

Has the Maputo Declaration Made a Difference?

Looking at the past ten years of Sub-Saharan
agriculture within the CAADP

Linnea Johansson Kreuger

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Abstract

The Maputo Declaration was launched in 2003 as a response to the stagnation of African agriculture. The signatories agreed that 10% of public expenditure should be spent on agriculture in an effort to increase agricultural productivity. This paper examines to what degree the goal of the Maputo declaration has been reached. Little to no evidence was found for a direct positive impact on agricultural productivity stemming from the Maputo Declaration.

1. Introduction

Last year the African Union (AU) celebrated the ten-year anniversary of one of its most ambitious initiatives. In 2003 that the AU agreed upon *The Maputo Declaration*, which stated that the signatory countries should among other things allocate at least 10% of their budgets towards agricultural and rural development. Following the Declaration the *Comprehensive Africa Agriculture Development Programme* (CAADP) was launched, which has been the main coordinating organization in the implementation process of the Declaration.

Sub-Saharan Africa's (SSA) current stagnation and struggle to achieve a sustained and more rapid agricultural growth has been the subject of a lengthy academic and political debate. This paper takes a closer look at the last ten years of agricultural development by evaluating part of the Maputo Declaration and CAADP, the motivation behind it, the results and possible future potential.

To evaluate and understand the need for agricultural growth and development, the historical background and the current issues facing African agriculture are presented in chapter two. In chapter three, the process leading up to the Maputo Declaration and the main goals of it are presented. The fourth chapter examines whether the goals of the Maputo Declaration have been reached, both in terms of reaching the budget target and in increasing productivity. Lastly, chapter five discusses the various issues surrounding the Maputo Declarations targets and whether it has achieved its intended objective.

2. Africa's agriculture

Ever since the independence of the African countries in the 1950s and 1960s, there has been an on-going effort by their governments to generate a thriving agricultural sector. After the Asian Green revolution in the 1960s, which turned many countries from what looked like the brink of despair to thriving agricultural exporters, many researchers and international agencies were quick to propose that the same methods could be used in Africa to achieve economic growth, alleviate poverty and improve food security. Africa however, although equally poor as the Asian countries after independence, was in a very different starting position: different geography (with implications not only for agriculture, but also for infrastructure, trade and demographics) and a different political environment. Thus many of the models imported from Asia did not gain foothold in Africa – and neither an African Green revolution nor any type of similar agricultural growth has taken place in the area. Nowadays researchers, individual governments and the AU are looking for new solutions more appropriate to the situation of the African agriculture.

2.1 Theoretical background - The importance of agriculture for economic development

The early development economics in the 1950's largely ignored agriculture's role in economic development (see e.g. Lewis, 1954) and often lacked a micro level understanding of tropical agriculture. Since then new theories such as the theory of the rational farmer (Schultz, 1964) have changed the notion of traditional agriculture as something backwards to move away from as quickly as possible. Today the field has reached a much deeper understanding of how crucial agricultural growth, especially among small scale farmers, can be for economic growth, poverty reduction and increased food security (see e.g. Staatz and Dembélé 2007, World Bank Report, 2008; Christiaensen and Demery, 2007; Kherallah et al, 2002). Agriculture is no longer seen as something to simply outgrow while trying to achieve economic development, but a necessary tool to achieve it.

In the beginning of the 1980s East Asia, South Asia, and Sub-Saharan Africa (SSA) all had comparable poverty rates with SSA experiencing *the lowest rate*. Measured as \$1 per day headcount poverty in terms of purchasing power parity (PPP), they had 58, 52, and 42 per cent respectively. Twenty years later both East Asia and South Asia had lowered their poverty count significantly to 15 and 31 per cent each, while Sub Saharan Africa's had *increased* to 46 per cent. Meanwhile the cereal yields had increased in East Asia and South Asia, by 50 and 68 per cent respectively, but declined by 15 per cent in Sub-Saharan Africa (Christiaensen and Demery, 2007, 2).

In explaining his concept of poverty traps Jeffery Sachs writes: "The most important determinant, it seems, is food productivity. Countries that started with high cereal yields per hectare, and that used high levels of fertilizer in input per hectare, are the poor countries that tended to experience economic growth. Countries that began with very low yields in 1980 are the countries that tended to experience economic decline between 1980 and 2000" (Sachs, 2005, 69). This is crucial to understand Sub-Saharan Africa's agricultural and economic situation today.

It is easy to see why agricultural development, has become an ambition for those who wish to see Sub-Saharan Africa achieve successful economic development. During the 1960s and 1970s, at the time of the Green Revolution, there was much research attention and donor enthusiasm directed at the potentials of agriculture. However, the 1990s Sub-Saharan Africa's obvious failure to mimic the Asian Green Revolution led to disappointment and even a resurgence of the 'agro-pessimism' that had been common during the Lewis theory framework (Christiaensen and Demery, 2007, 1). As Christiaensen and Demery write with regard to the new agro-pessimism in SSA: "some specialists are concerned about the potential of African agriculture to achieve sufficient (direct) growth to make a dent in poverty, and they doubt whether a Green Revolution can occur in Sub-Saharan Africa. The state of infrastructure, irrigation, human capital, and access to credit in Africa significantly differs from that in Asia when its Green Revolution began. Moreover, the external trading environment is much more competitive today than at that time" (Christiansen and Demery, 2007, 4). By the time of their independence the Asian countries had developed intense farming systems

including irrigation as well as large infrastructure systems connecting them to markets. Population densities were also overall much higher than currently in SSA. This means that regardless of the ensuing policies pursued in the different areas, Asia had a better starting condition than SSA (see also e.g. Staatz and Dembélé, 2007, 54). Thus agro-pessimism in regards to Sub-Saharan Africa may have been hasty and even flawed, implying that agro-realism, a realistic look on underlying agricultural factors and policies for the area, is very much needed.

2.2 Examining Sub-Saharan Africa's agriculture

To understand the specific agricultural traditions and needs for an area, it is important to examine the agricultural history and geography. For example although crops, such as wheat, maize and rice, are quite popular in certain regions of Sub-Saharan Africa, the area also has several important food crops such as cassava, yams, sorghum, millet, teff and plantains that are more unique for the area. Likewise climate, soil conditions and infrastructure are all connected to SSA's specific conditions.

Agricultural history

It has sometimes been argued that SSA's history shows that the area is not suited for higher yield agriculture. When examining such claims it is important to bear in mind that SSA had a later agricultural start than most other regions of the world. As described for example in Jared Diamond's book *Guns, Germs and Steel*, food production in SSA was delayed (compared to the Euro-Asian continent) by a scarcity of local species suitable for agricultural domestication and a geography that made it difficult to receive and spread agricultural techniques (Diamond, 1997, 414). However, when long-range transportation overseas became possible plant varieties from regions with more similar growing conditions were introduced. First came crops from Asia, like bananas (sweet and dry), starchy plantain and rice. This took place somewhere around 100 A.D. in Eastern Africa. More than a thousand years later the now widely grown cassava (or manioc) and maize (or corn) were introduced from the Americas (Austen, 1987, 31-49).

Not only did African farmers embrace and spread the newly arrived plants, they also developed them. According to Haggblade (2005), farmers have experimented with

bananas in central highlands of Eastern Africa since at least 500 A.D. Since bananas reproduce vegetatively (as do cassavas) new varieties had to be found by looking for and developing new strains from mutants. This technique is considerably more complicated than developing new varieties from plants reproducing by seeds. By 1300 A.D. "led by inventive local farmers these efforts launched a agricultural and demographic revolution..." (Haggblade, 2005, 140), which in turn laid the foundations for the Buganda kingdom in present day Uganda. To reach higher yields in an 800 year period might seem like a fairly long time compared with modern plant breeding, but "[g]iven the infrequency... [of plant mutations] most experts marvel at the rapidity with which African farmers achieved such genetic diversity" (ibid). It is also important to remember that up until the Green Revolution, it usually took at least ten years to develop each new variety, using seeds. Thus the early African agricultural history also shows that the farmers working here, as any other farmers, have been more than willing to adopt and develop new techniques under the right conditions. Thus there seem to be no conservative farmer problem as the rational farmer theorists suggests.

Another important aspect is that agriculture's development and yield growth, often only take place when other surrounding conditions are right. According to Esther Boserup's theories a certain population density is necessary to make it rational to put more labour and other resources into agriculture (see e.g. *The conditions of agricultural growth*, 1965). Boserup has argued that in subsistence farming extension will be preferred over intensification. The rationale is that as long as more land is available this strategy gives a higher output per worker. However trade possibilities and market access are also crucial to determine whether it is rational to intensify agricultural practices or not, and will have potentially different outcomes than intensification due to increased population pressure.

Since Sub-Saharan Africa historically mostly has been land abundant and population scarce, extension, in accordance to Boserup's theory, has been historically preferred. Extensive agriculture, and slash-and-burn agriculture in specific, has become the image of African agriculture. However, this does not mean that intensification is not possible;

rather the historical growth of African agriculture can be viewed as a series of natural and rational responses of farmers to their environmental surroundings.

Africa's colonial history meant that plantations were prioritized with the agricultural focus being on cash crops, which became major source of export incomes for many countries. However this had little to no impact on bettering the yields of food crops for the rest of the population. In some areas local farmers were also held back by lack of access to markets or other restrictive rules and regulations: "access to agricultural public goods and services (roads, extension, credit) was limited to plantations or settlers" (World Bank, 2000, 174).

Geography

SSA has larger areas of tropical climate than any other region of the world, 93% of its entire area lies between the Tropic of Cancer and the Tropic of Capricorn (Bloom and Sachs, 1998, 211, 213-214). The main types of climate zones are tropical rainforest, tropical savannah and desert, where the savannahs account for 60% of the land (ibid, 220). Tropical regions in general are less economically developed than the temperate ones, even within the same country, which can be seen in e.g. Brazil and Australia (ibid, 214). Part of the explanation appears to be that a tropical climate simply makes high productive agriculture more difficult. Bloom and Sachs argue, "the tropics are inherently disadvantaged in food production" (ibid, 220). The generally high night temperatures mean a higher loss of energy by plants during their night-time respiration, which worsen net photosynthesis and thereby plant productivity (ibid, 223). In temperate zones day lengths can become quite long during certain seasons and crops receives more sunlight than in tropical constant day length climate (provided they are not grown all year around) (ibid, 224). Two ways in where Africa differs from other tropical areas are that there are no monsoons (except some of limited extent in Nigeria area) and that they have higher rainfall variability (than the tropical parts in Americas and Asia) (ibid, 220, 222.)

The majority of the agricultural land in SSA is based on the Basement Complex Rocks, giving it a predominately old soil origin. However, although this type of soil "is

commonly associated with vast and homogeneous expanses of old, deeply weathered, poor and leached red soils... leached soils cover only 14.7% of the African continent, which compares favourably with South America and tropical Asia where they cover 37.2% and 18.3%, respectively" (Voortman et al, 2003, 371). Poor soil fertility is due to both old age of parent material and heavy rainfall, and since the rainfall in Africa often is less heavy than elsewhere, as seen above, the problem is relatively smaller than might be expected (Voortman et al, 2003, 371). The Basement Complex soils also have a homogenous, non-mixed, parent material: "which implies that imbalances, deficiencies and toxicities are more likely to occur" (Voortman et al, 2003). This in turn might make fertilization more complex, the usual macronutrients might not be enough or even useful in raising yields, unless certain micronutrients are applied. Voortman et al suggests that: "an important body of factual evidence indicates that the mere application of N, P and K may not lead to yield improvement on Basement Complex" (Voortman et al, 2003). Hence Voortman et al suggests that there is a high information demand in fertilizing the African soils concerning what micronutrients to use.

The World Bank refers to United Conference on Trade and Development (UNCTAD) 1998, which "suggests that almost half of Africa's land is unsuitable for direct rain fed cultivation because the growing period is too short, mainly due to aridity. In addition, there is a high risk of drought on 60 per cent of African land" (World Bank, 2000, 178). There are certain natural geographical limitations of the Sub-Saharan Africa, among these the recurrent droughts (Holmén, 1996, 40), the poor soils and the more general lack of access to water, which hinder development (Knox and Marston, 2007, 318-320).

All together this means that SSA geography is unlike any other regions and indicates the need for appropriate adopted solutions. It also points to the need for further development of techniques such as irrigation (to compensate for lack and variability of rainfall) as well as access to, more appropriate, fertilizers (to compensate for poor soil fertility).

2.3 Attempts for agricultural modernization

Discussions regarding the potential for a rapid agricultural development in SSA have been going on for over fifty years and the results have been patchy at best; “[i]n most instances, output gains in African agriculture have more closely resembled roller coasters than rocket ships” (Haggblade, 2005, 151-152).

During the 1960s and 1970s new Green Revolution inspired methods were used in Africa with donor initiative and the Sahelian droughts of 1968-73 led to a surge in aid directed at agricultural development. Still little agricultural output improvements were achieved (Sanders et al, 1996). Some researchers have criticized these attempts to modernize traditional agriculture by bringing in outside models and expect immediate results: “In the early post-independence years of the 1960s and 1970s, development models had been borrowed from the west, assuming that African agriculture could be quickly pulled out of subsistence and transformed into modern inputs-based market production by copying western models. Traditional agriculture was looked at as unsuitable for stepwise improvement [...] A quantum leap into the future was thought to be needed, to be brought about by the introduction of entirely new production concepts” (Mutsaers, 2007, 61-62).

Over the last fifty years governmental policies in the region towards agriculture have differed widely. Since food security in SSA was relatively stable at the time of independence there was no direct political pressure to increase yields. However during the 1960s and 1970s, many countries, such as Ghana, had price controls, subsidy programmes and tariffs for import (Kolavalli et al, 2010). During this time, due to the high level of government involvement in the agricultural markets, several countries had government expenditure on agriculture shares that were high; in fact around 10% public expenditures went to agriculture. In general the SSA governments were strongly centralized; “in more than 60 per cent of African countries, governments completely controlled the procurement and distribution of fertilizer and seeds” (World Bank, 2000, 174), and it likewise retained an urban bias (World Bank, 2000,177). During the 1980s political attitudes towards agriculture changed. The structural adjustment programs (SAPs), supported by the World Bank and the International Monetary Foundation (IMF), were introduced to gradually include most of the SSA countries (Staatz and Dembélé,

2007, 10). Thus not only were the controversial Input Subsidies Programmes (ISPs) discontinued, but also government expenditure on agricultural research and development (R&D), extension programmes and infrastructure, which are crucial for agricultural growth (Jayne and Rashid, 2013).

Current situation geography and policies

Today Sub-Saharan Africa's economy is still dominated by agriculture. Sixty three per cent of the population live in rural areas (World Bank Development Indicators, 2014) and agriculture's share of total employment was around sixty per cent (FAO, 2010). SSA has showed economic growth, with an average of 5% annually, without corresponding growth in agricultural productivity (IFPRI, 2012). Rather, with a rapid urbanisation the agricultural sector is losing labour before having had the chance to implement labour saving techniques (Jayne and Rashid, 2013). However the agricultural value added per worker has been rising the last decade, since 2000 the value added went from 472.6 to 747.3 in 2014 (constant 2005 US\$) (World Development Indicators, 2014).

Currently only 4% of arable land is irrigated, while it has been calculated that irrigation could double the yields (You et al, 2010). These low numbers of irrigation have implications for the use of fertilizers, since the return of investment for fertilizers is overall much lower when the land is not irrigated (Jayne and Rashid, 2013). Currently there has been a resurgence of fertilizer ISPs, with ten countries now using 28.6% of their public expenditure on fertilizers (ibid), without a matching investment in irrigation. As mentioned in previous sections, it is also important to remember that the soil structure of SSA means that fertilizers have different requirements than in other areas (Jayne and Rashid, 2013)

Another important area for agricultural growth is functioning infrastructure. Without or with bad conditions of roads and other venues of transportation rural farmers have limited access to markets, leaving them with fewer possibilities to sell any surplus and get favourable market prices, as well as buying modern inputs. It also carries a risk of produce being spoilt during transportation. In SSA roads are the dominant transportation mode, making for 75 per cent of passengers and freight (Beuran et al,

2015). However it has been estimated that in Africa “less than 50 per cent of the rural population lives close to an all-season road” (World Bank Report, 2008, 119) and that 50 per cent of the roads in SSA are in poor condition (Beuran et al, 2015). However, as the 2008 World Bank Report points out, roads are only part of a larger solution and poor road conditions are often associated with other issues for agricultural productivity and economic development such as: “poor agro-climatic endowments, low population density, no transportation services, low education levels, a lack of electricity and risk, credit and other market failures” (World Bank Report, 2008, 120).

Infrastructure also ties into trade and export possibilities. Currently 10 products make up for 40 per cent of the exports; most of them being classical cash crops such as cocoa, coffee and cotton (Badiane et al, 2014). It is important to remember that cash crops have no overlap with food staples that poor subsistence farmers rely on, thus their impact on food security is debatable. Nevertheless they can provide a valuable source of new income.

Lastly it should be mentioned that agricultural research and development (R&D) has the potential to increase yields significantly as seen both historically with the breeding of bananas in Eastern Africa or more recently during the Asian Green Revolution. Indeed, an analysis of government investment in India showed that agricultural research investments had among the most consistent high returns over a 40 year long period.

Summary of chapter

Table 1 identifies some key lessons from history and geography of areas that need improvement.

Table 1. African Agriculture: problems and possible solutions

<i>Issue</i>	<i>Impact on Agriculture</i>	<i>Possible Solutions</i>
Old soil material	Low Fertility	Fertilizers (organic/synthetic)
Variable rain patterns	Drought and destroyed crop	Irrigation/Water Management
Insufficient infrastructure	Low market access	Better infrastructure
Traditional crops	Low yields	Agricultural research

This chapter identified some core issues for African agriculture: soil, water, infrastructure and traditional crops. These are only a few of numerous issues that are facing the national governments and local farmers, but are perhaps among the most unique for Sub-Saharan Africa's particular geography and political climate.

3. The Maputo Declaration

The previous chapter discussed some of the past and current problems facing the African agriculture. These issues have not gone unnoticed by the African leaders. At a New Partnership for Africa's Development (NEPAD) and Food and Agriculture Organization of the United Nations (FAO) meeting in late 2002 it was stated: "We meet at a time of crisis, with Africa's economic growth stagnant; per capita income and food production in decline; and unacceptably high incidence of poverty, food insecurity and child malnutrition; growing dependence on food aid and food imports; as well as an increasingly marginal role for Africa in international trade. We believe that agriculture has potential to make a major contribution to reversing this state of affairs" (Abuja Declaration, 2002). The next step toward raising the stakes would become known as the Maputo Declaration.

3.1 What is the Maputo Declaration?

In 2003 the African Union (AU) convened in Mozambique's capital Maputo for its second session of the Assembly. The resulting document contained a "*Declaration on Agriculture and Food Security in Africa*" (Declaration no. 7), this is now commonly known as 'The Maputo Declaration'.

In the first part of the Maputo Declaration, the Declarations (see Annex A), the AU states it's dual purpose in launching a coordinated effort in the form of the Comprehensive Africa Agricultural Development Programme (CAADP), namely: increased food security and economic development and growth. This paper will only consider the economic side for lack of space. The Declarations also discusses what the Assembly considers to be underlying factors for the "agricultural crisis".

The second part consists of the Resolutions (see Annex B). In general the Maputo Declaration is often boiled down to Resolution nr 2, which states that the countries should: "commit [themselves] to allocating at least 10% of national budgetary resources for their implementation within five years" (Maputo Declaration, 2003). This is also the resolution that this paper will focus on when analysing the success of the Maputo Declaration.

3.2 What problems does it address?

In the Declarations (see Annex A) the AU establishes how it views the current situation, background factors for Africa's current agricultural state and proposes a solution; the new initiative CAADP. It stresses the importance of agricultural growth for economic prosperity, but also as a way to counterbalance the current food insecurity. As root causes for the current problems it identifies: inadequate funding, lack of water control and management, poor rural infrastructure, neglected agricultural research, and the threat of HIV/AIDS.

The Resolution (see Annex B) contains several aspects. Firstly it addresses the CAADP, which is presented as a joint effort to meet some of the challenges presented in the Declaration. Secondly the signatories avow to spend at least 10 per cent of their national budgets on "agricultural and rural development", within five years. This is a resolution with a clear and, perceivably, easily measurable goal to be achieved within a given time frame.

3.3 How is it implemented within the AU and on a regional level?

The Maputo Declaration is part of a larger initiative to renew African agriculture set in motion by the AU's formation of NEPAD in 2001 and continued through the CAADP and other Declarations.

There are some crucial differences between the Maputo Declaration and CAADP. One being that within CAADP there is a goal to achieve 6% annual agricultural productivity growth (NEPAD, 2015). The CAADP also consists of four pillars:

1. Land and water management – extending the area under sustainable land management
2. Market access – improving rural infrastructure and market access
3. Food supply and hunger – increasing food supply and reducing hunger
4. Agricultural research – research and technology dissemination (AU, 2015b)

Each of these pillars is organized by one or more different organizations, for example Pillar One is overseen by the University of Zambia and the Permanent Interstate Committee for Drought Control in the Sahel (CILSS). Unfortunately there is little to no information about specific programs and projects available through the NEPAD and CAADP home pages or other sources relating to these pillars, making it difficult to create a better overview of the exact framework.

To evaluate and coordinate the different countries' efforts the CAADP Partnership Platform meetings have been taking place since 2004, where CAADP member states can meet, share experiences and evaluate the process. Also the various regional organizations such as Economic Community of West African States (ECOWAS) and Common Market for Eastern and Southern Africa (COMESA) have been holding meetings for their member states.

The Regional Strategic Analysis and Knowledge Support System (ReSAKSS) founded in 2006, is carrying out another on-going evaluation. This branch of the CAADP has published several papers, with the support of the International Food Policy Research Institute (IFPRI), where they assess the impacts and progress being made by the CAADP. There are currently thirty implementation indicators tracked by CAADP.

3.4 How is it implemented on a national level?

To start the process of implementing the Maputo Declaration goals a country has to go through a stocktaking and a roundtable process to prepare a 'compact', a document pertaining to a country's priority areas for agricultural investment signed by all the key players, including government officials, civic society leaders and producer representatives (CAADP, 2015). Each document is unique for the specific country.

Summary of chapter

In the Maputo Declaration of 2003 the leaders of the AU set out to increase food production and identified certain key areas to achieve this goal. Through the implementation of the CAADP framework both on a regional and country level, they are hoping to address these key areas and achieve their goal. Next there will be an analysis

of to what degree the Maputo Declaration has been implemented, whether its 10% goals have been carried out and if any results have been obtained.

4. Assessing the impacts of the Declaration

This chapter will try to evaluate two things, firstly; has the Maputo Declaration goal of a 10% public expenditure directed to agriculture been implemented among the signatory members? Secondly, what impact, if any, has a CAADP compact had on the members' agricultural production and productivity? One major challenge in evaluating impact of the efforts and results that has been made by the member states is the lack of available data and statistics. Official governmental statistics at a national level are scarce, making it necessary to use more general and disperse sources from international organizations such as the World Bank, FAO and IMF to carry out this evaluation.

4.1 Compliance with Maputo/CAADP

As of late 2014 CAADP compacts had been signed by 40 AU member states, corresponding to 74% of all 54 AU member states (CAADP, 2014; AU, 2015a).

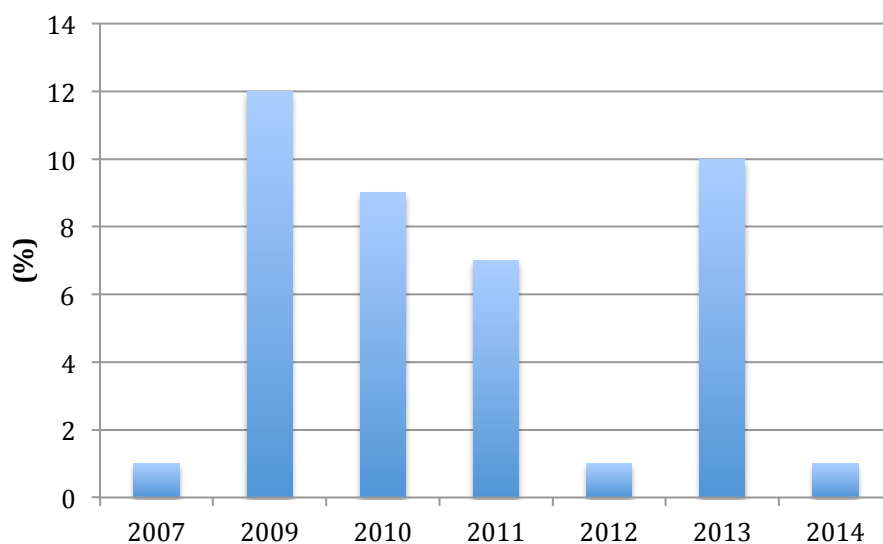


Figure 1. Number of CAADP country compacts signed by year.

Source: CAADP (2014)

However, as Figure 1 shows the pace of signing the compacts has been very slow. The first compact was signed by Rwanda in 2007, four years after the Maputo Declaration.

As of 2012, only 13 countries had “met or surpassed the CAADP target in one or more years” since 2003 (Benin and Yu, 2012). A list of these countries can be seen in Table 2 (first column). The number of signed compact members as of 2012 was 29, making the percentage of compact countries that had met the target at least one year around 45%, a little less than half. However, this does not mean that they fulfilled it each consecutive year, although that appears to be the intention of the Maputo Declaration.

To look more specifically at the time periods during which the countries have complied with the 10% target the Statistics of Public Expenditure for Economic Development (SPEED) data set, provided by IFPRI, was used (SPEED, 2013). SPEED has a measure for ‘percentage of agriculture in total spending (PPP-adjusted)’ (TotAg). Hence it can be used evaluate the 10% Maputo goal. First the general trend for agricultural spending among individual CAADP countries was examined.

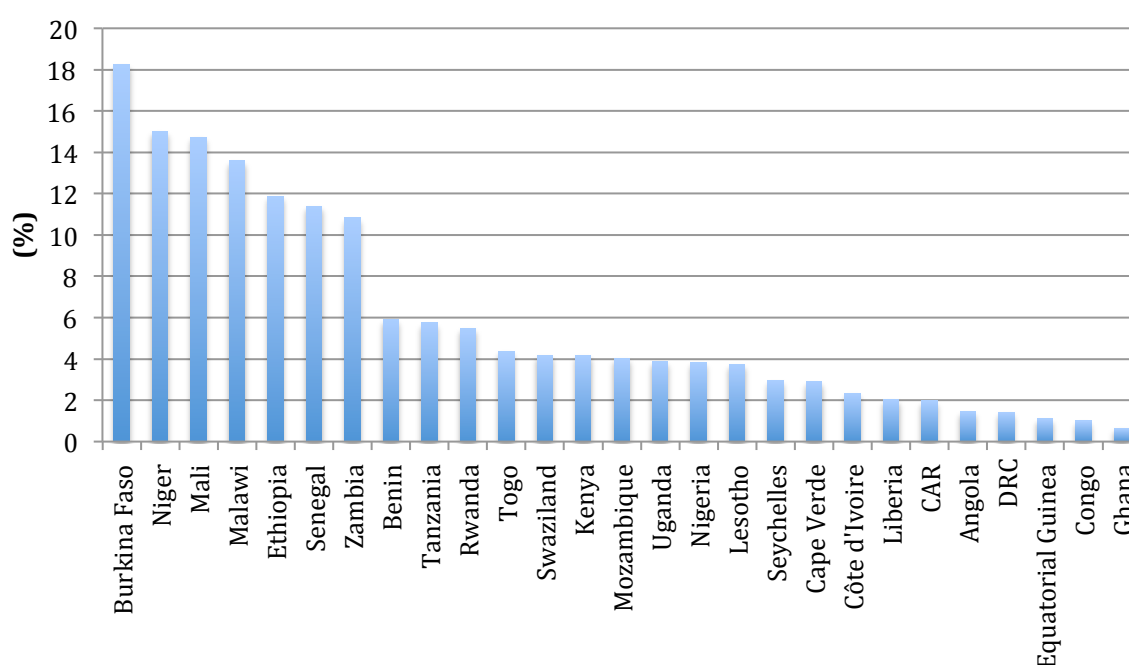


Figure 2. Average percentage of agriculture spending in total public expenditure 2000-2010, CAADP countries.

Source: SPEED Data 2013

As can be see in Figure 2, there is a rather big difference between those countries that have an agricultural spending above 10% and those spending below 10%, i.e. the majority of countries and. The average ends up being 6.3%, which is slightly higher than the average for SSA during the same period, 5.8%.

Table 2. 10% compliance by 2012 vs. Average over 10% 2000-2010.

10% compliance by 2012 (Benin and Yu, 2012)	Average over 10% 2000- 2010 (SPEED, 2013)
Burkina Faso	Burkina Faso
Burundi	-
Congo, Republic of	-
Ethiopia	Ethiopia
Ghana	-
Guinea	-
Madagascar	-
Malawi	Malawi
Mali	Mali
Niger	Niger
Senegal	Senegal
Zambia	Zambia
Zimbabwe	-

Sources: Benin and Yu (2012) and SPEED (2013)

While according to Benin and Yu (2012) a total of 13 countries had at some time achieved the goal of spending 10% of their annual budget on agricultural, the SPEED data set (2013) suggests that on average only seven countries, a little more than half of the countries suggested by Benin and Yu, had an *average spending* of more than 10 per cent of budgetary expenditures during 2000-2012. These countries can be seen in Table 2 (second column).

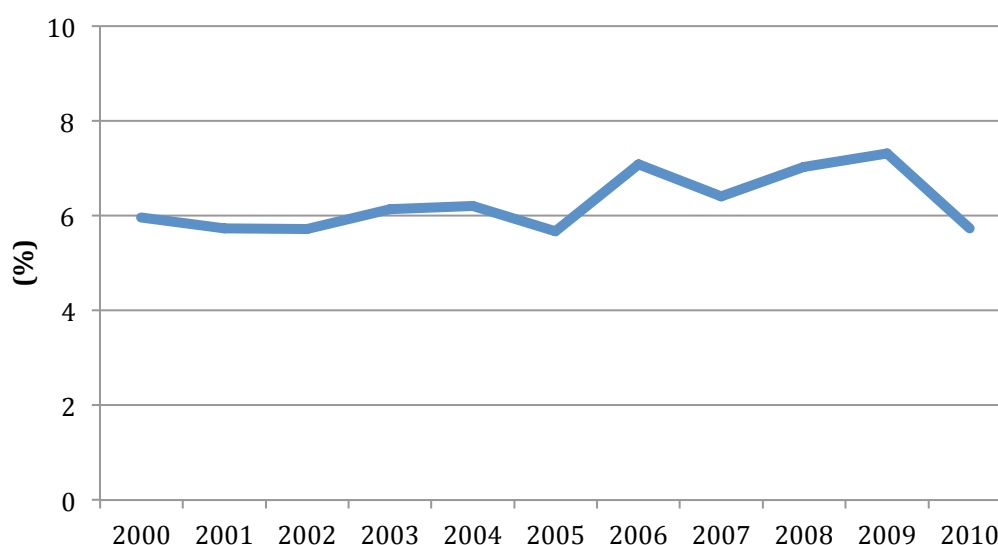


Figure 3. Average percentage of agriculture in total public spending for available CAADP countries 2000-2010.
Source: SPEED (2103)

Figure 3 shows a slight rising trend in agriculture's share of total spending until a decline in 2010. This decline can possibly be explained by a falling-off of countries that have presented data for this year: in 2010 only nine countries out of 32 (with available data for the overall period) had data for this year, (as opposed to e.g. 19 in 2009 and 23 in 2008). Thus it is possible that the smaller data set with a higher variance has skewed the data.

The biggest growth in agricultural spending as part of the total spending came in the 2005-2006 period with a 20% increase. This is still before the period where any countries had actually signed a compact and could therefore be unrelated to the Maputo Declaration and CAADP. It is also possible that many countries wanted to meet the five-year target, and was aiming to reach 10% by 2008.

Impact of signing compacts

The data has also been used to see if there has been any change in share of public expenditure on agriculture (PEA) for individual countries before and after signing the compacts. Out of 31 countries that were included in the set, only ten had any data (for TotAg) after their signing a compact, and only three had data for more than one year afterwards. Rwanda, the first and only country that signed a contract in 2007, have the

longest time series after signing, but unfortunately only have numbers for one year before, making it difficult to compare data. Only two countries reported any numbers for 2011, Mozambique and Rwanda.

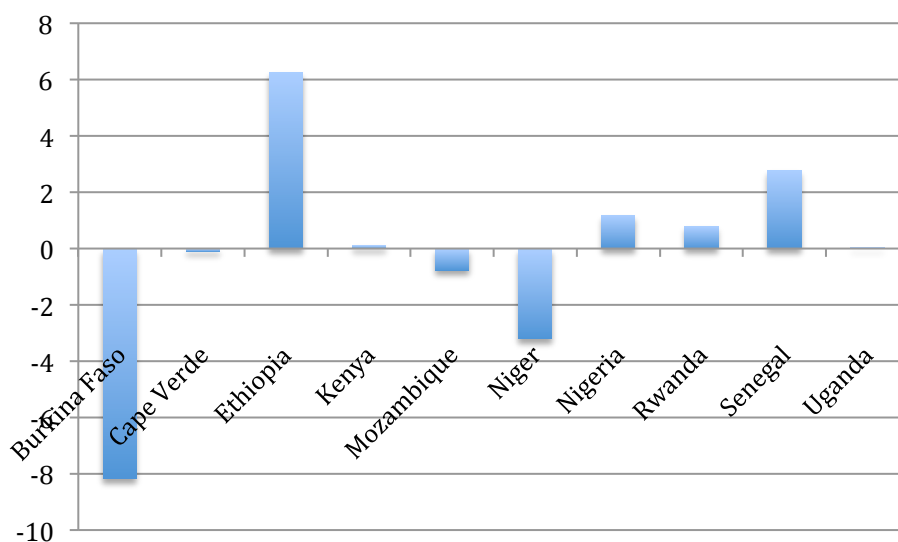


Figure 4. Absolute change in average public expenditure on agriculture (PEA) share between period before and after signing the CAADP compact

Source: SPEED (2103)

Comparing the average PEA share before and after signing a CAADP compact yields an overall negative result, as seen in Figure 4, which suggests that for some countries the signing of a CAADP compact has had little to no effect on the share spent on agriculture of overall government spending. Of course the variation in the data is quite high, thus it is possible that given a longer time span the variation would tend to a positive trend.

In this data set (SPEED 2013) four countries fulfilled the 10% target after signing the compact, Burkina Faso, Ethiopia, Niger and Senegal. However all of these countries already had an average percentage above 10% before signing the compact.

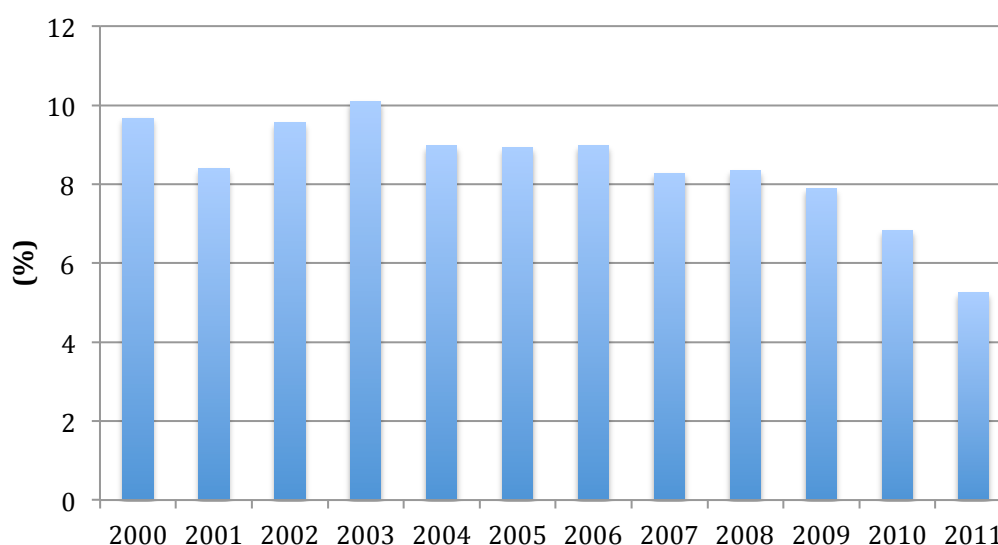


Figure 5. Average percentage of agriculture in total spending for the ten countries with data available from before and after signing a CAADP compact.

Source: SPEED (2103)

Lastly, the average PEA share spending for only the countries with data available both before and after their signing a compact is presented in Figure 5. The figure shows that the 10% PEA target was actually met during 2003, the same year the Maputo Declaration was signed. However since this time it has been stagnant or declining. (Although, once again, the lack of data for 2010 and 2011, with the possible resulting skewering, could be to blame for the dramatic decline for those years).

As the PEA share, or the TotAg measure, is less common than other measures in SPEED, countries were also compared using one more readily available measure: agricultural expenditure in 2005 as purchasing power parity (Ag_PPP). This will also allow an examination of expenditure to see if it has risen overall, even though it would not be a larger portion of the total government spending.

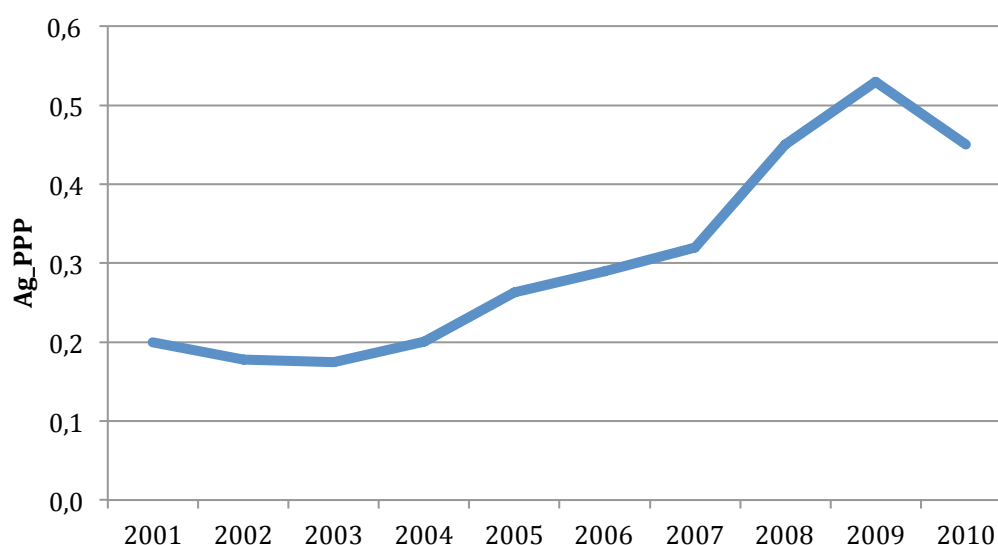


Figure 6. Government agriculture expenditure purchasing power parity (Ag_PPP) in 2005, average for SSA countries with available data 2001-2010.

Source: SPEED (2103)

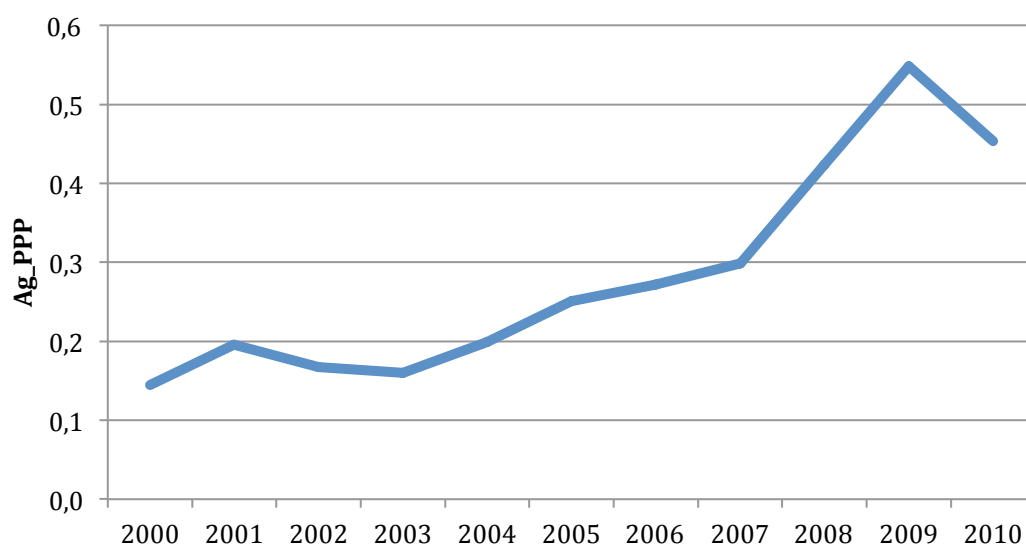


Figure 7. Government agriculture expenditure purchasing power parity (Ag_PPP) in 2005, average for CAADP compact countries with available data 2001-2010.

Source: SPEED (2103)

Looking at Figure 6 appears that the public spending on agriculture is growing in the SSA countries, albeit not necessarily its share of the total public expenditure. Comparing Figures 6 and 7 shows that the CAADP curve follows the broader SSA curve quite closely.

Both display a steady increase in spending since 2003. For CAADP the average for the entire period was 0.25, while in SSA it was slightly higher at 0.29.

4.2 Assessing effects on production and productivity

This section examines if changes in agricultural growth could be related to the Maputo Declaration. When looking at the agricultural sector it is always of interest to differentiate between increases in production and increases in productivity (larger yield per area). Especially as much of SSA's agricultural growth has previously come from increased agricultural area rather than raised productivity.

4.2.1 FAO and World Bank Data

For this section data from FAO and the World Bank, was used. More specifically the measurement Outlays from FAOSTAT (Total Outlay on Agriculture in USD (million)) and Yields from World Bank's World Development Indicators (WBDI), Cereal yield (kg per hectare)¹, were used.

Since roots and tubers are important food crops in many parts of SSA, ideally there would be a compound measure of grains as well as these. However the cereal measure includes the widely farmed rice and maize, as well as more local millet and sorghum, all of which are crucial food crops in the area.

Overview of production in relation to CAADP

The overall yield change of the CAADP members who had fulfilled the PEA share target of 10% as of 2012 was examined by looking at the WBDI's Crop Production Index, during the 2005-2012 period and taking the difference between the first and last year.

¹ Cereal yield, measured as kilograms per hectare of harvested land, includes wheat, rice, maize, barley, oats, rye, millet, sorghum, buckwheat, and mixed grains. Production data on cereals relate to crops harvested for dry grain only. Cereal crops harvested for hay or harvested green for food, feed, or silage and those used for grazing are excluded. The FAO allocates production data to the calendar year in which the bulk of the harvest took place. Most of a crop harvested near the end of a year will be used in the following year

Table 3. Change in crop production index 2005-2012, countries that had complied with the 10% target as of 2012.

No	Country	Index Change
1	Malawi	87.2
2	Zambia	77.8
3	Niger	69.3
4	Ethiopia	46.6
5	Mali	45.3
6	Ghana	36.4
7	Congo Republic	22.4
8	Burkina Faso	21.8
9	Guinea	20.7
10	Madagascar	20.5
11	Senegal	16.4
12	Zimbabwe	16.1
13	Burundi	- 2.3

Source: World Bank Development Indicators, 2014

Table 3 demonstrates that most countries in this group show a positive trend. Compared to other CAADP compact countries that have not complied with the 10% target, the compliers have a higher rate of crop index change: non-compliers had an average increase of 25.2 while compliers had an increase of 36.8. That is a difference of more than 30 per cent. This is a crude comparison with many other underlying factors besides public expenditure ignored.

Growth in Yields Before and After Compacts

This section will try to determine whether CAADP is driving this positive change. It is of interest to see if there is any clear deviation from previous growth trends after a country has signed a compact.

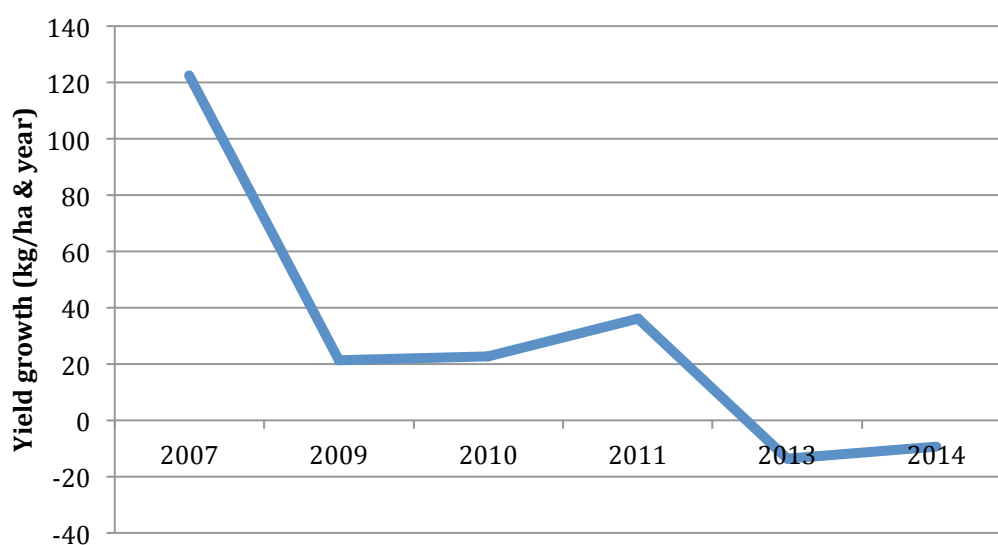


Figure 8. Average yield change depending on when a compact was signed (see text for further explanation). Note: Burundi and Cote d'Ivoire excluded (see next section)

Source: World Bank Development Indicators, 2014

In Figure 8 countries are grouped into the year when they signed a CAADP compact and their average yield growth since signing is represented on the y-axis. This indicates that yield growth is much higher for those who signed up earlier. It is possible that early signatories had other underlying benefits causing this growth that the later signatories might not have.

Table 4. Average difference in yields (kg/ha) before and after implementation

2007-2009	2007-2010	2007-2011	2007-2013
218	233	253	175

In Table 4 the average difference was calculated by taking the average yield for the period after implementation minus the average yield for the period before implementation. For example the 2007-2009 period includes the 12 countries that had signed a compact during this period and takes the average of their average difference between the before and after implementation yields. The data goes back to 2002 and up until 2013.

General yields become higher after implementation up until the period 2012-2013 is included. A problem with this period is firstly that no country signed up during 2012, so the period only represents 2013 (when nine new countries signed a compact). Secondly is that the yield data is only available up until 2013, thus there is not a representative average, but rather the yield for one single year (which is more likely to be affected by random environmental factors).

Regression Analysis: Outlays' impact on Yields

To check if increased budget spending has had any impact on yields, a simple regression with Outlays as independent and Yields as dependent variable, was run.

A regression for all countries in the data set gives a negative correlation of -2.17. The regression on the countries that has signed a CAADP compact as of 2014 (which excludes South Africa, Namibia, Burkina Faso and Mauritius) gives a negative correlation of -3.57.

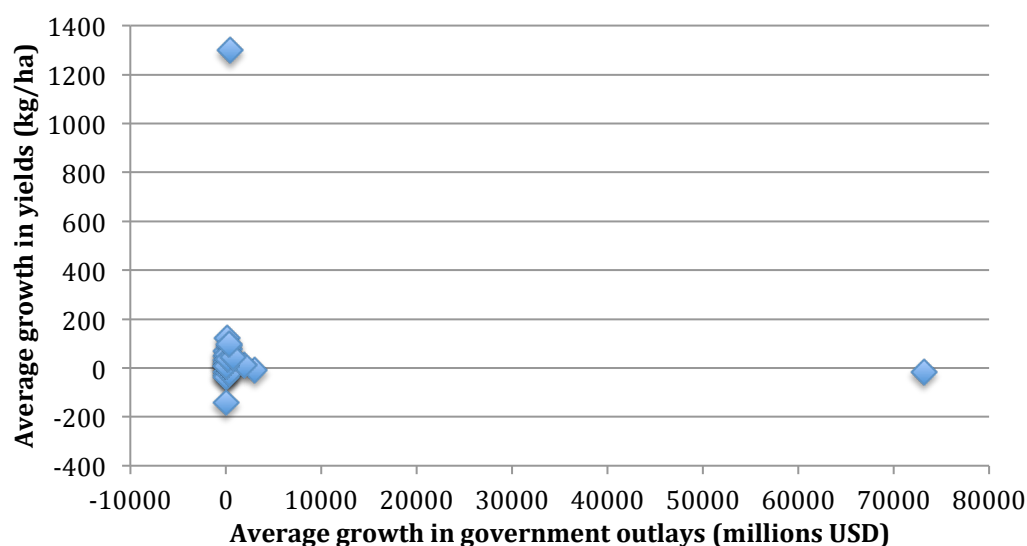


Figure 9. Correlation between Outlays and Yields. Clear Outliers shown, Burundi (73 128 on x-axis) and Ivory Coast (1298 on y-axis).

Source: World Bank Development Indicators, 2014

However this set of data includes two extreme outliers (Figure 9). Firstly Burundi's average growth of 73 128 USD (millions) in government outlays is extreme when

compared with the median, which is 173 USD (millions). Similarly the Ivory Coast's average growth in yields of 1298 kg/hectare is considerably higher than the median of 19 kg/hectare.

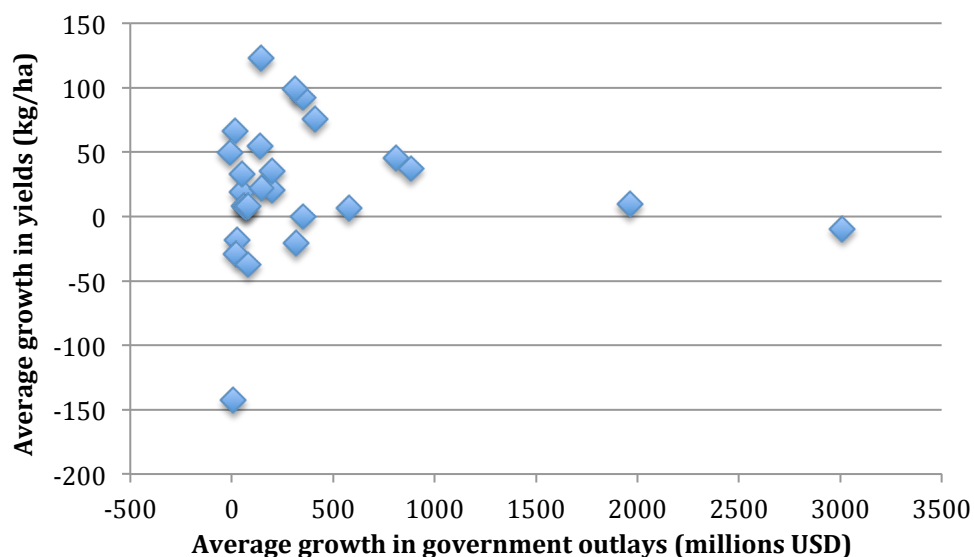


Figure 10. Correlation between Outlays and Yields, excluding data from Burundi and the Ivory Coast.

Source: World Bank Development Indicators, 2014

If one excludes the two outliers a regression instead gives the slightly less negative correlation -0.42, as seen in Figure 10. In the same figure there are still some pretty clear outliers, namely Angola and Namibia.

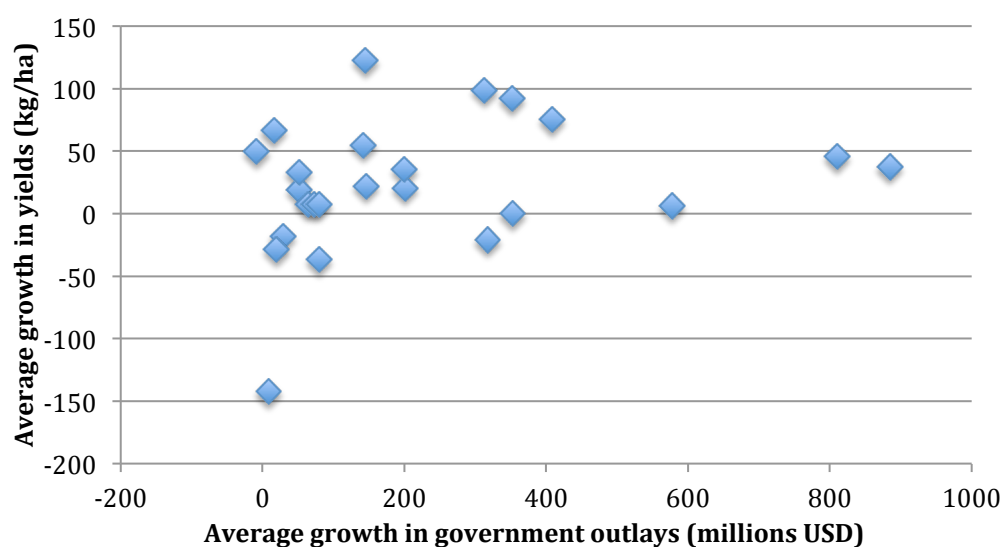


Figure 10. Correlation between Outlays and Yields, excluding data from Burundi, the Ivory Coast, Angola and Namibia.

Source: World Bank Development Indicators, 2014

By excluding another two outliers Angola and Nigeria, the correlation is still very weak but slightly positive at 1.17. It is most likely that there are other factors not included in this analysis (due to time restraints) preventing a clear picture of the relation between government spending and higher yields through only a simple regression. There are other perceivable explanations, for example it is possible that government spending might take some time to materialize as an effect in the agricultural data. Thus looking at the time elapsed since signing up to the program and comparing that to the average yield growth since might also provide some valuable insight.

4.2.2 FAO Country Stat data

The last possible source of data is FAO's initiative CountrySTAT. In 2006, an independent external evaluation of the FAO stated that: "The quantity and quality of data coming from national official sources has been on a steady decline since the early 1980s, particularly in Africa" (FAO, 2013). As a response to this problem FAO launched CountrySTAT, a data network that to date includes 57 countries, mainly from Sub-Saharan Africa. More precisely 32 out of CAADP's 41 member countries, or 78%, are also part of the CountrySTAT effort. Unfortunately promising as the project seemed most

countries has not filled in the type of data needed for this paper. Perhaps this will be a valuable source in future research.

Summary of chapter

Although on paper the Maputo Declaration was launched in 2003, it is only during the last five to seven years that countries have started to implement the CAADP compacts. There is a severe lack of data that limits the possibilities for evaluation of the Declarations' development. With the available data at hand no clear positive impacts from signing of a CAADP compact on PEA can be discovered. Neither does the 10% PEA share target, when met, appear to have had any impact on yields. It is hard to find any signs, within the specific data sets, that PEA shares had any effect on agricultural yields.

5. Discussion and Conclusions

Discussion on the goals of the Maputo Declaration

There is a clear overlap between what the general research literature and the AU points out as SSA's agricultural problems: soil fertility, water management, rural infrastructure, agricultural research and lack of funding. Indeed both the Declaration and the original CAADP implementation framework with four pillars show a great coherence and unity on these points. However the four pillars only work as a support network and it is each individual country and its country compact that mainly decides what priorities need to be made within that specific country. The only original common target goal was the 10% Public Expenditure on Agriculture (PEA) goal. However, as seen in chapter two, it matters how the public agricultural expenditure is spent. Some investments have a better rate of return to agricultural growth than others. Certain investments may work in some regions but can nonetheless be unsuitable in SSA.

Without the Maputo Declaration giving any priority to the different areas it is hard to predict how the countries will prioritize their public expenditure on agriculture. For example research clearly points to agricultural R&D as a good return of investment, but most African countries spend less than 1% of their agricultural gross domestic product (GDP) on agricultural R&D (Benin and Yu, 2012).

The fundamental causes for the agricultural crisis, the AU mentions, largely overlaps with those pointed out in chapter two as proposed areas of problems in SSA. The AU mentions as the first problem "lack of funding", which is later reflected in the resolutions. The only resolution that has a clearly set goal is the 10% share of agriculture in public expenditure.

With the lack of funding being a crucial point, the Maputo declaration could be seen as the AU's reaction to the decreasing official development assistance (ODA) support and lack of foreign direct investments (FDI). But it can also make sense long term to find more local funding to improve African agriculture. The risk with ODA is that it is granted without long-term guarantees or consistency, switching its' focus as the issue on the

international aid agenda varies; national or even regional support can hopefully provide a better stability.

The Resolutions (see Annex B) commits to small-scale and traditional farmers and mentions them as key players in the future development of agriculture, this has been well documented in research, see e.g. by Staatz and Dembélé (2007), who stresses the importance of their role in poverty reduction in rural areas. As they state: “agriculture-led path out of poverty does not occur automatically simply if the agricultural sector grows. It will require that agricultural growth be spread among a broad class of smallholder entrepreneurs (to broaden the demand for labour-intensive goods)” (Staatz and Dembélé, 2007). Thus it is crucial for the countries’ compacts to try to connect the increased government spending to projects and institutions that favour small-scale farmers.

As discussed in chapter two issues relating to soil fertility (old and weathered soils), lack of irrigation (reliance on rain fed agriculture), poor infrastructure (especially in rural areas) and poor ability to control pests and disease (for example wheat rust or the tse tse fly) are issues that Africa has faced for a long time. The Resolution recognizes and addresses these issues and states that they should be “removed”, but does not give any more concrete examples of how this could be done, whether through more government led research, subsidized inputs (for e.g. fertilizers or herbicides) or more private investments.

Examining the various Maputo, NEPAD and CAADP documents it is not clear why the figure 10 per cent has been chosen as a target. Most high and medium income countries spend significantly less on agriculture. However if one looks at the earlier period, 1980-1989, one can note that South Asia had an average agricultural spending of 11.8% for this period (SPEED, 2103). Thus it can be argued that a ten per cent goal is comparable to the levels of government spending South Asia had during part of their intense agricultural growth. One could also argue that ten per cent is necessary for the members of AU to achieve the crucial amount of money that need to be spent, as most member state’s budget are simply too small for a lower percentage to be enough for what is needed.

The SPEED data also shows that SSA spent on average 9.0% of their budgets on agriculture during the 1980-1989 period (SPEED, 2013), a period known for its' stagnation of agricultural growth, which would suggest that other factors rather than just government spending is crucial for agricultural growth. Though it can be argued that investments in agriculture will not immediately show up in the growth statistics, but rather show after some years. Thus the question remains open whether it is primarily money that is lacking for the development of agriculture, or if other ingredients such as training programs, better statistics, or related policies, play an equally important or even greater part.

One area where state financing has played a major part historically is agricultural research. During the Green Revolution the combined efforts of governments (Japan, the US, Mexico, India, the Philippines, etc.) and private aid organizations (the Rockefeller, the Ford Foundation, etc.) resulted in the new seeds and breeding techniques that laid the foundation for the Green revolution in Asia (Brown, 1970).

The Maputo Declaration, the CAADP and implementation

The Maputo Declaration's goal of a quick change of public expenditure on agriculture does not appear to have been successful. Only 24% of AU members had at one time or another had a PEA share above 10%, while only 13% had it on average during the time period 2000-2010. While the PEA share of budgets may have shown a slight upwards trend since 2003 (see figure 3), the figure is still well below the desired 10%. In fact most of the countries achieving a 10% PEA share were already doing so before signing a CAADP compact to implement the Maputo Declaration.

Neither has the implementation of the CAADP with its pillars reflecting the framework laid by the Maputo Declaration been very successful. The sign up rate has been slow with the first compact being signed four years after the Maputo meeting. Neither did the signing of a compact have any obvious effect on PEA shares, as seen in figures 4 and 5.

However there is a positive trend for total government agricultural spending on agriculture, both within the SSA as a whole and among countries who have signed a CAADP compact. Though unfortunately since SSA has a slightly higher average it seems unlikely that it is the Maputo Declaration or CAADP driving this change.

The other aim of this paper has been to examine whether the Maputo Declaration has had any impact on agricultural production or productivity. Looking only at the change in crop production index (see Table 3) shows a potential positive trend. Similarly looking at average yield changes for each group of countries grouped by their CAADP compact year could indicate that those who signed earlier had larger yields. Lastly by looking at the average difference in yields for CAADP countries before and after signing a compact, we have a slight upward trend lasting until the 2012-2013 period. However all three of these measurements do not control for any other factors such as economic growth, climate or agricultural prices.

To see if total PEA (or Outlays in FAO's data) could directly influence yields some simple regressions were run. However even after excluding some potential outliers, the effect was weak at best, showing little indication that public expenditure had a significant part in changing yields in any way.

Conclusions

The Maputo Declaration was aiming to take some highly needed steps towards a growth in African agriculture. However as the Declaration has celebrated its tenth anniversary it appears it has not reached this goal, there is an urgent need for reassessment and further evaluation.

The Future

In June 2014 AU leaders signed the Malabo Declaration where they decided to continue to uphold the goals of the Maputo Declaration and CAADP. The CAADP has also recently launched a Result Framework that is meant to span ten years, 2015-2025.

Abbreviations

AU	African Union
CAADP	Comprehensive Africa Agriculture Development Programme
CILSS	Permanent Interstate Committee for Drought Control in the Sahel
COMESA	Common Market for Eastern and Southern Africa
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Statistics Division of Food and Agriculture Organization
FDI	Foreign Direct Investment
IFPRI	International Food Policy Research Institute
IMF	International Monetary Foundation
ISP	Input Subsidy Programme
NEPAD	New Partnership for Africa's Development
ODA	Official Development Assistance
PEA	Public Expenditure on Agriculture
PPP	Purchasing Power Parity
R&D	Research and Development
ReSAKSS	Regional Strategic Analysis and Knowledge Support System
SAP	Structural Adjustment Programme
SPEED	Statistics of Public Expenditure for Economic Development
SSA	Sub-Saharan Africa
WB	World Bank
WBDI	World Bank Development Indicators
WDR	World Development Report

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Annex A. The Maputo Declaration, Declarations

Nr	Declaration, main points	Notes
1	30% of population undernourished, Africa a net importer	
2	Increased food production to guarantee food security and economic prosperity	
3	Launching Comprehensive Africa's Agricultural Development Programme (CAADP)	
4	Recalling Declaration in Abuja, Nigeria, December 2002	The meeting where the CAADP was discussed for the first time
5	Root causes of agricultural crisis: inadequate funding, lack of water control/management, poor rural infrastructure, neglected agricultural research, threat of HIV/AIDS	
6	Agriculture crucial for economic prosperity	

Source: The Maputo Declaration (2003)

Annex B. The Maputo Declaration, Resolutions

Nr	Resolutions	Focus points
1	<ul style="list-style-type: none"> a) Target for improvements: small scale and traditional farmers in rural sectors, b) Enable private sector participation c) Remove constraints to agricultural production and marketing: soil fertility, water management, infrastructure, pests & disease 	Traditional farmers, Private sector, Agricultural restraints
2	Implement CAADP, sound agricultural policies and “commit ourselves to allocating at least 10% of national budgetary resources for their implementation within five years”	Financing, 10% goal within 5 years
3	Call upon FAO and other partners for continued support	International support/aid
4	Consult civil society and others such as: small scale farmers, private sector, women, youth associations, etc	Involving key players in the community
5	Ensure “bankable projects [...] for the mobilization of resources for investment in agricultural growth and rural development”	Financing, Regional projects
6	Ensure regional food reserve systems, linked to the region’s production	Food security
7	Establish the African Investment Bank, which should “give priority to investment in agricultural production”	Financing, Loans, Insurances
8	Work on other countries to “address the effect of their subsidies, to ensure their support to market access for Africa’s exports”	Trade

Source: The Maputo Declaration (2003)