

MPRA

Munich Personal RePEc Archive

Food Security and the Developing World-Emerging Issues

Chawarika, Admire

5 April 2016

Online at <https://mpra.ub.uni-muenchen.de/71073/>

MPRA Paper No. 71073, posted 05 May 2016 16:25 UTC

FOOD SECURITY AND THE DEVELOPING WORLD: EMERGING ISSUES



**DEPARTMENT OF AGRICULTURAL ECONOMICS RURAL DEVELOPMENT
AND EXTENSION. UNIVERSITY OF PRETORIA**

AGRICULTURAL AND RURAL DEVELOPMENT

BY

ADMIRE CHAWARIKA

Copyright

“I certify that I have the right to deposit the contribution with MPRA”.

Abstract

Food security is an important aspect of every developing nation in the process of achieving sustainable development. This analysis therefore sought to discuss the methods and techniques which have been used by other researchers to understand food security. The analysis first presented the background on food security which showed the dire state of food insecurity in these nations. Objectives were then formulated on the basis of the presented background. The objectives of the analysis were to determine the factors affecting food security and discussing the methods and techniques which have been used in identifying them. Identifying the emerging issues which are affecting the achievement of food security was also tackled by the analysis. The theoretical framework on which food security is based was discussed in the analysis. This included availability, access and utilization components of the food security. It was important to note that for example the production functions guiding the supply of commodities accounted for the availability component.

Empirical studies on food security were then presented to provide the evidence on what researchers have practically found in the field. The issues of household asset holding, climate and trade liberalization were identified as some of the issues affecting the attainment of food security. Emerging constraints were then presented against the theoretical and empirical studies provided by the analysis. These were shown as to negatively affecting the attainment of food security both at household and national level with countries like Zimbabwe being cited. Global climate change, bio-fuels and GMO's were among the emerging issues which were affecting food security in the developed nations. However the analysis took into cognisance that these emerging issues have also presented an opportunity to meet food security. This can be shown by the GMO's which have increased agricultural productivity in countries like South Africa.

Conclusion and policy recommendations were then formulated based on the findings from the discussion. These included up-scaling nutritional programmes to deal with the utilization aspect. This was done under the background that there can be availability and access without food security as the utilization component is often neglected. Targeted social nets should also be implemented to cushion those households who cannot meet their requirements from normal agricultural activities.

TABLE OF CONTENTS

Abstract.....	ii
Abbreviations.....	iii
Statement of Purpose.....	1
Introduction	1
Problem Statement.....	2
Research Objectives.....	3
Definition of terms.....	3
Theoretical Framework on factors affecting food security.....	4
Empirical studies on food security.....	6
Emerging Constraints to Food Security.....	9
Summary and Conclusions.....	11
Policy Implications.....	12

References..... 15

ABBREVIATIONS

ADPC	Asian Disaster Preparedness Centre
FAO	Food and Agricultural Organisation
GDP	Gross Domestic Product
HIV	Human Immune Deficiency Virus
IFPRI	International Food Policy Research Institute
WFP	World Food Programme
WHO	World Health Organisation
USDA	United States Department of Agriculture

Statement of Purpose

This is a literature review based on what has been done by past researchers to critically determine emerging issues of food security and proffer solutions. The paper provides a theoretical framework on which the aspect of food security is based. The theoretical analysis is mainly carried out by reviewing secondary data on the definitions and factors affecting food security. The theoretical analysis was based on the availability, access and utilization of food commodities. This was carried out to understand the relationships on which food security is based on. Empirical studies were also analysed on how other researchers had carried out their research. These studies provided a synopsis on what other researchers and organisations view as the factors affecting food security. Again secondary data was used to critically analyse the methods and techniques used by the researchers discussing their merits and demerits. This provided the basis on which policy analysis and recommendations were based.

Introduction

While much effort has been put to achieve global food security, the issue continues to be a challenge. This has been largely due to the difficulties in understanding the nature and extent of the factors affecting the food security. According to Monde (2007) food security refers to the availability of enough food in order for all people to live a healthy, active and productive lives at all times, across all countries and regions, across all income groups, and across all members of individual households. This shows that food security is a multi-faceted aspect which includes physical, social and economic access. Therefore the challenges affecting food security are deemed to revolve around the issues of availability, accessibility and adequacy in terms of nutrients. It is important to note that food insecurity has affected both the developed and developing world, although the later has been greatly affected. The developing world has brunt the greatest effects of food insecurity, and Zimbabwe has not been spared.

Food security is a fundamental aspect for every nation, particularly the developing countries who face multitudes of economic and climatic restrictions. The United Nations listed the removal of hunger and poverty as the first millennium development goal, indicating the centrality of the food security issue. Therefore it is important to explore the nature and extent of the factors affecting food security, tracing some studies which have been done previously. FAO (2010) indicated civil strife, macro-economic imbalances, natural resource constraints,

poor human resource and absence of good governance. Different regions and countries are affected by varying factors to achieve food security, it therefore becomes important to have targeted solutions to the problems. These factors have been more pronounced in the developing world, where coping measures are limited. Therefore there is need to adopt strategies that address both chronic and transitory food insecurity especially in developing world where the effects have been more pronounced.

The World Bank (2007) noted that in the developing world agriculture accounts for around 9% of the GDP and more than half of the total employment. This becomes evident that addressing the food insecurity issues in these areas should be partnered with increasing the incomes and profitability of this sector. It is important to note that studies have been done on the determinants of food security and its measurement but with limited adoption especially in the developing world. Food security issues are becoming more topical in the 21st century because of the increase in population, and the conversion of some food crops into biofuels. This has put pressure on the food supplies and ultimately their prices leading to food insecurity. Hence the paper analysed these issues and methods used by past researchers. An important observation noted is that food security is inherently related to the current issues of global economy and climatic changes. With the different factors affecting food security, it's important to note that food security affects at a micro and macro level with individuals and nations being affected respectively. It therefore becomes imperative to understand the nature and extent of these factors and methodologies used on food security, to be able to proffer solutions to address the scourge.

Problem Statement

Food insecurity has become a scourge greatly affecting the developing countries. Developmental efforts are being hampered because these countries cannot provide food security to the generality of the populace. The multifaceted nature of achieving food security has resulted in most developing countries failing to deal with the issue. Furthermore the emerging issues of climate change, GMO'S and bi-fuels have increased the vulnerability of these countries to achieve food security. There is therefore no clear framework on the nature and extent of how these complex factors have affected the developing countries in achieving food security. The resulting effect of these factors have resulted in food insecurity in most developing countries particularly the sub-Saharan Africa.

Objectives

- To discuss the methods and techniques used in assessing food security.
- To assess the determinants of food security.
- To explore emerging issues affecting food security.

Definitions of Terms

FAO (2009) stated that food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Eicher and Staatz (1985) defined food security as the ability of a country or region to assure, on a continuous long-term basis, that its food system provides the total population access to a timely, reliable, and nutritionally adequate supply of food. This shows the multifaceted nature of the food security definition.

USDA (2003) defined Food insecurity as meaning consistent access to adequate food is limited by lack of money and other resources at times during the year. This means people do not have adequate physical, social and economic access to food. The food insecurity is mainly in two forms which is chronic food insecurity and transitory food insecurity. Chronic food insecurity is persistent long-term periods of poverty which can be caused by shocks on availability, access or utilisation. Transitory food insecurity is mostly caused by short term shocks and variations to access of food. Self-sufficiency at household level is when the food requirements of that household are met, whereas at country level this is achieved through production to meet its needs.

ADPC (2009) defined vulnerability as a set of prevailing or consequential conditions, which adversely affect people's ability to prevent, mitigate, prepare for and respond to hazardous events. Capacity is defined as the assets, resources and skills available within a community, society or organization that can be used to reduce the risks or effects of food security.

Theoretical Framework

The theory of food security is based on the premises of availability, access and utilization. Availability is depended upon the production which is involved. From the basic theory of production, the production function is given by:

$$F(q, x, z) = 0$$

In this case q will be representing a vector of output quantities, c representing the vector of variable input quantities and z is a vector of fixed factor quantities. The variable inputs include labour, capital, seeds and fertilisers. The fixed factors include land and also weather as an exogenous factor which the farmers cannot control. The producers will then choose the combination of inputs which will maximise their profitability given the technology. The maximisation is based on the input demand and output supply functions.

The law of variable proportions states that as input use increases the farmer will optimise production until they incur a loss. As more of variable inputs is added to a fixed input production will initially increase until a maximum point of which further increase will result in decreasing returns to scale. The farmer will therefore produce the agricultural output to a point where the marginal product is equal to zero and this is where the output is at its highest point. The profit maximising farmer will continue producing up to a point where the marginal revenue is equal to marginal cost. This production function is depended upon the availability of the variable and fixed inputs. These are used for production up to an optimal point which the farmer makes a profit. Distribution also affects the availability of the agricultural products (FAO, 2009). Availability of the agricultural products is depended on the production and distribution of the agricultural products.

Debertin (2002) states that the production function in agriculture can also be depicted by use of the Cobb Douglas function which is represented by:

$$Y = AX_1^\alpha X_2^\beta$$

Where X_1 represents capital and X_2 represents labour. The simples of alpha and beta depict the returns to scale during production where values greater than one represents increasing returns to scale, less than one shows decreasing returns to scale and equals to one means constant returns. The Cobb Douglas function is an important production function which shows the importance of capital and labour as factors of production at a farm. The technology and other fixed factors of production depend on the available capital and the labour which is important in the use of these factors of production. The Cobb Douglas function is an important

tool as a production function since it tries to correct the weakness of the linear functions. This means in this case labour and capital affect each other directly and is not autonomous as is the case in linear functions. However the Cobb Douglas function has limitations that there are two inputs which are used for the production of output.

The availability of the agricultural products is also depended on the supply response. The supply of agricultural commodities is depended upon the factors of price of the commodity, technology, weather, speculation and price of competitive products (OECD, 2006). This has an influence on the availability of the commodities and ultimately affects the food security status of the people. The responsiveness (elasticity) of the agricultural commodities is depended on these factors which will ultimately influence their availability.

The maximising conditions of the farmer given the production function are given by the function in the form;

$$Q=q(p, z),$$

P represents the prices, z is private and public factors and Q is the output supply. The supply of the agricultural products is therefore a result of the inherent farm factors and the exogenous factors which the farmer cannot control. To maximize the output therefore the farmer must be able to minimize the costs which are at the farm and be able to deal with the external circumstances which have an impact on the prices of the supply which is received. This can therefore be represented as an equation;

$$Y_t = \alpha L + \alpha P + \alpha T + \mu$$

In this equation Y_t represents the supply output with L, P, T showing Labour, Price, Technology and other factors respectively. Supply output is depended on the labour, price, technology and other factors not accounted for in this equation. The factors affecting the availability of the agricultural commodities are therefore depended upon the determinants which have to be dealt with to increase the supply.

According to IFPRI (2009) Access of the produced commodities is a function represented by the form;

$$A = f(M, P, In, I)$$

Where A represents access, M-market infrastructure, P-Price of the commodity, In-income, I-information. Access to food security is a fundamental aspect of food security and is determined by the factors of market infrastructure, prices, income and information. These are some of the factors which affect the access to food material. Market infrastructure provides the facility role by which the available output reaches the intended people. Although the market infrastructure provides the platform through which the available commodities reaches the people the price of the commodities and the incomes of the beneficiaries are also fundamental aspects to consider. The developing world often faces the challenges of depressed incomes and this affects their access to the food materials resulting in cases of food insecurity. Inflation pressures have also been a challenge to the developing world where they have eroded the incomes of the population severely affecting their ability to purchase food.

The utilization production function can be represented as production function by:

$$U = f(N, S, So)$$

In this function U represents utilization, N-nutritional value, S-Safety, and So-Social value. Utilization is determined by nutritional value, safety and social value. The nutritional value determines whether there are sufficient nutrients for a balanced diet. Cases of malnutrition have affected the developing countries and this has necessitated the issue of utilization to make sure that the nutritional aspects are clearly dealt with. Safety of the food materials is also a fundamental aspect which has affected the developing world. The safety of the food material affects the utilization as unfit food materials affects the utilization. Social value is also another component often overlooked. The social value means the food commodities should fit the way of life of the communities and specific to the target population. Therefore the three aspects of availability, access and utilization are the major components of food security which the theory is based. These components can be depicted as production functions which analysis is done.

Empirical Studies

IFPRI (2009) did a study on the global hunger index, to be able to proffer solutions on food insecurity. The index was calculated as follows.

$$GHI = \frac{PUN + CUW + CM}{3}$$

Where PUN is the proportion of the population that is undernourished, CUW is the prevalence of underweight children under five and CM represents proportion of children dying before the age of five. The index ranges from 0 to 4.9 representing 'low hunger' and from 20 to 29.9 'alarming hunger' and exceeding 30 'extremely alarming hunger'. The results showed that the index had fallen by a quarter from the 1990 levels. The model is a moderately good representation of the global food security status. However it is important to note that the index figures are based on the figures from organisations like FAO and the World Health Organisation. This is not reflective of all the agricultural and health figures which occur. Therefore this is not reflective of all production figures as some areas are neglected. The global human index is mostly concerned about the nutritional and dietary requirements of individuals without indicating the other issues of access and availability of the food materials. The index provides mostly past data, as it does not deal with the current existing tendencies on food security.

Adato and Besset (2009) carried out a research in Malawi, Mozambique, South Africa and Zambia on the effectiveness of cash transfers in alleviating food insecurity. Cash transfers were found to alleviate food insecurity with Malawi experiencing the greatest benefit from these initiatives. It is important to note that governments were involved in these transfers, by supervising the programmes. The results were based on government statistics and independent surveys by the involved organisations. Cash transfers are an important strategy in dealing with people who have already experienced food insecurity as they do not negatively affect the local value chains which are experienced in food aid. However dependency tendencies which could be developed by the beneficiaries were neglected by the study. Therefore much emphasis was put on the positive impacts of cash transfers without having a broad overview of the negative consequences, and causal factors which could have caused food insecurity. Since the governments of these nations were involved in these programmes chances of bias was observed on the success of these cash transfers. Households who do not participate in these programmes could be jeopardised by the rise in food prices as a result of enhanced incomes of those who participate. Therefore food security is a multi-faceted aspect which requires broad based solutions to address the issue.

Chopak (1986) carried out a study on how food security was influenced by the incomes of the selected Zimbabwean households. All sources of income including remittances were analysed, to check whether there was any influence on the food security status of the households. The results showed that various income sources had a great influence on the food security status of

the households. The study was carried out in the rural households which experience persistent dry spells. Therefore much effort should be put on enhancing the income sources of these households, particularly making agricultural productivity profitable. However, like most studies the urban population was neglected. There have been reports of food insecurity in the urban population and this group should be clearly studied. The study also focused mostly on the status of food security by use of surveys using questionnaires on income status. The income sources are a necessary but insufficient indicator on the food security status of households. Therefore other indicators like the nutritional status of the food which the households purchase with the income should also be analysed.

Dercon (1993) carried out an econometric analysis on the factors affecting the major grain prices in Ethiopia. The liberalization of the grain market was found to have a major impact on access of grain by the households in the country. This further illustrates the importance of macroeconomic fundamentals in the food security of nations particularly the liberalisation of grain markets by enhancing access. Local agricultural farmers should have a wide market on which they can sell their products, and also being linked to international markets. Therefore the price which farmers receive for their agricultural commodities has a great influence on their food security status. Shiferaw (2003) identified the major food security determinants for Korodegaga peasants in Ethiopia. The determinants included labour, livestock, land area, weather conditions, education, technology and market access. All these factors had an effect on the overall food security of the households under study. This analysis tried to capture a wide variety of factors which were assumed to affect food security in the area. This was important for the results to have a high degree of accuracy, since it captured most of the determinants.

The Catholic Relief Services carried out a survey in Zimbabwe in 2004 on which 6000 households from six districts were interviewed. The respondents included adults and children who answered various questions on food security. Demographic and economic questions linked to food security were being asked to assess whether these factors had an effect on the issue. These questions included if the households had the sufficient food commodities, using a probit model.

The vector of covariates reflected household composition. Economic status was represented as a vector of covariates reflecting household ownership of assets and income. Social net was represented as a vector of covariates reflecting if the households received assistance. Results showed that rural households have more food insecurity due to limited economic activities

which had an influence on their economic status. This economic status was influenced by the assets and incomes of the households under study. Social networks were found to have less impact on food security as compared to economic status. The results showed the importance of enhancing the economic activities of households for them to secure food security. However it is important to note that although social networks were reported to have less influence on food security, it is an important component for the selected households.

Meinzen-Dick et al (1993) did a study in Zimbabwe to determine the differences in food deficits for natural regions which experience food deficits. Food deficits were mostly experienced in areas which were dry and this had a significant impact on their food security. Profitability of the farmers in the dry-land areas of region 5 were found to be lower than those farmers in natural region 4 who experience relatively higher rainfall amounts. The study therefore advocated for specific irrigation development measures to record the highest results. The study was important in determining irrigation development as a measure of addressing some of the food security issues in those dry areas. Against that backdrop it is also important to note that irrigation development is just one component amongst several, which can be perceived as a panacea to addressing food insecurity. It is therefore important to note that these areas may be suitable for other agricultural ventures which may not necessarily involve irrigation activities. The analysis was therefore important in determining a key issue affecting food security in the region, but not broad in terms of policy recommendations to address it.

Emerging Constraints to Food Security

The developing world faces several emerging issues affecting the achievement of food security. WFP (2008) states that population is becoming an important factor in determining food security. This serves to confirm that population is growing at a faster rate than the food supply leaving a supply gap particularly in the developing world where this has become an issue. The developed world has experienced fairly static population growth and this has not been a major impact as compared to the developing world. Therefore more food supplies to match the population growth should be produced and population controls devised.

Climate change has become a critical issue to consider, for households and nations to achieve food security. This has become pertinent in the developing world which depends mostly on agriculture to meet its food security and economic welfare. Climate change has caused extreme

weather patterns affecting agricultural land, crops and livestock. This means that regions which were once suitable for agricultural activities are being rendered unsuitable for agricultural production. IFPRI (2002) notes that climate change will cause high poverty rates, high vulnerability levels and food insecurity in the developing world due to their low adaptation capacities. The 2008 droughts which affected wheat producing countries like Russia had a significant effect on the prices of wheat and food insecurity of most developing countries. As food supplies become limited, countries restrict exports of the commodities ultimately creating a shortage. This has become important as the effects of climate change are already causing food insecurity particularly in sub Saharan Africa.

The issue of rising fossil fuels has necessitated the growth of biofuels by other countries to reduce their importation bills. Although bio-fuels help these countries to save foreign currency by import substitution, this is creating a supply gap when this aspect is considered in aggregate. GM Watch (2010) noted that bio-fuels can cause food supply disruptions if not dealt with comprehensively. Therefore the issue of bio-fuels should be dealt with comprehensively to ensure that the supply of the food commodities is not affected. This is linked to the current global economic downturn. The World Bank (2012) noted that the sovereign debt crisis in Europe was increasing the chances for food insecurity in the developing world. This was mainly due to the fact that agricultural commodities prices were decreasing due to depressed demand. The countries which rely mostly on these resources especially in the developing world are greatly affected. When there is a global economic downturn countries become inward looking, and reduce their support to the developing world to combat food insecurity. Therefore current global economic conditions create frequent chances of food insecurity to the developing world.

The safety and nutritional aspects of food has become topical recently. This was necessitated by the fact that most emphasis was being put on the availability of adequate food supplies without critically analysing the nutritional aspects. WHO (2010) noted that more than 60% of the children in the developing world were malnourished. It was important to note that some of the areas under study in Ethiopia had normal grain availability but still recorded cases of malnourishment. The issue of nutrition is an important aspect to consider when dealing with food security to ensure that the households and nations have the adequate nutritional requirements. The developed world has strict rules for certification of agricultural products which enter their countries. Developing countries do not have strict conformity of food commodities due to the supply gaps which they experience. Therefore developing countries

should increase their agricultural food production and provide measures in place to ensure that they restrict unsafe food.

Availability of water has also become a pertinent issue to achieve food security. The availability and quality of water has become an important aspect for achievement of food security. Ringler (2010) indicated that the safety and quality of water is being affected by pollution and this is having negative impacts on the populace. Water forms a fundamental aspect of food security and its safety is of paramount importance to ensure that food security is achieved. The WHO (2011) noted that the food security in Zimbabwe's urban population was being affected as the quality of water had deteriorated leading to cases of cholera and typhoid. Therefore as the developing countries strive to achieve food security, the issue of water availability and quality should be dealt with.

The existing constraints to food security are multi-faceted from environmental, economic, social and political factors. These constraints are dynamic as global economic and environmental scenarios change. Therefore the developing world is being presented with vast emerging issues which need strategic and specific solutions to be dealt with.

Summary and Conclusions

The purpose of the paper was to investigate the techniques and methods used by past researchers and characterise food security according to various factors. Emerging issues affecting food security were also analysed to have a broad overview on the current aspects surrounding food security. The environment particularly the issue of climate change has been found to be affecting food security negatively. This has been mainly as a result of shifting weather patterns and extreme conditions which are making agricultural development in the developing world difficult. Therefore it is clear that environmental aspects have a bearing on the food security situation and should be well controlled. Closely related to the issue of climate change water and irrigation have been found to influence food security. The study in Ethiopia found that households with access to irrigation facilities were more food secure than those who did not have access. More investment is therefore needed to critically improve the water quality and irrigation facilities.

Techniques and methods which include surveys, global human index and probit models have been developed to try and measure the food security status of households. The methods have

to a large extent been effective in measuring the aspect. However more emphasis was put into measuring few aspects of food security, whilst neglecting the other issues. Food security is multifaceted aspects which include aspects of availability, adequacy and nutrition. However most studies, though accurate neglected other facets of the issue by having a limited focus. This means past studies have not been broad based in trying to understand the issue of food security. The economic status of households has been shown to have a major impact on the food security issues. This can be shown by the studies carried out in Ethiopia and Zimbabwe, which indicated that those with higher incomes had less risks of being food insecure. Global macroeconomic conditions have been shown to be a determinant of food security in the developing world. As the world economy depresses there is less investment into agricultural activities resulting in cases of food insecurity.

It therefore can be concluded that there are many methods, techniques which have been used to understand the factors affecting food security. Policy measures on the determinants affecting food security can be judged to be the major factors affecting the food security situation. These policy measures have been found to affect the economic, environmental and political determinants of food security. Food security is thus a dynamic and multifaceted aspect which needs new measures to be tackled.

Policy Implications

Macroeconomic conditions which include favourable producer prices have implications on the food security situation of households. The profitability of farmers has an impact on the income of the farmers and ultimately the food security of households. Therefore more research should be promoted for farmers to realise more output and reduce their costs of production. Agricultural production is a major determinant in the reduction of food insecurity and should be made profitable for the households in the developing world to continue producing. Developing nations should therefore have a minimum percentage of about 10% of their GDP towards agriculture, as this forms an important aspect in the reduction of food insecurity. Households should have credit facilities and subsidies to increase their output and reduce the poverty levels.

Technological advancement and research has been empirically shown to reduce food insecurity. This is evident in Kenya where the use of cell-phones by communal farmers to

report market prices has been key in uplifting their livelihoods. Technological progress in crop development, animal husbandry and other facets of agriculture is fundamental in reducing food insecurity. If households and nations can be able to increase their output on fixed land, this can result in surpluses and help ameliorate the issues of food insecurity. Levels of malnourishment in children can be reduced by technological advancements. In this respect irrigation facilities play a critical role in this transformation. Irrigation facilities have become a fundamental aspect in the development of agriculture and ultimately reducing food insecurity. As the world is facing climate change, extreme weather conditions is affecting the growth of certain crops as frequent dry spells are experienced. This necessitates the development of new crop varieties which are able to withstand extreme condition.

Nutritional programmes are also an important aspect in achieving food security. Food security has been mainly focused on availability and adequacy, without much emphasis on the type of food which households are consuming. This has resulted in other households having food supplies in abundance but not meeting the minimum dietary requirements. Therefore people in the developing world should be educated on the importance of nutritious food in achieving food security. This should be inculcated in government policies to make sure that the population has adequate nutritional needs by having legislative requirements. Extension and education initiatives should therefore be made available to the people to make sure that they have the requisite knowledge which would have been researched on. The transfer of knowledge is therefore critical in enhancing agricultural production and make sure that nations and households are food secure. Land has been shown to be a critical determinant for food security. This is based on the fact that the more limited the land area to households the more risks for food insecurity of these households. Therefore it requires these households for land intensification to make sure that the limited land area produces the maximum output. Extension of the technology for land intensification is an important aspect in this respect to make sure that food security is achieved. HIV and AIDS awareness campaigns should be continued especially in Zimbabwe where a significant reduction in prevalence rate has been achieved. HIV/AIDS has claimed the lives of many people in developing countries negatively affecting the labour availability to these nations ultimately resulting in food insecurity.

Targeted social nets which include food aid should be well carried out to ensure that unintended negative consequences do not occur. Food aid has been found to negatively affect the market equilibrium of those countries which the programmes are carried out. More emphasis should be done in integrating the local businesses into these initiatives to make sure that they are not

compromised. Fluctuations in food prices and output require developing countries to have food reserves and storage facilities to enable countries to have buffer capabilities in times of need. Food buffers should be in place to these developing countries to ensure that when there are international supply gaps, households and nations can help each other. For example in Zimbabwe institutions like the GMB should be capacitated to ensure that the countries have adequate food reserves. Linking the communal farmers to international markets is also an important aspect to ensure the food security of these farmers. Making sure that farmers acquire fair prices for their commodities is important for them to compete on the international markets. This however requires the costs of production of these farmers to be reduced by being linked to the international markets.

The issue of GMO's has also had a significant impact on agricultural output. This has seen countries like South Africa embracing GMO's and experiencing phenomenal increases in their total agricultural output. Therefore developing nations should consider adopting these technologies and to help them alleviate poverty. The food security issue is therefore a multifaceted aspect which requires all stakeholders to work together to meet the food security needs. It is also important to note that the constraints of food security are dynamic and new aspects are emerging. This requires tracking measures on these new issues to make sure that the food security measures remain relevant to the emerging concepts.

References

Adato, MAB 2009, *Social Protection to Support Vulnerable Children and Families: the potential of Cash transfers to Protect, Health and Nutrition*, AIDS Care report 21 (S1):60-75.

ADPC 2006, *Community Based Disaster Risk Management for Local Authorities*, UNESCAP Publications, Bangkok, Thailand.

ADPC 2006, *Community-Based Disaster Risk Management For Local Authorities*, UNESCAP Publications, Bangkok, Thailand.

Bank, W 2000, *The Need to Finance Agriculture in Developing Countries*, World Bank Publications, Washington DC, USA.

Bank, W 2012, *Funding for Developing Countries*, World Bank Publications, Washington DC.

Bank, W 2007, *Adjustment in African Economies*, The International Bank for Reconstruction, Washington DC.

Bank, W 2007, *Adjustment in African Economies*, The International Bank for Reconstruction, Washington DC.

Bank, W 2007, *Adjustment in African Economies*, World Bank Publications, Washington DC.

Chopak, C 1986, *Family Income Sources and Food Security*, UZ/MSU Food Security Research Project, Agricultural Economics and Extension, University of Zimbabwe, Harare, Zimbabwe.

Debertin, D (2002), *Agricultural Production Economics*, Department of Agricultural Economics, University of Kentucky

Dercon 1993, *The consequences of Liberalization and Peace for Food Markets in Ethiopia*, Centre for the Study of African Economies and Nuffield College, Catholic University, Louvain.

- Shiferaw, F 2003, *Determinants of Food Security in Southern Ethiopia*, American Agricultural Economics Association, Montreal, Canada.
- F, P 2003, *Gender differentials in land ownership and their impact on household food*, Masters Thesis, Uganda.
- FAO 1996, *Rome Declaration on World Food Security and World Food*, Rome, Italy.
- FAO 2009, *Stimulating Agricultural Productivity in Developing Countries*, Report Paper for Developing Countries, Washington DC, USA.
- FAO 2010, *Provision of Essential Needs to Stimulate Agricultural Production*, Educational Publications, Geneva.
- IFPRI 2002, *Reaching Sustainable Food Security for all by 2020. Getting the priorities and responsibilities right*, IFPRI Publications, Washington DC, USA.
- IFPRI 2009, *International Food Policy Research Institute Report (2008-2009)*, CGIAR, Washington DC.
- Jayne, T, Chisvo, M & Rukuni, MAMP 2006, *Zimbabwe's Food Insecurity Paradox Hunger amid Potential in Zimbabwe's Agricultural Revolution Revisited*, University of Zimbabwe, University of Zimbabwe Publications, Harare, Zimbabwe.
- Meinzen-Dick, R 1993, *Objectives of Irrigation Development in Zimbabwe*, Research Paper, Presented at the UZ/AGRITEX/IFPRI Workshop on irrigation development.
- OECD 2006, *Measuring the Profitability of Farming in the Developing World*, OECD publications, USA

Staatz, EA 1985, *Food Security Policy in Sub-Saharan Africa*, Invited paper prepared for the XIXth Conference of the International Association of Agricultural Economists, Malaga, Spain.

USDA 2003, *Food Security Assessment*, Agriculture and Trade Reports, Washington DC, USA.

Watch, G 2010, *Report on GM Crops and Food Security from India's Parliamentary Standing on Agriculture*', Government Report, GM Watch.

WHO 2010, *Making A Difference: World Health Report*, World Health Organisation, Geneva.

WHO 2011, *Making A Difference: World Health Report Volume 2*, World Health Organisation, Geneva.