

Economic Significance of Agriculture for Poverty Reduction: The Case of Zambia

Libanda Juliet^{1*}, Nkolola Barbara² and Nyasa Linda³

¹*School of Business Studies, Nanjing Xiaozhuang University, 41 Beiwei Road, Nanjing, China.*

²*Department of Environmental Science and Engineering, School of Engineering, Nanjing University of Information Science and Technology, 219 Ningliu Road, China.*

³*Ministry of Energy and Water Development, P.O.Box 53930, Lusaka, Zambia.*

Authors' contributions

This work was carried out in collaboration with all authors. Author LJ, the lead author, designed the study and wrote the first draft of the manuscript. Authors NB and NL managed the literature searches and analysis. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/ACRI/2016/26464

Editor(s):

(1) Alfredo Jimenez, Department of Management, Kedge Business School, Talence, France.

Reviewers:

(1) James Wabenga Yango, University Of Kinshasa, Congo.

(2) Musa Dantani Baba, College of Agriculture Zuru, Kebbi State, Nigeria.

(3) Anonymous, National University of Lesotho, Lesotho.

(4) Tunde Abioro, Obafemi Awolowo University, Ile-Ife, Nigeria.

Complete Peer review History: <http://www.sciencedomain.org/review-history/15850>

Original Research Article

Received 19th April 2016
Accepted 3rd August 2016
Published 20th August 2016

ABSTRACT

As a developing nation, Zambia has a number of setbacks to its economic development. One adverse setback that has affected the country's economic development pursuits is poverty. The economy of Zambia has faced some draw backs and domestic distress has increased, making it very difficult for the country in its pursuit for sustainable development. This study analyzes Zambia's main strategy of poverty eradication: agriculture. The study investigates the status and contribution of agriculture to the economy of Zambia. The results show that agriculture is the second largest contributor to the GDP of the country. Further, results indicate that there is heavy reliance on maize production than any other food crop in the country. These results can be used for policy formulation and economic projections in order to significantly contribute to poverty reduction in Zambia.

*Corresponding author: Email: julietlibanda@gmail.com;

Keywords: Agriculture; poverty reduction; economic growth.

1. INTRODUCTION

Zambia has experienced a number of economic challenges [1] and strains for more than a decade now [2]. From as early as the 1980s, Zambia has been going through one of the most intensified economic distresses in Africa; poverty [3]. In contrast to the initial situation of having continued rising poverty levels in the country, several programs and projects have since been initiated to reduce the level of poverty, especially among the less privileged [4]. One of the programs topping the list is agriculture [5].

The contribution rendered by agriculture to poverty reduction is sometimes thought to be minimal, this is as a result of having its relative economic importance dropping when low-income countries successfully develop. This view is a deceptive and misleading one. Strong agricultural growth, especially increased productivity, has been a feature of countries that have reduced poverty successfully [6]. Just as Theodore Schultz began his acceptance speech for the 1979 Noble price in economics observing:

“Most of the people in the world are poor, so if we knew the economics of being poor we would know much of the economics that really matter. Most of the world’s poor people earn their living from agriculture so if we knew the economics of agriculture; we would know much of being poor” [7].

The above assumption was however true only for some parts of Asia (The contribution rendered by agriculture to poverty reduction is minimal) where the green revolution played a major role in reducing poverty. This has a contradiction with most parts of Africa. The Green Revolution led to the gene revolution later in 1990 which was adopted by many African countries to increase their productivity in the agricultural sector. It brought high production in the yielding of varieties of wheat and rice wheat. This was made possible with conventional breeding methods, to millions of small-scale farmers, initially in Asia and Latin America, but after some time, in Africa as well. The gains achieved during the early decades of the Green Revolution were further extended in the late 1990s to other crops and also to other less favored locations [8]. This is a striking appearance of the departure from the Green Revolution, in which the public sector played a strong role in both research as well as

technology. After the green revolution, about 800 million people still lacked adequate access to food and there was a spread of malnutrition. The world is now on the second phase of agriculture the “Gene Revolution,” in which modern biotechnology could enable the production of genetically modified (GM) crops that could be tailored to meet the needs of the regions that still face food shortages. This shift has important effects for the kind of situation, the types of technologies that are developed and the way these technologies are scattered. The dominance of the private sector in agricultural biotechnology raises concerns that farmers in developing countries, particularly poor farmers, may not benefit – this is sometimes because appropriate innovations are not unavailable or are not affordable. Green Revolution in Asia is believed to be essentially technology-led and policy-supported, rather than policy-driven as is often assumed [9]. For some time, it worked very well for Asian countries partially because Asia is technologically advanced in diverse aspects. In response to profitable opportunities created by the new technologies, both factor and product markets gradually developed in Asia. Such developments in turn led to enhanced profitability in research and extension investments that further induced the development of enhanced technologies i.e increased investments in irrigation, extension reliable and adaptive research and subsidy programs for purchased agricultural inputs were introduced. The Green Revolution package having high-yielding varieties (HYVs), irrigation and agrochemicals is usually confronted as mainly a technological intervention that helps to boost food production through agriculture. The Green Revolution also seems to be a socio-economic and political construct, however it does also have an environmental dimension as agriculture is mainly based on natural resources.

1.1 How Poor was Zambia?

Once in history, Zambia was classified as a middle-income country. Three decades of economic decline and neglect of infrastructure and services had slowly turned the country into a very poor country. In the past, three out of four Zambians lived in poverty and more than half of them were extremely poor and unable to meet their minimum nutritional needs (three meals in a day). As the situation was for poor rural people,

ensuring food security was indeed a constant preoccupation.

Zambia Compared to its neighboring countries, is relatively sparsely populated, especially in the remote areas in the East as well as in the West, most of the population is concentrated in the central part of the country which is close to the urban areas that surround mines and other industries related to mining. In rural parts of the country about 83 per cent of the inhabitants were poor, and 71 per cent of them were extremely poor [10].

Many of the poorest people lived in households headed by women (because of various reasons) and households in which one or more members are ill, generally with HIV/AIDS, tuberculosis or malaria which were rampant at the time. Since the early 1990s poverty had been worsened by the impact of HIV/AIDS, which has been a factor in lowering life expectancy to about 38 years. The incidence of HIV/AIDS has now stabilized, and farm owners now have more labor on their farms, making their yields even better. When we talk about access to health and education there are major illusions between men and women in Zambia. In most parts of Southern Africa, citizens discriminate against women. Yet women are largely responsible for food production and many other income-generating activities in the household, while men often chose to relocate to urban areas in search of employment, leaving women to deal with farming as well as domestic tasks.

To date, as agriculture is booming, people don't see much difference between living in the big cities and rural areas because they get access to social amenities regardless of their location. In rural areas, for instance RED CROSS offers mobile health facilities to rural dwellers so they don't have to travel all the way to the city to seek medical attention.

According to recent experience, there is slow overall growth and increase in per capita food production and yields [11].

This discussion of agriculture has an insight particularly on crops. Other related topics of agriculture like livestock, fisheries, forestry and food security altogether bring in a broader outlook on issues that are not tackled in this paper. Agricultural productivity refers to measure of how best resources are used in producing agricultural products [12]. As the rule of inputs and outputs goes: when there is an increase in

productivity, there is an increase in the amount of output for any given amount of inputs used in its production [13]. Productivity gains can be noticed through increases in the efficiency with which land, labor and capital are used. When combined, these increases make "total factor productivity", a measure that focuses on all inputs that are used in production [14].

The favorable climatic conditions of Zambia have enabled agriculture to remain a priority sector in the growth and poverty reduction agenda of Zambia [15].

To effectively measure agriculture's performance and contribution to the economy of Zambia, account must be taken of its effects on the distribution of income among both rural and urban households, wage earners and owners. This is certainly the major aspect of evaluating agriculture's impact on poverty reduction strategies especially on the settlers in rural areas.

To attain an estimate of the Real Value, this study uses Social Accounting Matrices (SAMs). These tools offer a suitable accounting framework, because they make it possible to examine the relationship between production, consumption, trade and the accumulation and distribution of income. They can also be used to develop economic models that simulate the impact of public policies and other exogenous changes on the entire economy.

In summary, the findings were:

- As an economy develops and diversifies, the primary agricultural sector is drained off its weight in relation to GDP but develops strong linkages with the rest of the economy.
- Agriculture fully supports and promotes the advancement and development of rural areas and hence the quality of rural life changes.
- The sector displays strong multiplier effects with other economic sectors

2. KEY FINDINGS

Agriculture acts as an economic bridge between rural and urban areas as it provides food, work and natural resources to urban dwellers. Agriculture is the major development component of the Zambian economy. About 95% of rural households are engaged in agricultural activities today, this is a total of 45% of the total population

– approximately 4.6 million poor people are entirely dependent on agriculture. Out of the estimated number of farmers, about 76 percent are subsistence farmers. It is also estimated that between a quarter to a third of the total number of farming families live within 10 km of the railway line which makes it convenient for produce transportation.

The commercial farmers' i.e medium and large scale concentrate particularly on cash crops with farm sizes above 20 hectares. Only an estimation of 740 commercial farmers (this figure is less than one percent), have farm holdings in excess of 60 hectares. It is noted that there is a trend that the number of households in the small-scale category has been increasing while numbers of the medium and large-scale farmers have remained more or less the same [16,17]. Out of the general labor force of 3.4 million, 85% are employed in agriculture, 6% in industry and 9% in services. Agriculture serves as the main source of income for the rural population. With the unemployment rate around 50% [18], agriculture is usually the only potentially available source of livelihood or income within the informal sector.

Agriculture is believed to have contributed about 13 to 18% to real GDP over the past decade, making up approximately 39% of earnings from non-traditional exports. These figures seem to be inconsistent and are seen to be fluctuating significantly mainly because of the fact that agriculture in Zambia and other countries is somewhat dependent on seasonal rainfall which is unreliable. A major trend is that the number of households in the small-scale category has always been on an increase, while the numbers of medium- and large-scale farmers have remained unchanged. Increased unemployment has led people into agriculture as small-scale farmers [19].

The contribution that agriculture sector adds towards the balance of payments has been low. However, there has been a significant increase in the variety and value of agricultural exports, and the overall growth in the sector has mainly resulted from agricultural exports. The WTO (2002) remarks that Zambia's efforts to diversify from metal exports into non-traditional exports (agricultural, and agri-processing exports in particular) should translate into improved longer-term economic prospects.

Between 2000 and 2010 there appeared to be opportunities for small-scale farmers to broaden up from general focus on maize into more marketable crops, and this is confirmed by a pattern of declining maize production. Furthermore, trends display increases in more profitable, drought resistant food crops such as sorghum, cassava, millet and tubers that use less chemical fertilizer. However, over 70% of households still grow maize as the major staple crop. Small-scale farmers account for a larger share of the maize which is more than 60% of Zambia's cultivated area, but they generally lack access to irrigation capability, so this production is largely rain-fed. In turn, this is found making the country extremely vulnerable to swings in the pattern of rainfall every year. For instance, the heavy rainfall in the country in 2001 followed by a drought during 2002. In 2002, as a result of the serious food shortage, the Government encouraged large-scale farmers to work more on producing maize under irrigation in order to increase local production (WTO, 2002).

Increasing use of fertilizer portrays improved productivity for smallholders, nevertheless, usage is still less than 15% nationally, with increasing prices making it difficult to afford on a commercial basis (WTO, 2001).

2.1 Policies Affecting Agricultural Development

Fig. 1 shows the major constraints affecting agricultural development in Zambia today. Minor ones are not looked at in this paper. Labor constraints, technology use, land markets, input market, credit market, output market, and real exchange rates directly hinder agricultural development in Zambia and many more developing countries in Africa.

A persistent overvaluation of the exchange rate definitely meant a tax on producers of tradable commodities, in the early 1990s, which then led to a major expansion of market forces in the agricultural sector. The government, however, continued its involvement in certain key areas with not so favourable, deforming effects on prices, trade, and the fiscal deficit. These market interventions, mainly export restrictions, were motivated by the severe droughts in 1992, 1994, and 1995.

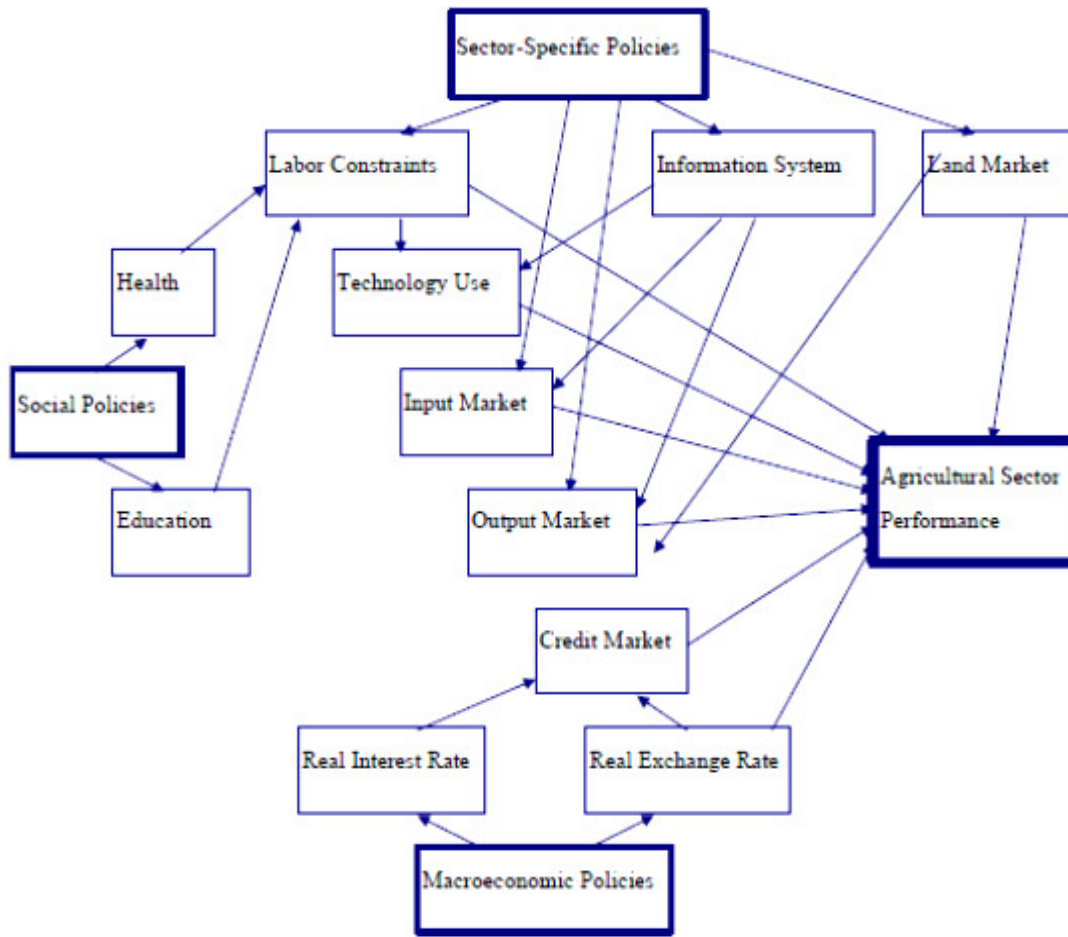


Fig. 1. Different policies affecting agricultural development

3. LITERATURE REVIEW

3.1 Governments Efforts to Overcome the Constraints

In different time periods, the economy is seen to fluctuate due to a number of reasons. For instance, between the 1980s – 1990s. There was vast growth in Zambia’s agricultural sector compared to other economic aspects, this is so because by then the population was relatively small, vigilant and the citizens had the desire to do farm work.

The government of Zambia employed quiet a number of programs with intent of reducing poverty. Programs like Poverty Reduction Strategy Papers (PRSPs) which worked greatly with civil society movements. This initiative focused on highly indebted and poor countries and that, in the late 1990s put the issue of the

reduction of debt or cancellation onto the international agenda with the help of successful lobbying. These movements did not only mean deeper debt relief but also for the freed resources to be used for poverty reducing programs (Wilk and Lefrancois 2000). Towards the end of this, a new framework called the Poverty Reduction and Growth Facility (PRGF) was introduced which replaced the Enhanced Structural Adjustment Facility (ESAF) of the International Monetary Fund (IMF) as a lending window of the economically challenged countries. The unmistakable characteristics of the PRGF were the deep routing chip of the PRGF in the main strategy for growth and poverty reduction, the building of budgets that are more pro-poor and pro-growth, and a greater emphasis on the processes to improve public resource management and accountability. All these programs were the government’s efforts to reduce poverty and to back up agriculture.

All the above were agricultural policies that were in existence prior to 1991. The major components of government intervention were transportation, storage subsidies, fixed producer prices, consumer price subsidies, and subsidies on agricultural inputs and credit. Following from earlier discussion, Zambia's farming sector is crowded with small scale farmers who are more than 50% of the total farming population. In the course of the government's efforts to achieve economic stability through agricultural growth, around 1980s the country adopted Structural Adjustment Programs (SAPs) which neglected small scale farmers. All the benefits in line with SAPs, subsidies for instance were to be given to only the large scale farmers. This led to the drop in production as the population chosen as less than half of the farming population.

Further, there were organizations like CUSA (Credit Unions and Savings Association) and other well established organizations which distributed agricultural inputs all over the country at very low rates, loan or subsidies and farmers were allowed to pay their debts after harvest, which was very convenient, even for the poorest Zambian families in rural areas. Agricultural inputs happened to be readily available and they were well organized and distributed to genuine farmers countrywide.

Following this arrangement, poverty levels are seen to have reduced steadily around the 90s and years after. Markets functioned through rural cooperatives, and the infrastructure where the operation took place was being maintained via the Ministry of Works and Supply. Policies avoided excessive taxing of agricultural produce in favor of the urban sector to have improved productivity. Assessment was directed at the stability of markets for exports.

Owing to the fact that when the economy seemed to be stabilizing, agriculture became undermined as opposed to mining, retail & wholesale trade and construction- this notion led to weak economic growth rate and stagnant poverty levels in the economy of Zambia after the 1990s. Despite the improved economic performance, since 1999 poverty has reduced at a very low rate because of the little attention given to agriculture. Here we learn that if considerate measures are put in place, the situation can be turned around such that agriculture growth can be more promising than before. As the national economists foresaw, more resources were unveiled to satisfy not only

the development of agriculture sector but also the whole of rural areas at large.

The decline in agricultural activities mentioned above was followed by a decade of unstable, poverty overrun economy until early 2000 when agriculture related programs began to be put back in place by the government and private sector was encouraged to join in the strengthening of the economy through agriculture.

4. DATA AND METHODOLOGY

4.1 Data

The data used in this study is secondary and primary data. Secondary data which was sourced from the Central Statistical Office (CSO) and a few previous writers. Primary data being the researcher's personal work with the use of Social Accounting Matrices (SAMs) The CSO conducts household based living condition surveys in order to monitor the effects of economic systems on the living conditions of the population. These surveys are also conducted to provide the much needed statistical monitoring indicators. The CSO is also the primary repository of Rural Agricultural Livelihoods Surveys.

4.2 Methodology

This study employs comparative statics analysis. This methodology is used to determine the changes in the endogenous variables of a model that will result from a change in the exogenous variables or parameters of that model. Many economists have employed comparative statistics analysis in their studies [20].

5. RESULTS AND DISCUSSION

5.1 Farmer Characteristics

Studies [21,22] have identified four broad categories of farmers in Zambia (i) Small scale farmers are considered to be subsistence producers of staple foods with occasional marketable surplus; (ii) Emergent farmers are considered to be producers of crops too much to be classified as small scale farmers but too little to be considered medium scale farmers; (iii) Medium scale farmers are considered to be producers of cash crops with markets in mind; (iv) Large scale farmers are generally considered to be producers of various crops for the local and export markets. Fig. 1 gives the four farmer

characteristics and the number of farmers in each group in 2012.

5.2 Statistical Analysis of the Production of the Major Staple Food Crops

While the government of the Republic of Zambia has placed emphasis on agricultural production, results (Fig. 2) show that there is a heavy reliance on maize production than any other crop. Rice is the least produced cash crop at 12,000 metric tons per year.

The pie chart shows that maize covers about 50% of the food produced in Zambia. The staple food

of the nation is made out of maize meal *nshima (hard porridge) which implies that the with regard to staple food, the country is likely to stabilize in the near future.

5.3 Contribution of Agriculture to Gross Domestic Product (GDP)

A comparative analysis of the contribution of agriculture to GDP shows that in 2012, at 13% (Fig. 2); agriculture is the largest contributor to GDP second only to wholesale and retail trade. Due to this significant contribution to GDP, the government of Zambia considers agriculture as the best alternative to mining.

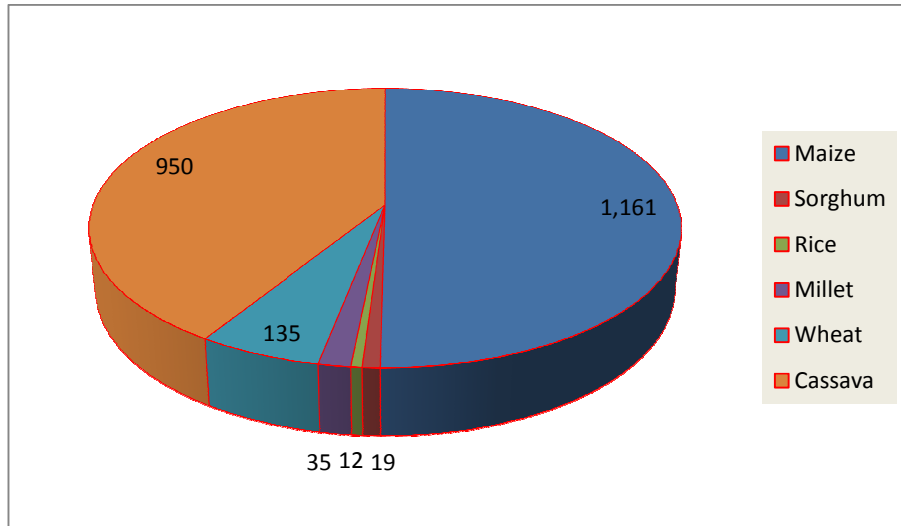


Fig. 2. Crop production in Zambia. Figures are in thousands of metric tons

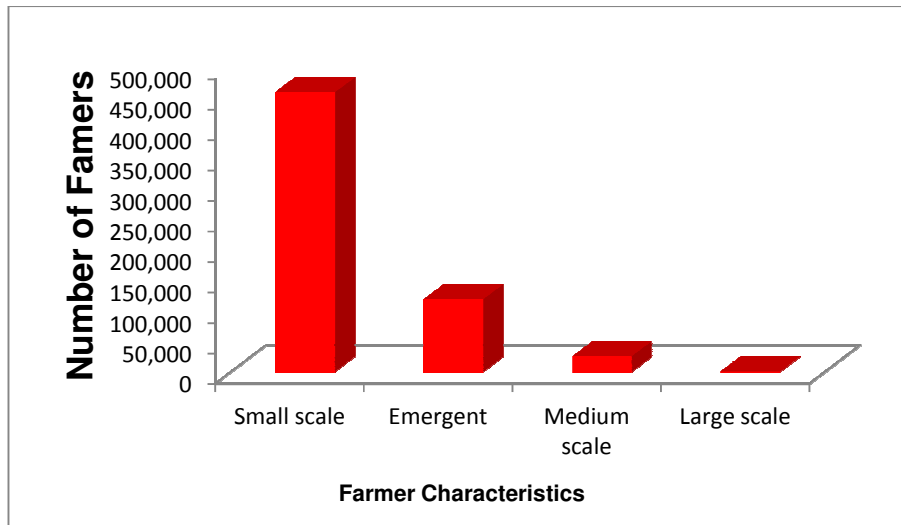


Fig. 2A. Famer statistics in Zambia

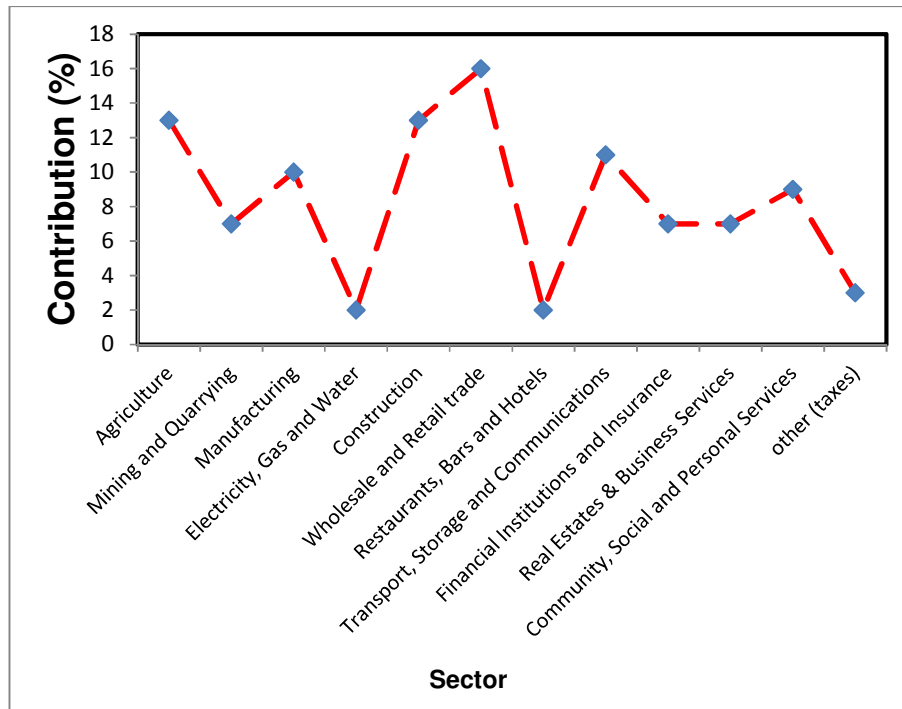


Fig. 2B. Contribution of sectors to GDP

6. CONCLUSION

Based on the above discussed issues surrounding agriculture in Zambia, the country has been judged successful in achieving poverty reduction through agriculture. Agriculture is still one of the main sectors in economic growth and poverty reduction agenda of Zambia. Well above 60 percent of Zambian population earns its wellbeing from agriculture. A huge number of the poor people live in rural areas and certainly depend on agriculture in their day to day lives. In this sense, agricultural development has the much needed potential to impact on extreme poverty and hunger issues, which affects most rural inhabitants.

Even though agriculture requires full commitment and bares risk, it will allow the country to possess full control of its operations in rural areas and it is the most viable strategy of economic development in Zambia.

Zambia is currently focusing on development of rural infrastructure because rural infrastructure and agriculture are inter dependent. The nation has put in place a number of policies that provide general public support and investment in agriculture; this is in the view to creating an enabling environment to attract a better part of

the private sector and smallholder interest in farm production, to process and trade.

7. RECOMENDETIIONS

Given that agriculture is seen to be of economic significance in Zambia, the following recommendations were made:

The government should target public spending more effectively. Strategic public investment in agriculture – especially in roads, irrigation and agricultural research which are highly effective in increasing agricultural productivity as well as reducing poverty. Agricultural research must be effectively funded and research priorities must respond to demand and reflect agriculture’s role in poverty reduction. Where appropriate, government should give particular attention to spending that supports agriculture and channel it towards important infrastructure and services that support private investment and benefit all citizens, including the poor.

Benefits of new technologies should be well spread. Efforts should be made towards improvement of the availability of knowledge and new technologies through both public and private sector institutions.

Address market failure. Poorly functioning markets suppress the country's development in terms of agriculture. Let the state intervene and markets be liberalized, the private sector should also be powerful enough to fill the gap left when government withdraws. Establishing effective markets that are accessible to poor people needs to be worked on in order to reduce the negotiation costs and risks that restrict the private sector. This involves improvement of infrastructure and communications systems, and getting rid of inappropriate regulations or inconsistent policies. Where markets are very weakly developed, governments may need to play a more direct role in encouraging private sector participation by using targeted and time-bound guarantees or subsidies.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Jayne TS, et al. Mountains of maize, persistent poverty. FSRP Policy Synthesis No. 48. Lusaka, Zambia; 2011.
2. World Bank. An assessment of the economic impact of flood and drought in Zambia. Washington D.C; 2008.
3. Central Statistics Office. Census 2002: Various Volumes, Dublin, Stationery Office; 2003.
4. World Bank. World development indicators. World Bank Washington, DC; 2007.
5. Thurlow J. A recursive dynamic computable general equilibrium model (CGE) for South Africa. Trade and Industrial Policy Strategies, Pretoria, South Africa; 2005.
6. Verdin J, et al. Climate science and famine early warning. Philosophical Transactions of the Royal Society. 2005;360:2155-2168.
7. Theodore W. The economics of being poor. Nobel Prize Lecture (IFAD ZAM, 2014); 1979.
8. Evenson, Gollin. Potential impacts of the green revolution in Africa. IAAE Conference, Beijing, China; 2003.
9. Djurfeldt, et al. The African food crisis. Lessons learnt from the green revolution. UK and USA CABBI; 2005.
10. IFAD, ZAM. (Zambia 2014) Rural poverty in Zambia.
11. Nkolola B, et al. Drivers of deforestation in the Miombo woodlands and their impacts on the environment. Advances in Research. 2016;6(5):1-7. DOI: 10.9734/AIR/2016/23831
12. Narayan PK. Macroeconomic impact of natural disasters on a small island economy: Evidence from a CGE model. Applied Economics Letters. 2003;10:721-723.
13. Caves DW, et al. The economic theory of index numbers and measurement of input, output and productivity. Econometrica. 1982;50(6):1393-1414.
14. Alexandra D. Forecasting the Malmquist productivity index. Journal of Productivity Analysis. 2010;33(2):97-107.
15. Libanda B, et al. 2016; Libanda B. et al. 2015; Rogers P; 2008.
16. Hantuba, et al. Civil society for poverty Reduction. Targeting Small Scale Famers in the Implementation of P1539 C SPR_Zambia; 2001.
17. DJF flood over Zambia. Nat Hazards. Hantuba; 2001. DOI: 10.1007/s11069-015-2069-z
18. World Factbook. Central Intelligence Agency CIA; 2002.
19. World Factbook. Central Intelligence Agency; 2002.
20. Tsakiris GP. A method for applying crop sensitivity factors in irrigation scheduling, Agricultural Water Management. 1982;5: 335-343.
21. Bank of Zambia. Lusaka; 2013. Available: <http://www.boz.zm/>
22. Central Statistics Office. 2010 census of population national analytical report. Lusaka: Government of the Republic of Zambia; 2013.

© 2016 Juliet et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://sciencedomain.org/review-history/15850>