-2009	Aug-2009	Apr-2009	Aug-2009	Jul-2012					Jul-2013			
Lesotho	Nov-2010	Dec-2010							Feb-2011	Sep-2013			
Botswana	Mar-2011												
Swaziland	2008								Nov-2009	Mar-2010			
Mozambique	Nov-2009	Apr-2009	Jun-2010	Dec-2010	Jun-2010	Jun-2010			Nov-2009	Dec-2011	Feb-2012	Dec-2012	Feb-2013
Angola	Not launched												
Namibia	Early stages												
Zambia	Aug-2006	Jul-2006	Mar-2006	Sep-2006	2007	2007	2008	2008	Mar-2008	Jan-2011			
Madagascar	Oct-2011	Oct-2011	Sep-2012										
Mauritius	Early stages												
Tanzania	Feb-2004	Mar-2010	Apr-2010	Apr-2010	Apr-2010	Apr-2010	May-2010	May-2010	Nov-2010	Jul-2010	Sep-2011	May-2011	Nov-2011

Source: Based on ReSAKSS-SA data collected from individual countries.

Annex C. Agricultural Financing.

TABLE C1. SHARE OF AGRICULTURAL EXPENDITURE IN TOTAL PUBLIC EXPENDITURE.

Region/Country	Average level (1995-2003)	Annual average percentage change (1995-2003)	2003	Average level (2003-2008)	Annual average percentage change (2003-2008)	Average level (2009-2013)	Annual average percentage change (2009-2013)
Angola	1.05	(7.06)	0.91	1.75	23.85	4.37	(13.16)
Botswana	5.02	(7.40)	3.92	3.58	(3.93)	2.85	1.97
DRC	6.48	34.51	1.90	1.32	6.48	3.23	1.52
Lesotho	6.73	(14.22)	4.24	3.37	(11.64)	1.90	(4.54)
Madagascar	8.21	(11.80)	3.45	5.84	24.32	14.40	(13.88)
Malawi	6.09	(4.95)	4.14	10.19	40.10	17.64	(17.95)
Mauritius	4.43	(6.51)	3.14	2.70	(9.58)	2.84	(11.30)
Mozambique	4.31	35.15	5.82	6.20	(5.42)	3.49	(14.29)
Namibia	6.06	(3.81)	4.97	4.61	(3.86)	2.95	(6.73)
Seychelles	2.66	12.95	4.97	3.92	(5.57)	3.18	(1.32)
South Africa	1.18	24.82	2.12	2.18	(0.01)	1.70	(1.70)
Swaziland	4.65	(6.74)	4.09	3.55	(11.21)	2.28	(4.62)
Tanzania	5.38	5.10	7.31	6.05	(16.61)	5.60	(17.78)
Zambia	4.65	10.85	6.12	9.07	19.22	7.52	(17.30)
Zimbabwe	4.45	14.31	10.35	17.80	33.93	10.11	(30.15)
SADC	4.80	(3.04)	4.50	5.48	11.45	5.60	(14.88)
SADC excluding South Africa	5.07	(3.52)	4.67	5.71	11.74	5.88	(15.14)
SADC low-income countries	5.83	(0.37)	5.58	8.07	19.10	8.86	(17.71)
SADC middle-income countries	3.97	(5.48)	3.55	3.21	(5.01)	2.76	(6.22)

Source: ReSAKSS based on SPEED database (IFPRI 2013); AUC 2008; World Development Indicators (World Bank 2013); and national sources () implies a negative number

TABLE C2. SHARE OF AGRICULTURAL EXPENDITURE IN AGRICULTURAL GDP (%).

Region/Country	Average level (1995-2003)	Annual average percentage change (1995-2003)	2003	Average level (2003-2008)	Annual average percentage change (2003-2008)	Average level (2009-2013)	Annual average percentage change (2009-2013)
Angola	6.14	(7.50)	4.69	8.54	26.51	18.67	(18.01)
Botswana	82.74	1.77	85.56	69.24	(7.79)	57.78	6.99
DRC	2.39	(27.57)	0.72	0.80	21.53	3.45	22.72
Lesotho	34.24	(13.66)	23.98	22.30	(4.62)	14.81	(5.82)
Madagascar	4.90	(11.98)	2.35	4.24	21.22	12.52	-
Malawi	5.45	(11.16)	3.14	9.83	49.98	21.14	(4.12)
Mauritius	15.31	0.09	13.30	13.09	(6.67)	17.31	(14.46)
Mozambique	4.49	34.19	5.68	6.39	(3.33)	4.60	(12.33)
Namibia	19.15	(5.42)	14.54	14.43	3.54	15.30	(7.17)
Seychelles	41.62	9.68	55.84	52.91	0.65	55.33	17.98
South Africa	11.37	21.33	19.98	25.09	8.46	24.65	1.09
Swaziland	17.23	(2.12)	17.93	15.80	(10.42)	13.82	(3.41)
Tanzania	2.97	6.97	4.39	4.19	(6.22)	6.55	(16.52)
Zambia	4.47	10.86	6.30	10.15	24.35	10.21	(15.70)
Zimbabwe	72.54	(3.21)	54.88	42.56	(90.28)	17.19	(3.34)
SADC	22.36	(1.74)	20.89	19.97	(5.24)	19.95	0.27
SADC excluding South Africa	23.19	(2.51)	20.95	19.60	(6.39)	19.60	0.12
SADC low-income countries	14.78	(4.91)	11.07	11.16	(14.05)	10.60	(8.05)
SADC middle-income countries	28.47	(0.02)	29.48	27.68	(1.94)	27.21	1.62

Source: ReSAKSS based on SPEED database (IFPRI 2013); AUC 2008; World Development Indicators (World Bank 2013); and national sources () implies a negative number

TABLE C3. SHARE OF AGRICULTURAL EXPENDITURE IN GDP (%).

Region/Country	Average level (1995-2003)	Annual average percentage change (1995-2003)	2003	Average level (2003-2008)	Annual average percentage change (2003-2008)	Average level (2009-2013)	Annual average percentage change (2009-2013)
Angola	0.44	(4.68)	0.39	0.67	22.61	1.72	(15.68)
Botswana	2.03	(5.18)	1.71	1.34	(7.98)	1.18	(2.15)
DRC	1.35	(27.65)	0.38	0.37	17.29	1.40	18.09
Lesotho	3.72	(15.55)	2.08	1.74	(8.86)	1.05	(9.16)
Madagascar	1.35	(12.53)	0.63	1.04	17.72	1.80	(25.97)
Malawi	1.63	(8.04)	1.06	2.89	44.71	5.68	(12.79)
Mauritius	1.03	(4.75)	0.74	0.68	(11.16)	0.79	(16.45)
Mozambique	1.17	34.33	1.47	1.62	(2.92)	1.19	(12.44)
Namibia	2.12	(5.37)	1.63	1.35	(5.29)	1.07	(4.54)
Seychelles	1.36	8.73	1.77	1.56	(3.86)	1.12	9.66
South Africa	0.29	21.36	0.50	0.57	5.23	0.55	(1.17)
Swaziland	1.23	(2.22)	1.28	1.07	(12.36)	0.86	(4.69)
Tanzania	0.96	5.65	1.33	1.20	(8.67)	1.64	(18.78)
Zambia	1.08	8.89	1.42	2.03	19.22	1.90	(15.59)
Zimbabwe	12.60	(0.83)	9.67	7.31	(90.81)	2.30	(5.89)
SADC	2.20	(4.50)	1.74	1.70	(7.96)	1.62	(10.60)
SADC excluding South Africa	2.34	(4.79)	1.83	1.78	(8.25)	1.69	(10.82)
SADC low-income countries	3.04	(3.81)	2.28	2.35	(9.51)	2.28	(12.65)
SADC middle-income countries	1.53	(6.22)	1.26	1.12	(5.03)	1.04	(6.60)

Source: ReSAKSS based on SPEED database (IFPRI 2013); AUC 2008; World Development Indicators (World Bank 2013); and national sources () implies a negative number

Annex D. Agricultural Output, Productivity and Growth.

TABLE D1. AGRICULTURE, VALUE ADDED AS A SHARE OF GDP (PERCENTAGE).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2011)	Annual average percentage change (2004-2011)
Angola	12.9	-20.9	8.2	-1.2	8.3	8.5	1
Botswana	4.8	-2.3	2.9	-8.7	2.5	2.2	1.1
DRC	48	12.2	49.2	4.7	51	44	
Lesotho	19.9	-3.4	15	-9.6	10.2	8.4	1
Madagascar	27.8	-2.9	29.7	0.3	29.2	27.4	
Malawi	38.7	-9.3	36.4	1.3	35.7	31.6	
Mauritius	11.2	-4.6	7.7	-6.9	6.3	4.9	0.9
Mozambique	36.2	-2	29	-4.5	28	29.1	1
Namibia	11.3	0.8	11.2	-0.8	10.9	9.6	1
South Africa	4.3	-2.2	3.7	-1.8	3.4	3	1
Swaziland	11.1	3.8	12	-5.6	9.4	8.3	1
Tanzania	47.1	-0.2	36.8	-5.4	32.5	30.3	1
Zambia	21.6	-1.6	21.3	3.2	22.6	20	0.9
Zimbabwe	14.7	2.8	18.5	-4.8	16.6	18.9	1
SADC	22.1	-2.1	20.1	-2.8	19.0	17.6	1.0
SADC excluding South Africa	23.5	-2.1	21.4	-2.9	20.2	18.7	0.8
SADC middle-income countries	66.0	-32.1	50.4	-29.8	42.9	37.8	6.1
SADC low-income countries	33.4	-0.1	31.6	-0.7	30.8	28.8	-

Source: Authors' calculations based on World Bank 2012b.

TABLE D2. LAND AND LABOR PRODUCTIVITY.
2A. LAND PRODUCTIVITY (USD/HA).

Region/Country	Annual average (1990-1995)	Annual average change (1990-1995)	Annual average (1995-2003)	Annual average change (1995-2003)	2003	Annual average (2003-2008)	Annual average change (2003-2008)
Angola	11.8	4.4	16.6	7.2	22.1	25.1	4.7
Botswana	6.6	1.0	6.3	-1.7	6.2	6.5	1.7
DRC	152.5	-1.1	127.6	-1.4	121.6	122.5	0.2
Lesotho	38.8	1.4	42.8	0.6	41.0	40.7	-1.7
Madagascar	50.8	0.6	48.7	-2.0	46.2	51.5	2.9
Malawi	214.2	1.7	289.0	3.6	304.9	353.1	6.9
Mauritius	1,468.8	0.3	1,574.2	1.7	1,737.0	1,756.6	0.0
Mozambique	16.7	2.4	25.5	3.0	28.2	30.5	2.0
Namibia	7.8	2.2	7.5	-0.4	7.3	7.4	0.7
Seychelles	1,037.6	5.8	1,236.0	-2.3	1,050.8	900.4	-5.2
South Africa	72.5	-1.3	79.7	2.6	86.7	90.9	2.5
Swaziland	150.5	-3.0	144.1	0.7	151.6	157.2	0.8
Tanzania	87.0	0.1	99.5	3.0	119.5	129.3	4.6
Zambia	28.8	-0.9	31.2	2.9	35.7	39.8	2.3
Zimbabwe	96.7	-2.2	107.6	-0.4	92.3	84.0	-3.1
SADC	51.1	-0.3	55.5	1.8	59.4	63.2	2.7
SADC excluding South Africa	44.2	0.2	47.8	1.4	50.8	54.5	2.9
SADC middle-income countries	38.9	-0.5	43.5	2.8	48.0	50.7	2.5
SADC low-income countries	66.3	-0.1	70.2	0.9	73.1	78.1	2.9

Source: Authors' calculations based on World Bank 2012b.

TABLE D2. LAND AND LABOR PRODUCTIVITY.
2B. AGRICULTURAL LABOR PRODUCTIVITY (USD/WORKER).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2006)	Annual average percentage change (2004-2006)
Angola	341.4	4.4	490.3	7.7	631.8	708.2	4.4
Botswana	49.2	-1.4	39.1	-2.9	35.7	36.5	-0.8
DRC	12,077.6	-4	8,388.9	-3	7,738	7,821.5	0.4
Lesotho	7.8	-1.2	7.8	-1.7	6.8	6.9	0
Malawi	189.3	-0.8	245.3	2.1	251.6	253.1	6.3
Mauritius	39.7	-0.2	38.6	-0.4	38.9	37.9	-3.8
Mozambique	11,482.7	4	20,529	4.4	24,254.1	27,422.8	5.9
Namibia	48.5	-1.2	38.4	-1.7	36.4	34.3	-0.8
Seychelles	17.7	4.6	19.8	-2.8	17.7	14.4	-6
Swaziland	96.9	-2.6	101.9	2.3	114	128.1	5.8
Tanzania	25,890.3	-0.9	28,556.7	3.5	30,435.7	38,808.1	3.3
Zambia	48.9	-3	49	1.2	54.3	57.9	2.1
Zimbabwe	469.6	-2.6	534.2	-2.4	450.9	430.1	-5.9
SADC excluding South Africa	6,158.1	-1.6	6,469.4	1.4	6,731.9	7,386.5	2.8
SADC middle-income countries	85.9	0.3	105.1	0.1	125.9	138.0	-0.2
SADC low-income countries	8,359.7	-1.2	9,717.2	1.0	10,530.8	12,465.6	2.0

Source: Authors' calculations based on World Bank 2012b.

TABLE D3. CEREAL YIELDS (KILOGRAMS PER HECTARE).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2011)	Annual average percentage change (2004-2011)
Angola	350.6	-0.8	630.9	0.4	668.7	595.21	4.92
Botswana	339.8	4.5	377.4	12.3	1,217.5	401.98	1.18
Lesotho	779.3	2.1	944.8	-8.5	609.9	770.89	-0.07
Mauritius	4,029.3	-1.3	6,301.8	7.2	6,555.5	578.56	1.64
Namibia	343.2	-12.5	349.1	2.2	327.9	2,444.43	0.45
South Africa	1,828.6	0.6	2,453.7	2.0	2,536.4	1,679.29	12.96
Swaziland	1,453.1	9.2	1,531.5	-9.0	1,020.4	7,678.76	0.46
DRC	788.4	-0.7	787.1	-0.4	771.5	923.56	5.90
Madagascar	1,937.2	0.1	1,990.5	0.9	2,201.6	411.00	-1.58
Malawi	1,051.3	5.3	1,327.2	-1.7	1,208.9	3,586.28	6.23
Mozambique	454.8	12.2	866.5	-0.1	840.0	1,119.11	-1.28
Tanzania	1,318.0	1.5	1,474.5	-0.4	856.3	1,337.68	1.58
Zambia	1,467.6	1.7	1,508.2	-0.1	1,702.2	2,117.25	4.42
Zimbabwe	1,143.9	-10.7	1,109.9	-9.4	803.3	686.09	-3.96
SADC	1,295.9	0.5	1,515.5	-0.4	1,360.8	1,737.86	2.45
SADC excluding South Africa	1,056.7	0.1	1,184.2	-1.2	1,016.4	1,595.68	1.82
SADC middle-income countries	1,529.1	0.1	2,002.4	1.1	2,034.9	2,270.42	2.14
SADC low-income countries	1,376.2	2.1	1,462.3	-1.6	1,159.9	998.79	4.25

Source: Authors' calculations based on FAO 2013.

TABLE D4. AGRICULTURAL PRODUCTION INDEX (NET BASE 2004-2006).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2011)	Annual average percentage change (2004-2011)
Angola	49.4	4.2	72	8	92.6	129.0	11.5
Botswana	100.9	0.8	92.9	-0.8	93.3	107.0	3.8
DRC	125.2	-1	104	-1.5	99.3	102.6	1.5
Lesotho	96.3	1.1	106.5	-0.7	95.9	100.4	1.1
Malawi	55.2	1.1	86.1	5.4	96.4	108.8	4.5
Mozambique	56	2.8	88.1	1.9	94.7	126.4	9.3
Namibia	88.1	2.1	85.2	0.8	88.7	104.5	2.7
South Africa	78	-1.2	89.6	2.1	95.8	94.9	-1.7
Swaziland	92.6	-3.2	90.3	0.8	94.6	106.8	2.8
Tanzania	62.3	-0.1	73.4	4.5	81.5	100.3	0.8
Zambia	68.2	-0.3	79	2.8	92.5	106.5	4.0
Zimbabwe	93.3	-1.4	115.3	-1.2	103.5	112.2	6.0
SADC	80.5	0.4	90.2	1.8	94.1	99.4	-0.3
SADC excluding South Africa	88.0	0.6	98.5	2.0	102.5	107.6	3.8
SADC middle-income countries	84.2	0.6	89.4	1.7	93.5	107.7	3.8
SADC low-income countries	76.7	0.2	91.0	2.0	94.7	107.2	3.8

Source: Authors' calculations based on FAO 2013.

TABLE D5. TOTAL FERTILIZER USE (KG/HA).

Region/Country	Annual average (1990-1995)	Annual average percentage change (1990-1995)	Annual average (1995-2003)	Annual average percentage change (1995-2003)	2003	Annual average (2003-2009)	Annual average percentage change (2003-2009)
Angola	2.89	-0.27	1.11	-12.58	1.79	3.8	(9.2)
Botswana	3.02	19.49	11.28		0		
DRC	1	9.34	0.27		0.28	0.5	43.9
Lesotho	17.19	2.55	21.45		0		
Madagascar	3.71	3.15	3.15	-10.06	2.15	3.4	1.8
Malawi	30.03	-11.46	25.99	-1.84	32.71	34.9	(2.8)
Mauritius	281.75	2.45	329	-3.63	277.39	252.7	(7.6)
Mozambique	1.4	16.55	3.95	26.03	7.87	4.8	29.7
Namibia	0		0.82		1.41	2.1	(23.4)
Seychelles	0		10.63		0	50.5	(0.2)
South Africa	54.41	-1.85	51.39	-1.03	54.27	38.8	36.27
Swaziland	54.64	-18.86	31.39		0		
Tanzania	4.51	-10.8	3.13	-4.03	4.61	6.0	6.6
Zambia	12.88	-1.61	9.25	4.15	14.3	30.3	2.2
Zimbabwe	51.45	-2.03	50.36	-3.62	45.21	26.2	3.4
SADC	34.59	-1.28	37.65	-0.56	36.83	37.7	(4.4)
SADC excluding South Africa	31.0	0.6	33.5	-0.4	25.8	26.1	(4.9)
SADC middle-income countries	51.7	0.4	57.1	-	41.9	14.1	0.5
SADC low-income countries	15.0	0.4	13.7	1.5	15.3	12.6	2.4

Source: Authors' calculations based on World Bank 2012b.

TABLE D6. AGRICULTURAL GDP.

Region/Country	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	Annual average level (2004-2011)	Annual average percentage change (2003-2010)
Angola	-7.4	10.4	12.1	11.5
Botswana	0.6	-0.5	15.1	4.1
DRC	3.5	-1.7	1.2	2.6
Lesotho	-0.8	2.1	3.4	1.0
Madagascar	1.5	1.9	1.3	4.0
Malawi	8.5	6.9	3.9	4.0
Mauritius	1.7	1.1	1.6	1.5
Mozambique	2.5	5.7	5.4	8.2
Namibia	5.5	3.8	4.1	-4.7
Seychelles	-1.5	2.3	-5.9	3.0
South Africa	-3.0	4.3	0.7	1.8
Swaziland	-3.3	3.7	4.9	1.3
Tanzania	3.2	3.7	3.2	4.1
Zambia	7.6	1.0	5.1	3.9
Zimbabwe	2.8	1.2	-15.0	-4.3
SADC	1.4	3.1	2.7	2.8
SADC excluding South Africa	8.6	10.2	9.9	2.9
SADC middle-income countries	-1.0	3.4	4.5	2.6
SADC low-income countries	4.2	2.7	0.7	3.1

Source: World Bank 2012b.

Annex E. Agricultural Trade.

TABLE E1. RATIO OF THE VALUE OF TOTAL AGRICULTURAL EXPORTS TO TOTAL AGRICULTURAL IMPORTS.

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2009)	Annual average percentage change (2004-2009)
Angola	0.0	-8.7	0.0	-22.3	0.0	0.00	6.28
Botswana	0.3	-0.7	0.3	-7.0	0.2	0.24	11.87
DRC	0.4	-2.7	0.2	-23.1	0.1	0.07	-3.02
Lesotho	0.1	-3.1	0.0	-20.1	0.0	0.01	-10.02
Madagascar	2.7	-1.0	1.5	2.6	1.1	0.66	-10.71
Malawi	3.4	-13.2	5.9	-10.1	3.0	3.65	-3.46
Mauritius	1.6	-6.9	1.2	-3.6	1.0	0.71	-14.24
Mozambique	0.2	-2.2	0.3	3.0	0.4	0.49	8.83
Namibia	1.7	4.1	1.0	0.9	1.3	0.77	-7.17
Seychelles	0.0	14.6	0.0	-11.4	0.0	0.0	25.3
South Africa	1.4	-9.2	1.5	3.7	1.6	1.20	-1.48
Swaziland	1.2	-5.6	0.8	-13.5	0.6	1.13	1.27
Tanzania	3.2	11.5	2.5	-9.8	1.6	1.21	1.65
Zambia	0.2	-16.2	0.3	9.9	0.5	1.67	-0.94
Zimbabwe	13.7	1.9	8.8	-13.2	3.9	1.02	-16.75
SADC	41.2	-9.8	31.3	3.1	26.5	0.92	-4.01
SADC excluding South Africa	0.7	-4.0	0.6	-4.9	0.5	0.83	-4.27
SADC middle-income countries	1.1	-1.2	1.0	-3.4	0.9	0.88	-5.03
SADC low-income countries	0.7	-4.6	0.7	-4.0	0.6	0.81	-3.71

Source: Authors' calculations based on FAO 2013.

TABLE E2. PER CAPITA AGRICULTURAL TRADE (USD).
2A. TOTAL PER CAPITA EXPORTS (USD).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1995-2003)	Annual average percentage change (1995-2003)	2003	Annual average level (2003-2009)	Annual average percentage change (2003-2009)
Angola	39	-7.7	39	3	54	88.5	17
Botswana	201	6.2	210	-4	194	226.4	20
DRC	6	-1.3	5	0	6	11.0	14
Lesotho	85	0.0	77	-4	69	65.8	2
Madagascar	5	3.2	6	5	10	14.2	22
Malawi	13	9.3	8	6	13	13.2	18
Mauritius	222	7.4	267	-3	289	427.5	13
Mozambique	19	4.0	13	4	15	23.5	8
Namibia	74	-0.2	124	-5	103	146.8	10
Seychelles	508	6.1	682	1	760	978.7	7
South Africa	37	12.4	37	-5	40	77.2	12
Swaziland	109	-2.3	180	4	219	228.7	-10
Tanzania	5	14.2	9	0	8	13.4	8
Zambia	9	2.6	12	4	17	18.9	6
Zimbabwe	16	12.7	16	-5	18	58.4	16
SADC	21	5.2	22	-2	25	40.0	12
SADC excluding South Africa	17	1.7	18	0	21	31.3	12
SADC middle-income countries	50	5.7	53	-3	58	94.7	12
SADC low-income countries	9	5.0	9	1	10	17.4	11

Source: Authors' calculations based on World Bank 2012b.

TABLE E2. PER CAPITA AGRICULTURAL TRADE (USD).
2B. TOTAL PER CAPITA IMPORTS (USD).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2009)	Annual average percentage change (2004-2009)
Angola	39	-8	39	3	54	88	17
Botswana	201	6	210	-4	194	226	20
DRC	6	-1	5	0	6	11	14
Lesotho	85	0	77	-4	69	66	2
Madagascar	5	3	6	5	10	14	22
Malawi	13	9	8	6	13	13	18
Mauritius	222	7	267	-3	289	427	13
Mozambique	19	4	13	4	15	24	8
Namibia	74	0	124	-5	103	147	10
Seychelles	508	6	682	1	760	979	7
South Africa	37	12	37	-5	40	77	12
Swaziland	109	-2	180	4	219	229	-10
Tanzania	5	14	9	0	8	13	8
Zambia	9	3	12	4	17	19	6
SADC	95.1	3.8	119.2	0.4	128.4	166.6	10.5
SADC excluding South Africa	99.6	3.2	125.6	0.8	135.2	173.5	10.4
SADC middle-income	159.4	2.6	202	-1.6	216	279.9	8.9
SADC low-income countries	9.5	5.3	8.8	3.2	11.5	15.7	12.7

Source: Authors' calculations based on World Bank 2012b.

TABLE E3. TOTAL AGRICULTURE EXPORTS AS A SHARE OF TOTAL MERCHANDISE EXPORTS (PERCENTAGE).
3A. TOTAL AGRICULTURE EXPORTS AS A SHARE OF TOTAL MERCHANDISE EXPORTS.

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2009)	Annual average percentage change (2004-2009)
Angola							
Botswana	0	6.57	0	-10.81	0	0	37.01
DRC	0.01	17.82	0.01	-27.86	0	0	7.72
Lesotho	0.01	-11.93	0	-32.18	0.02	0	-10.79
Madagascar	0.02	0.79	0.01	11.53	0	0.01	-1.33
Mauritius	0.02	-3.31	0.01	-7.97	0.01	0.01	-8.56
Mozambique	0.02	-5.45	0.01	-9.84	0.01	0.01	13.6
Namibia	0.01	-0.96	0.01	-4.24	0	0.01	-3.3
Seychelles	0	16.63	0	-12.25	0.12	0	33.1
South Africa	0.26	-2.73	0.19	-15.29	0.01	0.21	16.81
Swaziland	0.05	-19.29	0.02	-16.27	0.02	0.01	-16.76
Tanzania	0.08	9.44	0.07	-23.38	0.01		
Zambia	0	-6.46	0	19.47		0.03	16.58
SADC	0.04	0.09	0.03	-10.76	0.02	0.03	7.64
SADC excluding South Africa	0.02	0.36	0.02	-11.32	0.02	0.01	6.81
SADC middle-income countries	0.05	-2.15	0.03	-14.14	0.03	0.03	6.79
SADC low-income countries	0.03	3.23	0.02	-6.02	0.00	0.01	7.31

Source: Authors' calculations based on World Bank 2012b.

TABLE E3. TOTAL AGRICULTURE EXPORTS AS A SHARE OF TOTAL MERCHANDISE EXPORTS (PERCENTAGE).
3B. AGRICULTURAL IMPORTS AS A SHARE OF TOTAL MERCHANDISE IMPORTS (PERCENTAGE).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2009)	Annual average percentage change (2004-2009)
Angola							
Botswana	0.02	13.11	0.02	-5.17	0.02	0.02	15.05
DRC	0.04	32.18	0.04	-19.86	0.01	0.02	9.39
Lesotho	0.02	-2.66	0.02	-7.35	0.01	0.01	-2.03
Madagascar	0.01	5.63	0.01	1.01	0	0.01	14.06
Mauritius	0.01	5.42	0.01	-3.7	0.02	0.02	10.68
Mozambique	0.03	3.88	0.02	-1.21	0.01	0.02	3.27
Namibia	0.01	-0.69	0.01	-6.91	0	0.01	-4.65
Seychelles	0	-1.47	0	0.65	0.07	0	2.72
South Africa	0.15	5.61	0.1	-14.07	0.01	0.16	16.6
Swaziland	0.01	-3.92	0.01	-5.19	0.01	0.01	-21.03
Tanzania	0.04	13.71	0.03	-15.92	0.01		
Zambia	0	0.52	0	15.35		0.01	8.16
SADC	0.03	5.94	0.02	-5.20	0.02	0.03	4.75
SADC excluding South Africa	0.02	6.51	0.02	-4.86	0.02	0.01	3.67
SADC middle-income countries	0.03	2.20	0.02	-5.96	0.02	0.03	2.48
SADC low-income countries	0.02	11.18	0.02	-4.13	0.01	0.01	6.98

Source: Authors' calculations based on World Bank 2012b.

Annex F. Poverty and Hunger.

TABLE F1. HEAD COUNT POVERTY RATES (PERCENTAGE OF THE POPULATION BELOW INTERNATIONAL POVERTY LINE, USD 1.25/DAY).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2009)	Annual average percentage change (2004-2009)
Lesotho	55.5	-4.4	45.2	-1.2	43.4	38.9	-3.3
Madagascar	73.6	0.3	76.1	-0.4	72.1	67.5	-0.9
Malawi	91.5	-1.7	80.8	-1.9	75.4	70.1	-2.2
Mozambique	86.3	-1.3	78.6	-1.4	74.7	70.9	-1.5
Seychelles	2	0	2	0	2	2	0
South Africa	23.3	-1.6	25.2	2.8	27	28	1
Swaziland	85.2	-3	66.8	-3.9	57.5	48.3	-5.3
Tanzania	73.6	2.7	84.5		0		
Zambia	63.7	0.4	60.1	1.1	64.6	64.6	0.2
SADC	61.6	-1.0	57.7	-0.6	46.3	48.8	-1.5
SADC excluding South Africa	66.4	-0.9	61.8	-1.0	48.7	45.3	-1.6
SADC middle-income countries	41.5	-2.3	34.8	-0.6	32.5	29.3	-1.9
SADC low-income countries	63.0	-0.5	59.1	-0.5	57.4	54.6	-0.9

Source: Authors' calculations based on World Bank 2012b.

TABLE F2. HEAD COUNT POVERTY RATE (PERCENTAGE OF THE POPULATION BELOW NATIONAL POVERTY LINE).

Country	National poverty rate (%)		USD 1/day poverty rate	
	Survey year	Percentage	Survey year	Percentage
Angola			2000-2006	******68
Zambia	2004	***68	2004	64.3
	2006	***64	2006	64.5
Botswana	2002/2003	****30.6	1994	31.2
	2009/2010	****20.7		
DRC	2001	83.6		
Lesotho	1993	49	1990-2000	*****51.2
	1999	68	2001-2009	40.5
Madagascar	1997	73.3	1990-2000	*****75.3
	1999	71.3		
Malawi	2004	*52.4	2004	73.9
	2005	**50	2005	72.4
	2006	**45	2006	70.8
	2009	**40	2009	66.2
Mozambique	1996/1997	69	1990-2000	*****83.5
	2002/2003	54.1	2001-2009	72.5
Namibia	1999	38	1990-1996	35
	2006	28	2000-2006	32.8
South Africa	1993	23.7	1990-2000	*****23.7
	2001	57	2001-2009	27.6
Swaziland	1995	40	1990-2000	*****78.6
			2001-2009	52.3
Tanzania	1993	41.6	1990	68.6
	Jan-2000	35.7	2000-2006	80.5
Zambia	2004	***68	1990-2000	*****61.34
	2006	***64	2001-2009	64
Zimbabwe	1990/1991	25.8	1990-1996	56.1
	1995/1996	34.9	2000-2006	58.3

Sources: * National Statistical Office (NSO) of Malawi, Integrated Household Survey (IHS) 1 and IHS 2.
** NSO-Welfare Monitoring Survey, 2009.
*** Zambia Central Statistical Office - Living Conditions Monitoring Survey, 2006.
**** Botswana Central Statistical Office - Core Welfare Indicator Survey, Poverty Survey 2009/2010.
***** World Development Indicators: World Bank 2012b.
Mozambique national poverty rate: Republic of Mozambique, 2005.
Namibia USD a day rate: Namibia Statistics Agency 2012.
South Africa national poverty rate: Schwabe 2004.

TABLE F3. PREVALENCE OF CHILD MALNUTRITION (PERCENTAGE OF CHILDREN UNDER FIVE YEARS OF AGE).

Region/Country	1990	Annual average level (2000-2002)	Annual average percentage change (2000-2002)	Annual average level (2003-2009)	Annual average percentage change (2003-2009)
Angola	44.8	30.5	-4.2	24.0	-5.3
Lesotho	15.7	18.4	2.8	17.9	-1.5
Namibia	27.4	23.1	-4.0	18.6	-4.4
South Africa	7.8	11.5	0.0	12.4	2.4
Madagascar	38.6	35.3	6.4	42.1	1.1
DRC	35.6	31.3	-0.8	31.2	-0.1
Mozambique	30.7	25.2	-2.9	20.0	-5.8
Tanzania	29.9	26.9	-4.6	21.6	-3.3
Malawi	28.2	23.7	-7.1	20.6	-2.5
Zambia	24.7	23.7	-2.7	19.7	-1.9
Zimbabwe	15.1	15.1	7.4	16.9	-0.1
SADC	26.3	24.0	-1.2	22.9	-1.0
SADC excluding South Africa	31.2	27.2	-1.5	25.4	-1.6
SADC middle-income countries	16.2	15.7	-2.5	14.8	-0.7
SADC low-income countries	30.8	27.6	-1.1	26.2	-1.2
Sub-Saharan Africa	31.7	28.5	-1.4	26.5	-1.2

Source: Authors' calculations based on World Bank 2012b.

TABLE F4. PREVALENCE OF ADULT UNDERNOURISHMENT (PERCENTAGE OF THE POPULATION).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2009)	Annual average percentage change (2004-2009)
Angola	65.2	-2.5	54.9	-2.4	49.8	42.4	-4.6
Botswana	20.6	3.1	25.4	2.1	26.6	25.6	-0.5
DRC	33.3	14.5	62.8	4.4	69.8	70.5	1.2
Lesotho	14.6	-1.9	13.6	1.0	14.0	14.0	-0.2
Madagascar	33.2	1.4	32.3	-4.5	27.4	25.4	-2.1
Malawi	43.8	-3.5	33.2	-3.5	29.6	27.8	-2.4
Mauritius	6.9	-2.5	5.5	-3.3	5.0	4.9	-1.0
Mozambique	58.3	-2.4	49.0	-2.5	44.4	38.9	-3.8
Namibia	29.3	-0.8	25.0	-5.4	20.6	19.1	-2.6
Seychelles	10.7	-3.2	8.5	-2.5	7.8	7.1	-3.1
South Africa	5.0	-	5.0	-	5.0	5.0	-
Swaziland	13.4	8.8	18.8	-1.1	18.0	18.2	0.8
Tanzania	30.4	5.9	39.6	-0.5	38.0	35.2	-1.3
Zambia	40.1	0.5	42.0	0.8	43.0	43.1	0.2
Zimbabwe	41.5	1.2	43.1	-2.1	38.8	31.9	-4.9
SADC	29.8	0.8	30.6	-1.0	29.2	27.3	-1.6
SADC excluding South Africa	30.9	0.6	31.4	-1.0	30.0	27.9	-1.7
SADC middle-income countries	22.9	-0.3	22.1	-1.1	21.1	19.9	-1.5
SADC low-income countries	40.1	1.8	43.3	-0.9	41.3	38.3	-1.7

Source: Authors' calculations based on World Bank 2012b.

TABLE F5. MORTALITY RATE, CHILDREN UNDER FIVE YEARS OF AGE (PER 1,000).

Region/Country	Annual average level (1990-1995)	Annual average percentage change (1990-1995)	Annual average level (1996-2003)	Annual average percentage change (1996-2003)	2003	Annual average level (2004-2011)	Annual average percentage change (2004-2011)
Angola	253.05	-0.8	216.7	-3.1	194	173.8	-3.1
Botswana	68.6	5.4	88.6	-0.2	79	62.3	-4.4
DRC	198.6	0	198.6	0	198.6	198.6	
Lesotho	96.3	1.6	116.4	1.8	117.7	102.9	-6.5
Madagascar	151.1	-4.1	105.1	-5.8	84.4	67.8	-6.1
Malawi	206.4	-2.2	167.4	-3.6	145.9	124.7	-4.7
Mauritius	22.7	-2.5	19.2	-2.9	16.9	16.1	1.6
Mozambique	219.8	-2.3	186	-2.4	170.7	154.5	-3.2
Namibia	71.5	-0.9	72.2	-0.7	67	55.5	-5.9
Seychelles	14.7	-1.1	13.7	-1	13.2	12.7	-1.0
South Africa	62.5	0.5	74	2.5	78.1	71.3	-5.0
Swaziland	92	-0.2	101.8	1.7	105.5	91.2	-8.0
Tanzania	158.3	-0.9	140.7	-2.2	129.4	117.2	-3.1
Zambia	177.1	-0.3	166.6	-1.2	159.5	150.2	-2.2
Zimbabwe	93.7	5.4	111.6	0.2	108.6	98.4	-3.4
SADC	125.8	-0.2	118.6	-1.1	111.2	99.8	-3.6
SADC excluding South Africa	130.3	-0.2	121.8	-1.4	113.6	100.4	-3.3
SADC middle-income countries	85.2	0.3	87.8	-0.2	83.9	81.8	-4.4
SADC low-income countries	172.1	-0.6	153.7	-2.1	142.4	126.9	-2.9

Source: Authors' calculations based on World Bank 2012b.

TABLE F6. GLOBAL HUNGER INDEX (GHI).

Country	Data from 1988-1992	Data from 1994-1998	Data from 1999-2003	Data from 2005-2010
Angola	41.9	39.9	33.0	24.1
Botswana	13.4	15.4	15.7	13.7
Lesotho	12.6	13.6	13.9	11.9
Madagascar	24.1	23.8	24.9	22.5
Malawi	29.9	27.5	22.5	16.7
Mauritius	8.0	7.4	6.0	5.4
Mozambique	35.5	30.7	28.8	23.3
Namibia	20.3	19.1	16.3	13.2
South Africa	6.9	6.5	7.4	5.8
Swaziland	9.3	12.6	12.9	10.9
Tanzania	23.2	28.0	25.9	19.3
Zambia	24.8	25.0	27.2	23.3
Zimbabwe	18.6	22.3	21.3	17.3
SADC	20.65	20.91	19.68	15.95
SADC excluding South Africa	18.69	18.95	17.74	14.40
SADC middle-income countries	17.15	17.44	16.55	13.54
SADC low-income countries	26.26	26.46	24.68	19.82

Source: Based on IFPRI 2012.

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