



**MIDLANDS STATE UNIVERSITY
FACULTY OF ARTS
DEPARTMENT OF DEVELOPMENT STUDIES**

**THE ECONOMIC CONTRIBUTION OF TOBACCO PRODUCTION
AND MARKETING MODELS IN THE DEVELOPMENT OF
ZIMBABWE**

BY

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DECLARATION FORM

I Clemence Taderera Bwenje do hereby declare that the work here presented, is a result of my effort except where acknowledged and that it has never been submitted in any university for the award of any degrees.

Signed

Student.....Date.....

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ABSTRACT

Agriculture is central to Zimbabwe's economic recovery and prosperity. The sector however continues to face sustainability, productivity, market access and competitiveness challenges. The adoption of tobacco contract farming models in other enterprises has high potential to turnaround agriculture. This study used mixed research methodology to compare economic contributions of tobacco production and marketing models and assess scope for successful transfer of tobacco's successes to alternative enterprises as part of a broader agriculture intensification agenda. The study concluded that tobacco contract farming models are viable and profitable but their potential to further the agriculture intensification agenda depends on how they are regulated to achieve economic and social equity across groups defined by farm level characteristics. The study recommends intensification of tobacco production and trade to cash-in on increasing global demand; and diversification to alternative enterprises through policies, plans, projects and programmes informed by the experience and circumstances of contract tobacco models.

Key words: Productivity, Market Access, Competitiveness Auction, Contract, Tobacco Production and Marketing.

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ACRONYMS

ACE	Agricultural Commodity Exchanges
ANOVA	Analysis of Variance
ARDA	Agriculture and Rural Development Authority
BAT	British American Tobacco
BT	Boostafrica Traders Pvt/Ltd
BTF	Boka Tobacco Floors
CAADP	Comprehensive Africa Agriculture Development Programme
CBA	Cost Benefit Analysis
CF	Contract Farming
CFU	Commercial Farmers Union
CT	Curverid Tobacco Pvt/Ltd
CTP	Chidziva Tobacco Processors
EC	European Commission
ESAP	Economic Structural Adjustment Programme
EU	European Union
FAO	Food and Agricultural Organization
FCTC	Framework Convention on Tobacco Control
FDI	Foreign Direct Investment
FTA	Free Trade Areas
GDP	Gross Domestic Product
GLS	Golden Leaf Services Pvt/Ltd
GMB	Grain Marketing Board
GNP	Gross National Product
GOZ	Government of Zimbabwe

IBI	Index-based Insurance
IC	Inventory Credit
ICT	Information Communication Technology
IFAD	International Fund for Agriculture Development
ILT	International Leaf Tobacco Company
IMF	International Monetary Fund
ITGA	International Tobacco Growers Association
MAMID	Ministry of Agriculture Mechanisation and Irrigation Development
MFED	Ministry of Finance and Economic Development
MFI	Micro Finance Institutions
MIS	Market information Systems
MTC	Mashonaland Tobacco Company
NNP	Net National Income
NT	Northern Tobacco
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnerships
PTAF	Premier Tobacco Auction Floor
RBZ	Reserve Bank Of Zimbabwe
RSKSS	Regional Strategic Analysis and Knowledge Support Systems
SACU	Southern Africa Customs Union
SADC	Southern Africa Development Community
SBU	Strategic Business Units
SDG	Sustainable Development Goals
SSA	Sub-Saharan Africa
ST	Shasha Tobacco Pvt/Ltd

TIMB	Tobacco Industry and Marketing Board
TNC	Transnational Corporation
TRB	Tobacco Research Board
TSF	Tobacco Sales Floor Limited
UNCTAD	United Nations Conference on Trade And Development
UNMD	United Nations Millennium Declaration
WB	World Bank
WHO	World Health Organization
WHOFCTC	World Health Organization Framework Convention on Tobacco Control
WRS	Warehouse Receipt System
WTO	World Trade Organisation
ZAIP	Zimbabwe Agriculture Investment Plan
ZCFU	Zimbabwe Commercial Farmers Union
ZFC	Zimbabwe Fertilizer Company
ZFTA	Zimbabwe Fertilizer Trade Association
ZFU	Zimbabwe Farmers Union
ZIMASSET	Zimbabwe Agenda for Sustainable Social and Economic Transformation
ZIMVACC	Zimbabwe Vulnerability Assessment Coordination Committee
ZLT	Zimbabwe Leaf Tobacco Company
ZNFU	Zimbabwe National Farmers Union
ZTA	Zimbabwe Tobacco Association
ZTP	Zimbabwe Tobacco Processors
ZTSA	Zimbabwe Tobacco Seed Association

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Zimbabwe is endowed with productive land and water resources for agriculture (GoZ, 2013, 2015a), which is a key instrument for economic development, poverty reduction, and food and nutrition security (Kassie, Zikhali, Pander and Kohlin, 2011). The land reform transformed the agriculture production structure into a 99% smallholder dominated structure and brought the majority of Zimbabweans in the mainstream of the agriculture-led economy. Under crippling liquidity challenges and fiscal space, limited access to finance, high cost of production, poorly functioning input and output markets, poor production and market infrastructure, high post-harvesting losses, poor quality and inconsistency of production and supply, and climate variability, these productive resources remain underutilised. The smallholder agriculture which is now the engine of development continues to face sustainability, productivity, market access and competitiveness challenges (GoZ 2015a, 2015b, 2012) across the various crop and livestock enterprises. This has resulted in stagnation of economic growth, and increasing poverty and food insecurity.

During the 2014/15 season, the country experienced a cereal deficit of 700 000 MT as a result of a fall in maize production by 49% and small grains by 70% (GoZ, 2015). The Zimbabwe Vulnerability Assessment Coordination Committee (ZIMVACC)(2015) estimated that 16% of the population would require food handouts during the peak hunger period of January – March 2016. The import of agriculture commodities has surged.

There is consensus among development practitioners that raising agricultural productivity and improving market access and competitiveness is central to accelerating broad-based economic growth, reducing poverty and improving food and nutrition security in Africa (ReSAKSS, 2011, European Commission, 2012, World Bank 2010). Indeed, enhancing and sustaining productivity improvements, market access, competitiveness and and broaden economic growth is at the centre stage in the Government of Zimbabwe's quest for a sustainable green revolution (GoZ 2015b). Since early 2000s, the Government of Zimbabwe (GoZ) has been implementing agriculture intensification policies, plans, projects and programmes (4Ps) aimed at increasing land utilisation and output per unit of agricultural land, market access and competitiveness in order to induce economic growth, and reduce poverty and food insecurity. Such interventions took the form of direct government intervention including land redistribution, crop and livestock input support schemes, provision of tillage and mechanisation services, negotiation of lines of credit to assist farmers acquire mechanisation, and irrigation machinery and equipment, setting of floor producer prices for grain and maintenance of the Strategic Grain Reserve. However, not withstanding the noble intentions, these interventions have largely served to increase pressure on the fiscus, while productivity market access and competitiveness remain on the margin.

1.2 STATEMENT OF THE PROBLEM

In the Mid-Term Fiscal Review 2015, Government called for agriculture intensification and diversification based on transfer of successful production and marketing models such as contract farming, which have been seen to be successful in cotton and tobacco, to other agriculture commodities with high potential to contribute to the economy. This same call has been echoed in Mozambique. According to IFAD (2003), contract farming in Mozambique

was positive in expanding cotton growing, increasing production and standards of living of involved smallholders. And as result government has shown signs of seeking to extend contract farming over vast areas with high agricultural potential, with a view to creating public-private partnerships (PPPs) that could significantly boost agricultural production and reduce rural poverty. In his paper on Smallholder Agriculture Production Mutami (2015) called the State to roll back marketing boards and replace them with competitive markets such as the tobacco auction market. In the Zimbabwe Agriculture Investment Plan (ZAIP): 2013 – 2018, the GoZ (2013) sites contract farming as an acceptable financing mechanism for the agriculture sector that provide inputs, extension and technical support services, mechanisation and irrigation equipment, gurrantes farmers output markets and generate revenue for farmers and foreign currency for the country.

There are a number of studies that have been done on the advantages and disadvantages of contract farming in Zimbabwe and other tobacco producing economies. However, little has been done to clearly justify these calls by governments and stakeholders. Tobacco contract farming is largely credited for its increasing gross revenue and foreign currency generation for farmers and the country country respectively. This was US\$527 million in 2012 and US\$685 million in 2014 (TIMB, 2014). The finding by the Zimbabwe Vulnerability Assessment Committee (ZIMVAC) (2014) however, fail to confirm a positive relationship between tobacco and food security. The Committee indicates that 22.5% of the rural households are experiencing various levels of poverty and of these 5% are tobacco growing households. This shows that poverty levels in tobacco farming areas have not decreased in line with developments in the tobacco sector suggesting that the benefits realised from tobacco production and marketing are not trickling down to the somes farming sectors and the surrounding communities. This puts the contribution of tobacco production and marketing model to economy at question.

For development practitioners, the question is “Is it really benefiting farmers and the economy?” There is need to evaluate the economic dominance of contract farming to farmers and the economy over other alternative production systems such as the auction system taking in to consideration the cost at which contract farming is mobilising these resources into agriculture to generate the much cherished revenue for the farmer and the economy, and provision of some guidance on how such transfer of successful policy aspects of tobacco and cotton production would be feasible.

For governments, the question is “what policy instruments and incentive structures needs to be put in place not only to facilitate and incentives contract farming investments into alternative crop and livestock value chains, but also to ensure that such investments are beneficial to farmers and the economy?” This is particularly so bearing in mind the specificities associated with successful policies formulation and implementation. As the GoZ (2014a) puts it in its position paper on the World Health Organisation (WHO) Framework Convention on Tobacco Control and FCTC), successful intensification and diversification, based on the transfer of contract farming to other crop and livestock enterprise, requires a clear understanding of the tobacco industry and tailoring of the transfer process – policies and incentive structures – to the local level conditions including farmer level characteristics such as natural region, gender, sector, age, experience and irrigation status. This study is a response to these existing information gaps.

1.3 RESEARCH OBJECTIVES

The overall objective of the study is to conduct an economic evaluation of the contribution of tobacco production and marketing models to development in Zimbabwe and assess the scope and feasibility for extending or transferring the successful aspects of the tobacco production and marketing value chain to alternative crop and livestock enterprises.

The study is under pinned by the following five (5) specific objectives:

- i. To assess the tobacco industry value chain structure, and alternative tobacco production and marketing models and how they promote productivity gains, and global market access and competitiveness;
- ii. To evaluate the economic benefits accruing to farmers and the economy under the alternative tobacco production and marketing models and establish which model is more beneficial to farmers and the economy;
- iii. To determine the association between alternative tobacco production and marketing models and the various farm level characteristics including sector, gender, agro-ecology, irrigation status and farmer experience as well as their association with determinants of income such as quality grades achieved;
- iv. To assess how farm level characteristics such as sector, gender, agro-ecology, irrigation status and experience condition or influence economic benefits under alternative tobacco production and marketing models; and

- v. To draw lessons from tobacco production and marketing which can be used for agriculture intensification through the copying the successful features of the production and marketing model to alternative crop and livestock enterprises

1.4 RESEARCH HYPOTHESIS

The research will test the following three hypotheses:

- i. H_1 : Tobacco farmers and the nation economy do not benefit more from production and marketing of tobacco under contract farming arrangements.

H_0 : Tobacco farmers and the national economy benefit more from production and marketing of tobacco under contract farming arrangements.

- ii. H_1 : There is no relationship between the tobacco production and marketing models and farmer level characteristics

H_0 : There is a relationship between the tobacco production and marketing models and farm level characteristics.

- iii. H_0 : Farm level characteristics do not condition the level of economic benefits that accrue to farmers and the economy under alternative tobacco production and marketing models.

H₁: Farm level characteristics do condition the level of economic benefits that accrue to farmers and the economy under the alternative tobacco production and marketing models.

1.5 RESEARCH QUESTIONS

- i. What is the tobacco value chain structure in Zimbabwe?
- ii. What are the alternative tobacco production and marketing models in Zimbabwe?
- iii. What is the relationship between tobacco production and marketing models, their economic benefits, and farmer level characteristics;
- iv. What lessons can be drawn from tobacco production and marketing models for duplication to achieve productivity, and gain domestic, regional and global market access and competitiveness of alternative crop and livestock enterprises?

1.6 PURPOSE OF THE STUDY

The purpose of the study is to assess the economic contribution of tobacco production and marketing models and the possibility of duplication of successful aspects in other agriculture enterprises. The study describes the tobacco value chain structure and derive quantitative measures and values of economic benefits from alternative tobacco production and marketing models at the farm and national level to ascertain which model benefits farmers and the nation more; and review how farm level dimensions (gender, sector, agro-ecology, irrigation and farmer experience) of the economic benefits should be taken into account in policy decisions to influence tobacco control and the extension of production and marketing models to alternative crop and livestock enterprises.

The study describes the tobacco value chain through a qualitative research methodology which emphasises the views of industry players on the benefits of alternative tobacco production and marketing models, and detail the scope for expanding the successful aspects of the production and marketing models to alternative crop and livestock enterprises. Lastly the study explored the future of tobacco in light of the World Health Organisation (WHO)'s Framework Convention on Tobacco Control (FCTC).

The results of the study are expected to inform agriculture intensification and diversification policies relating to contract farming and the auction system. The results of the study will also contribute to improvements in policy interventions design across agro-ecological regions and agriculture enterprises and assist in making agriculture planning choices like: (1) auction or contract farming? (2) invest in low or high potential areas? (3) target small or large farmers? (4) focus on food or high value cash crops? (5) local or foreign investors?

1.7 JUSTIFICATION

The study is motivated largely by the false paradigm development theory which according to Todaro (1998) warns against the blind adoption of development recommendations that have not been carefully examined as to where and the circumstances they have and are working. The theory argues that such blind adoption may actually lead to stalling of development, increasing poverty, and food and nutrition insecurity. This means that the transfer of successful production and marketing models, policies and strategies from successful enterprises to poorly developed enterprises may not necessarily guarantee successful

agriculture intensification and development of an economy. Hence the study seeks to answer some very fundamental questions: “Is contract tobacco production and marketing model the right developmental model for other crop and livestock enterprises? Is contract tobacco production and marketing really more successful than the auction system based on socio-economic measures of development at the farmer and national levels to warrant its extension to other crop and livestock enterprises so as to grow their contribution to the economy?”

There are variations in contract tobacco farming and location specific characteristic such as agro-ecosystem, irrigation, area and gender are key in determining the feasibility, profitability and acceptability of production and marketing models. It may actually be the case that not all types of contract farming models are profitable. Effective formulation of policy to influence adoption of the tobacco model in other enterprises requires information about individual variations of the model and their specific impacts on productivity and income.

The call to duplicate tobacco contract farming is largely based on increases in gross revenue received by farmers and gross foreign currency earnings realised by the country. However, there are no studies that have quantified or estimated the partial or full economic costs and benefits of contract tobacco production and marketing that accrue to farmers and the economy. The one question that comes to mind is at what cost to the farmer and the economy is contract farming mobilising resources into tobacco to generate the much celebrated revenue and foreign currency. In order to find out if a grower is benefiting there is need to compare productivity gains with the alleged loss of revenue through low leaf prices and increased costs of inputs under contract farming. This should then be compared with the net of better leaf prices, low input costs and loss of productivity under the auction system.

In its rural development strategy – The Revout Approach - the Government of Isreal (2000), notes that the realisation of agriculture development is a result of responses to government policy by a multitudine of social and economic investors – farmers, investors, contractors, processors and merchants. Hence, the transfer of contract production and marketing model to alternative crops and livestock enterprise, as a development strategy, is a process that requires government to put in place strategies and policy incentives to influence these investors to duplicate what they are doing in tobacco to alternative crop and livestock enterprises. The GoZ (2014a) notes that if such strategies and policy incentives are to work effectively, they must be locally relevant and contextualized. Hence the study looks at an industry specific (tobacco) value chain analysis to understand its setting and the dynamics responsible for the industry’s success including understanding how farm level dimensions (gender of farmer agro-ecological, experience in tobacco farming, and availability of irrigation) impact on economic benefits under each the various tobacco production and marketing models.

The study was thus key to establishing whether the model to be transferred is really successful based socio-economic measures of development at farmer and national levels. In this regard the study will ascertain if Zimbabwe tobacco farmers and the nation are really benefiting from the alternative production and marketing models to warrant the extension of its model to alternative crop and livestock enterprises and grow their contribution to the agriculture gross domestic product. The study also seeks to understand the various dimensions of the economic benefits under each production and marketing model. To ensure the transfer of the successful aspects of tobacco production and marketing is to be successful, the study seeks to establish under which of the alternative tobacco production and marketing models are farmers and the economy benefiting more? And have a clearer understanding of

how farm level factors such as gender, agro-ecological, technological and farmer experience condition the economic benefits under the alternative tobacco production and marketing models.

At the national level, informed by the centre periphery development theory, it is not clear whether the nation is benefiting from the tobacco income or is relying under trade abuses by the developed markets. The study fills this gap by establishing whether Zimbabwe as a developing nation is immune to trade based abuses by the developed world, where they import cheap raw tobacco and export back to Zimbabwe more expensive processed tobacco resulting in a negative balance of payments. The study thus was conducted to give a clear understanding of the flow of income in the tobacco production and marketing economy.

The results of the economic analysis are of particular importance as ingredients into formulating agriculture intensification policies, projects and development programmes that promote tobacco production and marketing as well as the extend tobacco production and marketing models to other crop and livestock enterprises in an attempt to duplicate and harness the successes aspects of tobacco production and marketing. Without a clear understanding of the industry setting and the production and marketing dynamics, the extension of the tobacco production and marketing model to alternative crop and livestock enterprises may actually be misinformed and ill-conceived to the extent of stalling development as would be predicted from the false paradigm development theory.

1.8 DELINEATION / DELIMITATION OF STUDY

The study was national in approach and looked at the tobacco economy comprising production, marketing and consumption. The economic analysis is limited to the economic costs and benefits of tobacco without reference to the health challenges which are the subject of concern under WHO FCTC. The the study did not distinguish between flue-cured and barley tobacco. The value chain analysis focused on input supply, production and marketing stages. The focus on processing was only for completeness' purposes.

1.9 LIMITATIONS

The major limitation of the study was the time frame within which it had to be completed taking in to consideration the rate of release of information. The tobacco industry is very competitive. Some value chain players were not willing to release information on costs and benefits. A number of sources of information had to be instituted to come up with standard costs which were used in the cost benefit analysis. These include contractors themselves, the TIMB and Zimbabwe Tobacco Association (ZTA) and farmers. The reluctance to release of cost and benefit information made it impossible to make a margin analysis across the value chain within the time frame of the study. Also, information on tobacco capital flows could not be obtained in time and the study had to depend on the current account for a view on the development prospects of tobacco to the economy.

1.10 ORGANISATION OF THE STUDY

The study is organised into five chapters. Chapter 1 gives the background to the study. Chapter 2 literature review, which looks at work done by others in the area and explore theory in the area of sustainable production and productivity, market access and competitiveness. Chapter 3 is the research methodology. Chapter 4 is the presentation of results of the study. Chapter 5 makes the conclusions of the study and a cocktail of recommendations for agriculture intensification.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents the theoretical framework for assessing the actors and factors that influence the performance of the tobacco industry and relationships among value chain players to identify successes and constraints to increased productivity, market access and competitiveness in the tobacco industry and how these constraints have been overcome in order to draw lessons for broader agriculture intensification and diversification agenda.

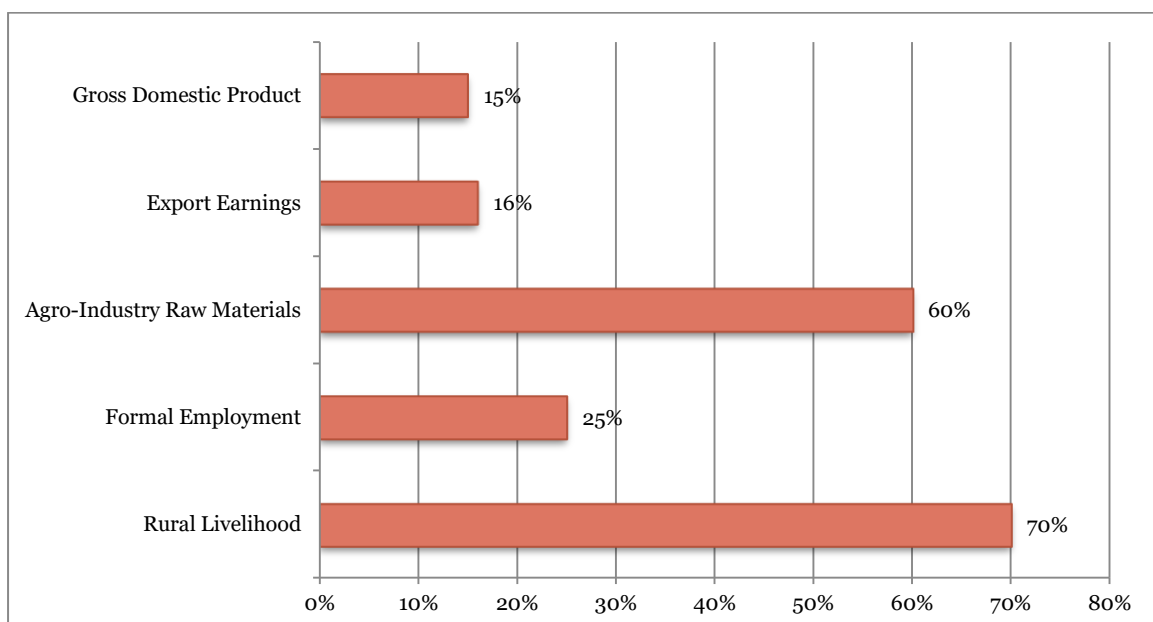
2.2 AGRICULTURE AND DEVELOPMENT

The World Bank (2010) indicates that more than a two thirds of developing countries live in rural areas and depend on agriculture for their livelihoods. This renders agriculture a more effective instrument of development and means of fighting poverty in the developing world. Kassie (2011) and World Bank (2012) agree that sustainable agriculture intensification and diversification based on raising agriculture productivity and increasing efficiency, market access and competitiveness of agricultural value chains is basic to the success of rural economies in terms of increasing incomes, poverty reduction and food and nutrition security.

The World Bank Report of 2008 supports this position indicating that growth in Gross Domestic Product (GDP) originating in agriculture is about four times more effective in raising incomes of extremely poor people than GDP growth originating outside the sector.

The 2012 Census Report confirms that in Zimbabwe agriculture is the major source of livelihood for 67.2% (of which 52% are women) of the population living in rural areas and remains. The GoZ (2015) believes that agriculture remains the mainstay of the Zimbabwean economy with potential of contributing between 12-18% to Gross Domestic Product (GDP), 16% of national export earnings and 60% of raw materials to agro-industries. The GOZ (2015) further indicates that agriculture also supports a third of the formal labour force through its backward and forward linkages with other sectors of the economy. Sustainable agriculture intensification thus remains the driver for the Zimbabwe's economy and a key instrument for reducing poverty, food and nutrition security and economic development (Kassie et al, 2011).

Fig: 2.1 Importance of Agriculture and the Economy of Zimbabwe



Source: Ministry of Agriculture Mechanisation and Irrigation Development, 2014

Zimbabwe is endowed with productive land and water resources for agriculture which have not been fully utilised or leveraged (GoZ, 2015a). The agriculture sector however continues to face sustainability, productivity, market access and competitiveness challenges (GoZ 2012) across the various crop and livestock enterprises resulting in stagnation of agriculture and economic growth, increasing poverty and food insecurity. In order to reverse these GoZ (2015b) in its Mid-Term Fiscal Policy Review argued for the transfer of such agriculture intensification strategies as contract farming which have been successful in tobacco and cotton, to other crop and livestock enterprises.

2.3 AGRICULTURE INTENSIFICATION: PRODUCTION AND PRODUCTIVITY

2.3.1 Drivers, Source and Measures of Agricultural Productivity

The Regional Strategic Analysis and Knowledge Support System (ReSAKSS), (2011) define agriculture intensification as a sustained increase in agricultural productivity measured as the ratio of the weight or market value of agricultural outputs to agricultural inputs and compared to different types of inputs such as dollar invested, labour and land. They argue that productivity is driven by policies and institutions, investment and innovation all targeted at sources and drivers of productivity, market access and competitiveness. This is supported by FAO *etal*, (2012) who indicated that the sources of productivity include mechanization, and high yield varieties, irrigation, increased chemical use and specialization. The International Fund for African Development (IFAD) (2004) highlights contract farming, warehouse receipts, agriculture commodity exchanges, insurances and subsidies as the major sources of market access in developing countries..

The World Bank (2012) notes that one way to increase the competitiveness of an industry or product on the global market is to produce more efficiently. The FAO et al (2012) confirms that increasing agricultural productivity provides more food and increase prospects for growth and competitiveness on agricultural markets. The organisation indicates that increases in agricultural productivity lead to agricultural growth and helps to alleviate poverty in poor and developing countries, where agriculture employs the greatest portion of the population. As the sector become more productive, its comparative advantage in agricultural products increases which means that it can produce these products at a lower opportunity cost than can other regions. Therefore, the sector becomes more competitive on the world market.

2.3.2 Policy, Legal and Regulatory Framework for Agriculture Intensification

The Ministry of Agriculture Mechnaisation and Irrigation Development (2014u) summarises the policy framework for agriculture intensification from the global level, through continental, regional, national and sector levels down to sub-sector and thematic levels.

Table 2.1: The Policy, Legal and Regulatory Framework for Agriculture Intensification

Level	Policy, Legal and Regulatory Framework
Global	Sustainable Development Goals (SDGs)
	WTO Protocols and Agreements: Agriculture, SPS and Trade Facilitation

Level	Policy, Legal and Regulatory Framework
Continental	Comprehensive Africa Agriculture Development Programme, Agenda 2063
Regional	Comesa Common Policy on Agriculture Comesa Regional Agriculture Programme, Comesa Regional CAADP
	Regional Indicative Development Plan, Regional Agriculture Policy
National	Zimbabwe's Agenda for Sustainable Socio-Economic Transformation (ZIMASSET), Food and Nutrition Security Policy, Fiscal and Monetary Policy and 10 Point Plan for Economic Growth,
Sector	The Zimbabwe Comprehensive Agriculture Policy Framework (2015-2035), Zimbabwe Agriculture Investment Plan (ZAIP) (2013 – 2018)
Sub-sector	Mechanisation and Irrigation Development Policy, National Livestock Development Policy, National Livestock Development Programme.
	Acts of Parliaments (39) Relating Agriculture
Thematic	National Gender Strategy for Agriculture
	Agriculture Sector HIV/AIDS Strategy
	National Contract Farming Strategic Framework

Source: Ministry of Agriculture Mechanisation and Irrigation Development, 2014u

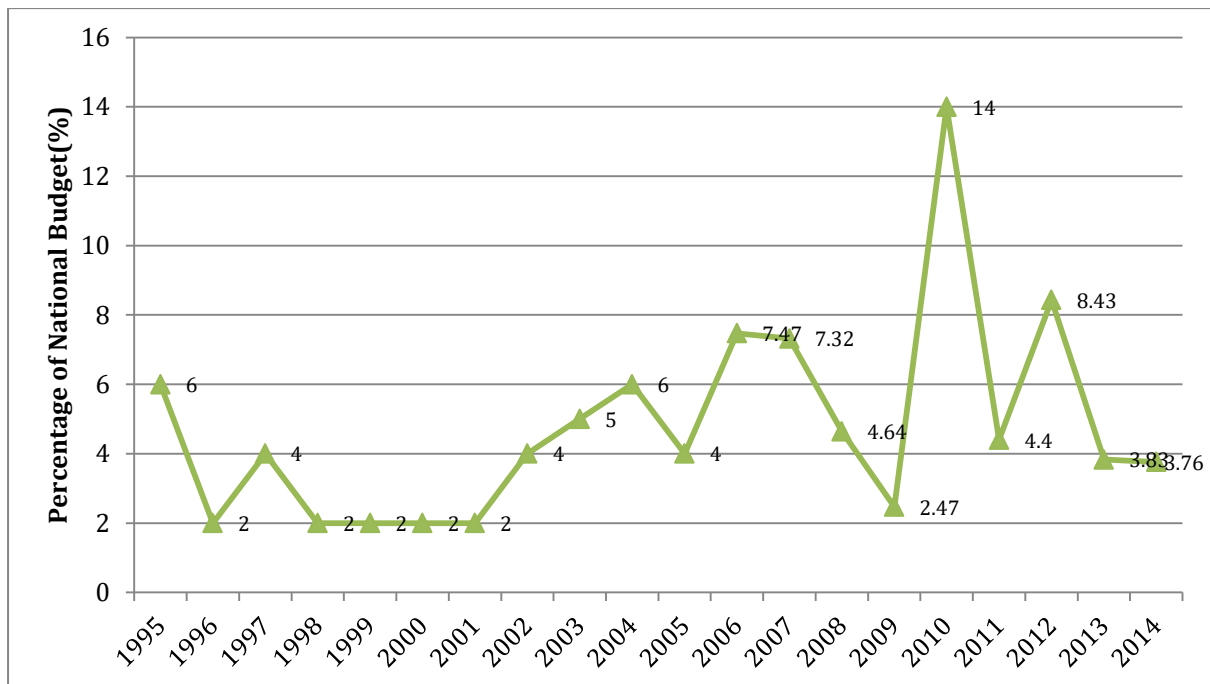
The policy objectives for agriculture intensification in the context of the Comprehensive Africa Agriculture Development Programme (CAADP), ZIMASSET, The Ten Point Plan, the Zimbabwe Agriculture Investment Plan (ZAIP) 2014 – 2018 are to increase crop and

livestock production to meet national demand and generate surplus for value addition and beneficiation for export of processed products. The priority agriculture intensification investment areas stated in ZAIP are:

- i. Increasing production and productivity through improved management and sustainable use of land, water, forestry and wildlife resources;
- ii. Increased participation of farmers in domestic and export markets through development of an efficient agricultural marketing system and enabling environment for competitive agriculture production, investment and trade;
- iii. Ensuring food security and nutrition security for all people at all times particularly among vulnerable groups by facilitating a cohesive multi-sectoral agricultural response; and
- iv. Improving access to appropriate agriculture technologies to increase productivity.

The ZAIP indicates that the investment strategy in the context of the CAADP is that Government will provide catalytic investment of 10% of GDP in agriculture strategic areas – such as infrastructure, farmers’ syndicates and small and medium sized agro-buisnesses – to realise a 6% annual growth in agriculture to provide leverage for farmers and private sector and is to operate competitively.

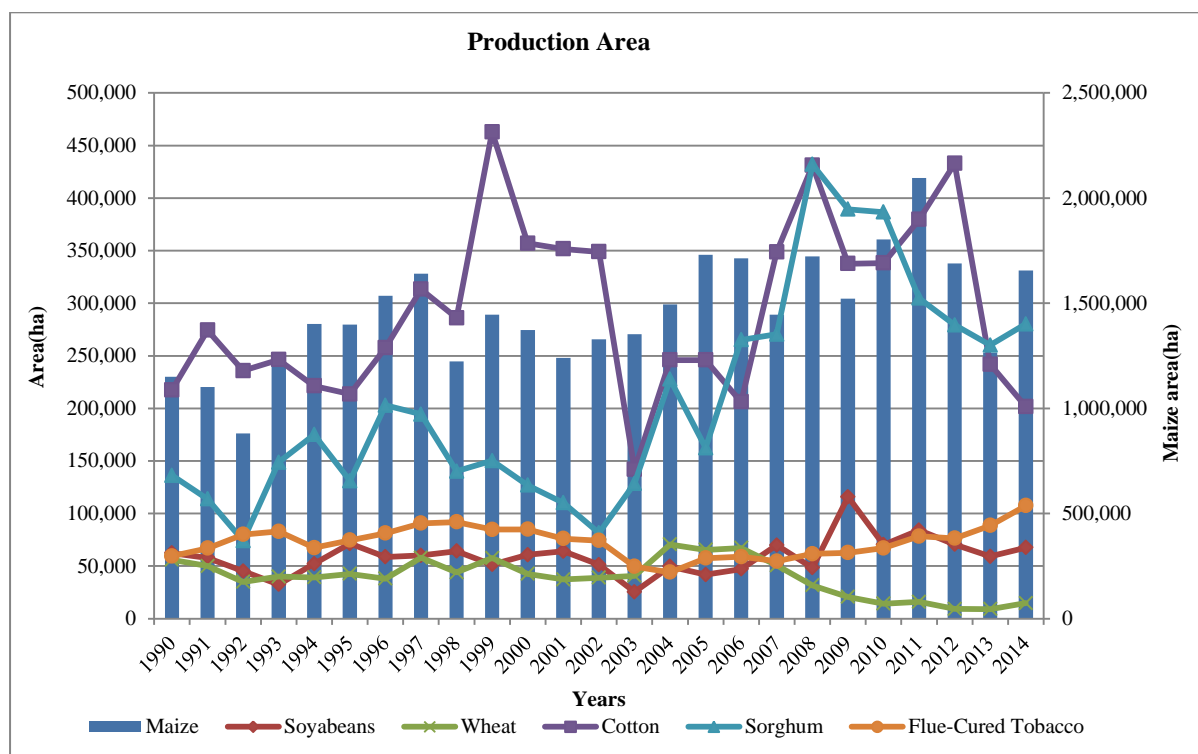
Fig 2.2: Trends in Public Investment in Agriculture as Percentage of GDP



The assessment of Zimbabwe's performance however shows that Zimbabwe still remains below the 10% mark that is stipulated in the CAADP.

2.3.3 Review of Agriculture Productivity trends

Fig 2.3: Productivity Trends for Various Crops in Zimbabwe: 1990 – 2014



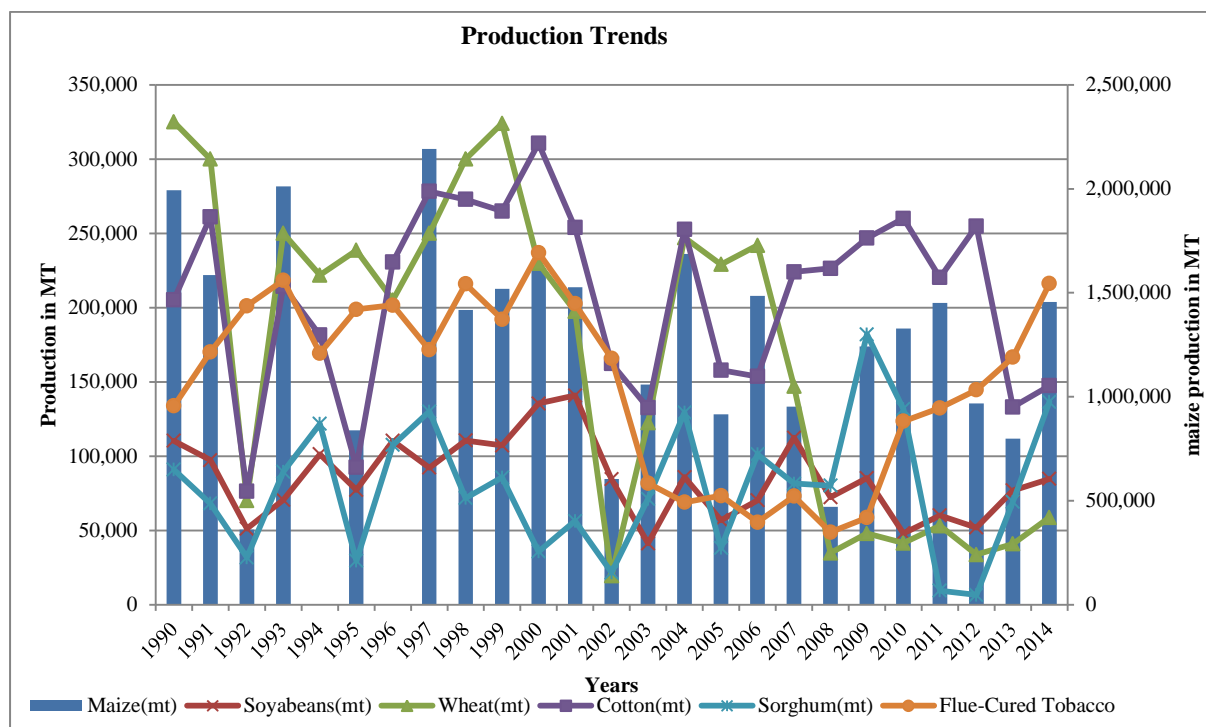
Source: Ministry of Agriculture Mechanisation and Irrigation Development, 2015

The are three distinguishable periods: 1990 – 2002, 2003 – 2008; and 2009 – 2014. These are defined by economic reforms: Economic Structural Adjustment Programme (ESAP) and Zimbabwe Programme for Economic and Social Transformation (ZIMPREST), the Fast Track Land Resettlement Programme; and Dollarisation, market liberalisation respectively.

The are under production remained relatively constant for wheat, soyabeans, flue-cured tobacco during the 1990 – 2002 period. This trend remained during 2003 – 2008 after which the area under wheat started to fall while that of flue-cured tobacco and soyabeans started to increase and have surpassed the 1990s levels.

The area under sorghum, maize, cotton increased and reached peak in 1996, 1997 and 1999 respectively before falling to reach their lowest levels in 2002, 2001 and 2003 respectively. The respective areas started to increase between 2003 – 2008 before the trend reverses a between 2009 - 2014.

Fig 2.4: Productivity Trends for Various Crops in Zimbabwe: 1990 – 2014

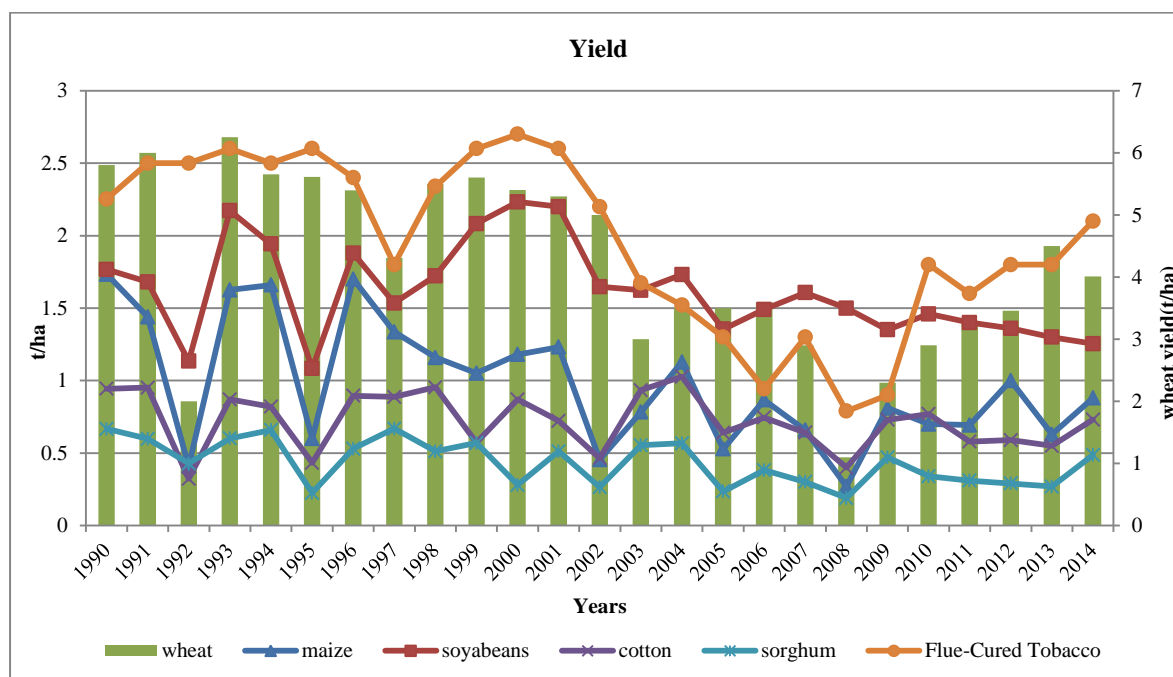


Source: Ministry of Agriculture Mechanisation and Irrigation Development, 2015

The trend for production followed the same as the area, with troughs during years of drought. These including 1992, 195, 2002, 2005, 2008 and 2013. The production of tobacco, cotton and maize were the most responsive to dollarisation. Tobacco production sustained the increase in production (together with wheat and soyabeans at a low scale), while that of cotton and maize started to decline in 2012. This was due to fluctuating international cotton

prices for cotton and tightening liquidity for maize which constrained government input support schemes.

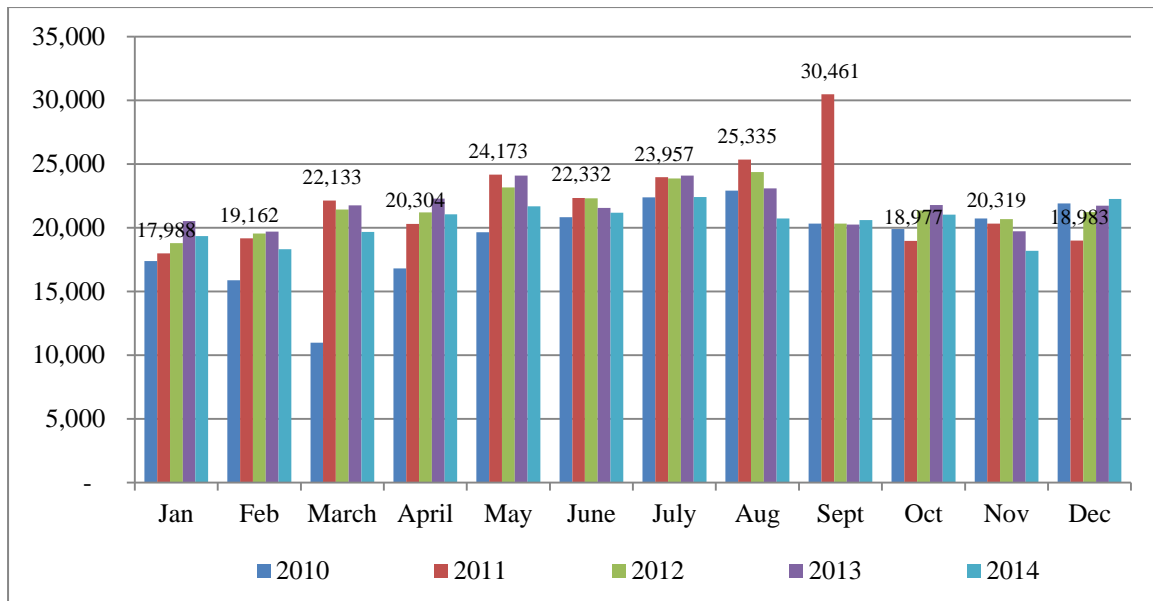
Fig 2.5: Productivity Trends for Various Crops in Zimbabwe: 1990 – 2014



Source: Ministry of Agriculture Mechanisation and Irrigation development, 2015

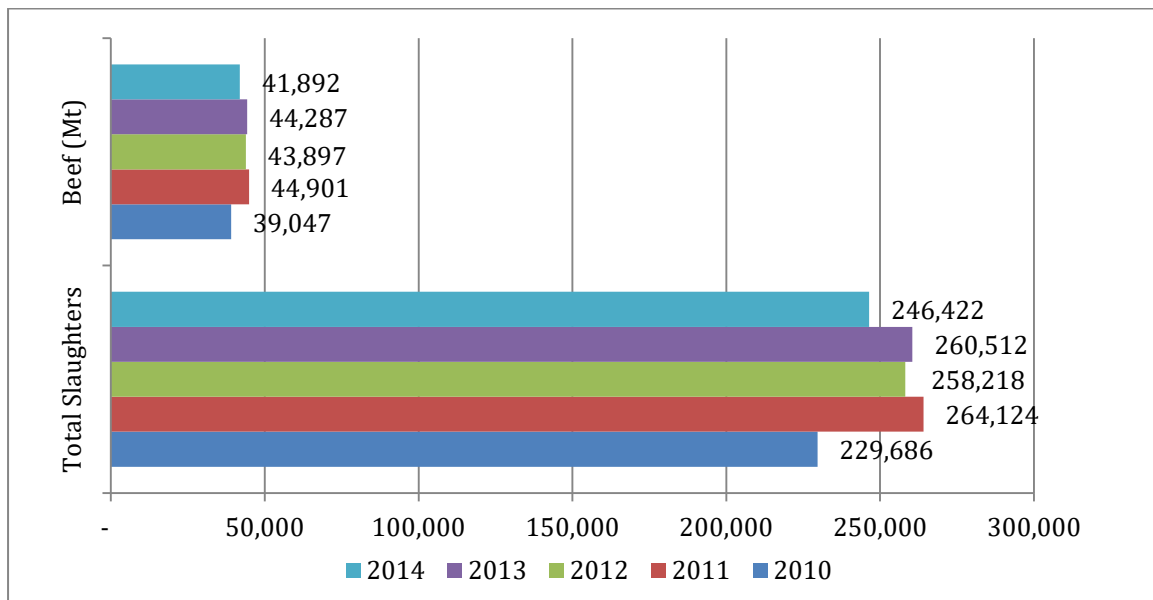
The productivity was on a declining trend between 1990 and 2008. The trend started to increase in 2009 to date for tobacco, maize and wheat while it continued to fall for soyabeans, and remained almost constant for sorghum and cotton. Tobacco and wheat are leading the pack, in terms of productivity gains, but are yet to achieve their respective highest levels of 2000 and 1993 respectively. The troughs in the trends are indicative of drought years.

Fig 2.6: Beef Slaughter by Month: 2010 – 2014



Source: Ministry of Agriculture Mechanisation and Irrigation development

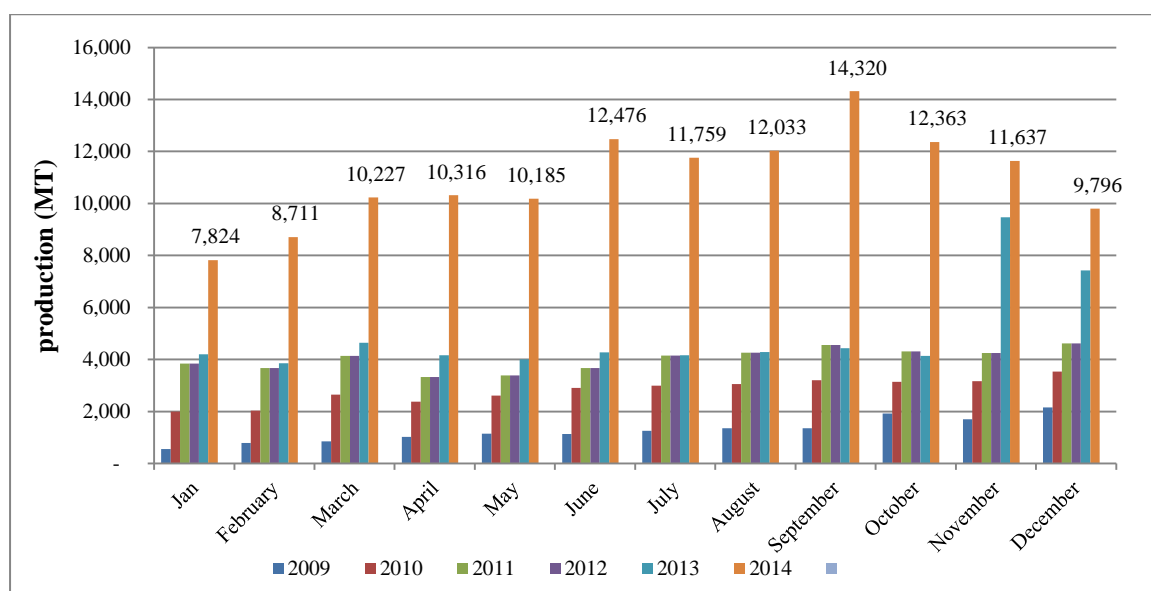
Fig 2.7: Total Beef Slaughter and Meat Production: 2010 – 2014



Source: Ministry of Agriculture Mechanisation and Irrigation Development, 2015

Beef slaughter fluctuated around 21,000 MT per month (252,000 MT per annum) since 2010 with little productivity gains due to low demand resulting from high prices and tight liquidity.

Fig 2.8: Broiler Meat Production: 2010 - 2014



Source: Ministry of Agriculture Mechanisation and Irrigation development, 2015

The production of broiler meat increased significantly between 2010 and 2014 as an alternative to beef. The increase in broiler production was driven by increasing focus on broiler production as an emerging source of livelihoods spurred by contract farming. The increased support to local production through the ZIMASSET, launched in 2013 is responsible for the sharp increase in 2014. There is increasing knowledge of production of chicken following establishment of representative poultry farmer organisations including the Poultry Producers association (PPA), Zimbabwe Women Poultry Producers Association (ZWPPA), and the Livestock and Meat Advisory Council (LMAC).

2.4 AGRICULTURE VALUE CHAINS

2.4.1 The Value Chain Structure

The IFAD (2012) states that value chains represent a series of actors, from input suppliers through producers and processors to exporters and buyers, and the full sequence of value-adding activities involved in bringing a product from production to the end-consumer. In the same context, the World Bank (2010) indicates that agriculture value chains encapsulate the sequence of steps, flows, investments, actors, and inter-relationships that characterize and drive the process from production to delivery of a product to the market. This is summarised by Miller and da Silva (2007) who indicate that agriculture value chains include the “farm-to-fork” set of inputs, processes and flows.

Diagram 2.1: Basic Agriculture Value Chain Model



Source: Value Chain Structure and Content based on Duguma (2012), Bank (2010) and IFAD (2012)

The World Bank (2010) and IFAD (2012) agree that enhancing value chain competitiveness have increasingly been recognized as an effective approach to generating growth through adding value, diversifying rural economies, increasing rural household incomes and reducing rural poverty in most sub-Saharan Africa (SSA) countries. The study applied the value chain analysis approach to the tobacco industry with a view to understand the production and marketing models and the sources of productivity, market access and competitiveness.

2.4.2 Governance of Agriculture Value Chains

The governance of agro-value chains is an important ingredient for their success. Abdulah and Khalid (2013) argue that today's agriculture business environment is characterised by increasing globalisation, liberalisation and competition and that corporate strategy and parenting has become increasingly critical in government as it is in the private sector. This is especially so for Ministries that intervene in diversified agriculture value chains through established or establishing parastatals or agencies and in some instances 100% state-owned private companies to promote agriculture intensification. The Reserve Bank of Zimbabwe, in its 2006 Monetary Policy Statement, referred to parastatals as "the missing link" in the country's economic turnaround efforts. Through a fish bone analysis, the bank singled out GMB and ARDA as missing links in agriculture intensification efforts.

In the context of corporate strategy and parenting, parastatals are strategic business units (SBU) or subsidiaries for Ministries. The Ministries themselves become the multi-business corporates (or parents) for which corporate parenting is an important instrument of agriculture intensification interventions. According to Campbell (1998) multi-business

companies creates value by influencing or parenting the businesses they own. Abdullah and Khalid (2013) Campbell and Campbell (1998) agree that the value created from the relationship between parent and the business is a function of the fit or balance between resources, skills and competencies of the parent organization and the business improvement (parenting) opportunities and that this fit is a two-edged sword: (1) a good fit can create value; (2) a bad one can destroy value. The two advise that ensuring that a parent and its business achieve a near perfect fit involves:

- i. Examine the critical success factor of each business or sector or value chain,
- ii. Document areas in the business, sector or value chain where performance can be improved. These areas are called parenting or improvement opportunities, and
- iii. Review the characteristic of the parent, grouped in a number of categories: Resources, special skills, competences, systems and processes, mental maps.

Both Campbell (1998) and Abdullah and Khalid (2013) warn that a parent that does not understand the critical success factors in a business or that does not have the requisite characteristics to exploit the business improvement opportunities in the industry is likely to destroy value or cause the parastatal to make losses, sector or value chain to perform badly. They argue that to create value the parents should understand the critical success factors of the business and have the right characteristics – resources, skills and competences – to exploit the business improvement opportunities. Campbell (1998) and Abdullah et al (2013) advise that depending on the results of assessment of fit, the parent can adopt the following parenting styles in order to influence performance of their parastatals in agriculture intensification.

Table 2.2: Parenting Strategic Framework for Parastatals and Agencies

<p>1. Stand-Alone Business Entities</p> <ul style="list-style-type: none"> ○ The Parent’s limit interventions to strategic control: <ul style="list-style-type: none"> ▪ Exercising budget and strategy approvals, ▪ Setting operational and financial targets, ▪ Review and close monitoring of operations ○ The Parent not involved in strategic planning or financial planning. 	<p>2. Promote Linkages / Synergies</p> <ul style="list-style-type: none"> ○ The Parent plays the role of synergy manager by enforcing and promoting synergies between and among parastatals that might not have self-materialised. ○ Parent integrates functions across subsidiaries
<p>3. Provision of Central Functions, Services</p> <ul style="list-style-type: none"> ○ Parent provides central functions and serviced such as the following to develop businesses: <ul style="list-style-type: none"> ▪ Strategic planning ▪ Recruitment of senior staff ▪ Business development ▪ Policy, legal advice - contracts and contracting ▪ Sharing knowledge and best practices of doing business ▪ Practice coaching employing knowledge and experience of industry 	<p>4. Facilitate Corporate Development Deals</p> <ul style="list-style-type: none"> ○ The Parent facilitates and fostering business such deals as: <ul style="list-style-type: none"> ▪ Strategic alliances ▪ Joint ventures ▪ Mergers and acquisitions ○ The parent is a portfolio manager of diversified business: <ul style="list-style-type: none"> ▪ Restructure and successful manages change processes of existing parastatals. ▪ Create new and remove existing parastatals

Source: Based on Campbell etal, 1998, Abdulah etal, 2013

2.5 AGRICULTURE MARKETS AND TRADE

2.5.1 Trade

The European Commission (2012) indicates that trade is an important engine for growth, both as a foreign exchange earner and through its multiplier effects as a generator of income and employment. The Commission identifies trade in agricultural commodities as important to economies that are developing and depend largely on agricultural commodities as the main source of export earnings. The commission states that agricultural and other labour-intensive products represent more than half of low-income countries' exports and about 70% of the least-developed countries' export revenues

In its assessment of who have benefited from trade liberalisation, the European Commission, (2012) agrees with the developing world that the main beneficiaries of trade liberalization have been the industrialized countries. Developing countries' products continue to face significant impediments in accessing rich countries' markets. Agricultural commodities, in which developing countries are most competitive carry the highest protection in the most advanced countries and over the last two decades, market prices of most primary commodities have declined substantially: in 2000, prices for 18 major export commodities were 25% or more lower in real terms than in 1980 (European Commission, 2012).

The Commission sites two factors as being responsible for the decline in prices. The first is the slow growth in demand for primary food commodities as incomes grow, contrasted with a rapidly expanding supply from an increasing number of developing countries. Coffee is a

classic example: not only has the world price declined and the value of coffee exports fallen (by USD 4 billion over the past five years), but also the proportion of the value of the coffee market captured by producer countries has dropped, from 33% ten years ago to less than 10% today. Other crops such as cocoa and rubber have been adversely affected in similar ways (EC, 2012).

The second factor behind the decline in commodity prices is that of subsidies and related support paid to farmers in the developed world. In the Organisation for Economic Co-operation and Development (OECD), total public support for agriculture amounted to USD 311 billion in 2001 (fully six times the total amount of official development assistance), while producer support as a whole – domestic subsidies, import tariffs and export subsidies – was estimated to equal nearly one third of total farm receipts. Prices received by OECD farmers were, on average, 31% above world prices. A large share of that support is directed at temperate-zone agriculture, but support for products of interest to producers in the tropics is often especially high – crops particularly affected include cotton, maize, wheat, rice, sugar and oil seeds. These subsidies lead directly to increased output and to surpluses that are then transferred onto international markets, with the effect of increasing price volatility and depressing the prices received by farmers in developing countries. In a study of the impact of subsidies on cotton production in the United States, Oxfam found that in 2001/02 American farmers received subsidies of USD 3.9 billion (double the level in 1992); the cost to Africa alone of those subsidies were losses amounting to USD 301 million. Eight cotton-producing countries in West Africa accounted for about two thirds of that.

There are other trade barriers, both direct and indirect, that undermine the ability of developing countries to export agricultural products to the developed world. Low- and

middle-income countries reported that, from 1996 to 1999, they were unable to meet sanitary and phytosanitary requirements on more than 50% of their potential exports of fresh and processed fish, meat, fruit and vegetables into the European Union. They viewed these measures as more important barriers than the tariffs and quotas. Finally, and in addition to these factors, other practices undermine the efforts of producers in developing countries to access both local and international markets. Food aid and agricultural input supplies programmes have on occasion been used by developed countries to dispose of surpluses, and these too have had the effect of depressing local prices and undermining markets in developing countries.

2.5.2 Markets

The European Commission (2012) define markets as where producers, buy their inputs and sell their products; and where consumers, spend their income from the sale of crops or from their non-agricultural activities, to buy their food requirements and other consumption goods. The Commission and IFAD (2003) agree that markets are important in the livelihood strategy of most rural households where improving smallholder farmers' access to agricultural markets is essential to reduce poverty and increase food security and without access to markets, the rural poor people in many parts of the world cannot improve their living standards

IFAD (2003) argues that rural incomes will not be substantially increased by exclusive emphasis on subsistence food crop production; rather, more market-oriented production systems are needed. This requires the intensification of agricultural production systems, increased commercialization and specialization in higher-value crops. These must be built

upon efficient and well-functioning markets and trade systems – ones that keep transaction costs low, minimize risk and extend information to all players, and that do not either exclude, or work contrary to the interests of, the poor – particularly those living in areas of marginal productivity and weak infrastructure (IFAD, 2003)

The market developments are detailed by IFAD (2003). Two decades ago, major markets in many developing countries were controlled by governments. Monopolistic parastatal marketing agencies were responsible for both the delivery of agricultural inputs and the marketing of agricultural produce, through a network of distribution outlets and marketing depots, and at prices (usually pan-territorial) that were determined in advance. With this system, inputs were delivered to farmers too late to be used effectively, the inputs were limited in the variety available, and frequently they were sold in quantities inappropriate for small farmers. Prices offered to farmers were low – representing only a relatively small proportion of the real value of the crop, and actual payment was often made several months after delivery of the crop. Further, the system of pan-territorial prices for grains especially promoted inappropriate production systems – limited in scope and ill-suited to the agro-ecological and socio-economic conditions faced by many rural households. The parastatal agencies lost large amounts of money and drained resources from national budgets.

Starting in the early 1980s, a series of agricultural marketing reforms were introduced in most countries in the developing world, with the aim both of reducing the level of public expenditure incurred by the state agencies, and of promoting a more productive, commercially oriented and diverse agricultural sector. The major aim was to limit the role of the parastatal institutions in agricultural marketing to become facilitatory, and so provide the space for private-sector involvement. In practice, and in retrospect not surprisingly, the

emergence of private-sector market intermediaries, ranging from small-scale informal traders to large, often foreign-owned, agro-processors, to fill the vacuum left by the withdrawal of the state has generally been less smooth and less rapid than expected.

Studies conducted by IFAD (2003), first, this process is most advanced in those countries that were the first to introduce market reforms. In some countries, the situation is enormously dynamic, changing yearly as increasing numbers of players enter the markets and as marketing operations become more efficient and varied. Second, this process has also made rapid progress in countries with relatively sophisticated and diverse economies, a well-established private sector and an entrepreneurial culture, and a relatively developed rural infrastructure. Within countries, markets have grown more rapidly in areas close to urban centres, with relatively dense populations, and in higher-potential areas where levels of agricultural production and surpluses are greater. By contrast, in areas that are remote, have weak infrastructure, are scarcely populated and have low agricultural potential, the process of market development has been far slower. Furthermore, different types of market relations have developed for different types of crops: food crop markets being typically characterized by informal arrangements between producers and small-scale intermediaries, and export crop markets by 'formal' relations between producers and agro-processing firms – which in case also supply inputs and provide production support services. In many countries, export crop markets have emerged faster and more smoothly than food crop markets.

In this rapidly evolving context, the policy and institutional frameworks established by the governments of developing countries have not been consistently supportive of private-sector-led market development. At the national level, improved farmer-to-market linkages have been typically constrained by, for example, an overly restrictive legal framework for farmer

group registration, the lack of an effective legal framework for contract enforcement, or by excessive licensing requirements for traders. The policy environment has also constrained the development of intraregional markets. It is true that many developing countries have been keen to promote intraregional trade, and that – particularly during the 1990s – a substantial number of regional trading agreements were established. Yet despite the provisions of these agreements, the level of intraregional agricultural trade generally remains low. All such trading efforts have come up against structural and policy obstacles, including tariff barriers and trade restrictions; non-tariff barriers, such as differing standards and inspection systems; and bureaucratic bottlenecks.

2.5.3 Market Access Constraints

2.5.3.1 Physical Access to Markets

Distance to markets – and lack of roads to get to them (or roads that are impassable at certain times of the year) and high transport costs – present real physical difficulties in accessing markets for rural communities throughout the developing world. It undermines the ability of producers to buy their inputs and sell their crops; it results in high transportation costs and high transaction costs, to both buyers and sellers; and it leads to uncompetitive, monopolistic markets. In many countries, the closure of the former parastatal market chain has exacerbated this problem, leaving large numbers of farmers far from any markets. Transport costs – combined with storage constraints – are particularly important for women, who tend to trade locally in vegetables and other perishables.

Difficult market access restricts opportunities for income-generation. Remoteness increases uncertainty and reduces choice: it results in more-limited marketing opportunities, reduced farm-gate prices and increased input costs. It also exacerbates the problem of post-harvest losses, which can reach as high as 50% in some areas. In doing so, it weakens incentives to participate in the monetized economy, and results in subsistence rather than market-oriented production systems. By contrast, improved infrastructure leads to increased market integration and more commercially oriented production systems. Market access is thus a key determinant of house- hold production systems.

2.5.3.2 Market Structure

Rural markets are characterized by extreme asymmetry of relations between, on the one hand, large numbers of small producers/consumers, and on the other, and a few market intermediaries. Such market relations are characteristically uncompetitive, unpredictable and highly inequitable. Rural producers who face difficulties in reaching markets often become dependent on traders coming to the village to buy their agricultural produce and to sell them inputs and consumer goods. However, especially in remote areas, a trader may not arrive reliably or at all, and producers often face little choice but to accept the first offer of the first trader who shows up, however unfavorable it might be. Such a situation is exacerbated when the trader is also the only source of information on prices and other relevant market information.

In many countries, there has been rapid growth in smallholder-based contract farming; and through this, many poor producers have established an important, assured commercial

relationship. However, in the context of monopolization of processing, credit, marketing and technical capabilities by agribusiness companies, smallholders have been entering a commercial relationship that has been fundamentally inequitable. Although experiences have varied, and there are clear examples of companies acting with enlightened self-interest, smallholder producers have in some cases found themselves effectively operating as employees rather than as partners; and ultimately, they have derived very low net returns as the large-scale private sector exercises its economic power to take the lion's share of value added. This offers a scenario of growth of smallholder production without smallholder development.

Input markets have been even more problematic. In many countries the commercial firms that have replaced the parastatal input distribution companies have only a limited retail network in the interior and are only starting to develop their networks of agents. To the extent that the inputs get to the rural communities – and in many developing countries fertilizer use has fallen off dramatically in recent years – the range is often still limited, and the costs are considerably higher than formerly. This is the result of the removal of the subsidies on agricultural inputs, high transport costs, lack of competition among distributors, and farmers' lack of ability to negotiate favourable terms.

2.5.3.3 Lack of skills, organization and information

In their participation in agricultural markets, poor producers find themselves at a major disadvantage. Many have a poor understanding of markets. How they work and why prices fluctuate. They have little or no information on market conditions, prices and the quality of

goods; they lack the collective organization that can give them the power they require to interact on equal terms with other, generally larger and stronger, market intermediaries; and they have no experience of market negotiation and little appreciation of their own capacity to influence the terms and conditions upon which they trade. With little experience, no information and no organization, they have no basis upon which either to plan a market-oriented production system or to negotiate market prices and conditions. Ultimately, their lack of knowledge means that they are passive, rather than active, players in the market; that they can be exploited by those with whom they have market relations; and that they fail to realize the full value of their production.

The provision of market and price information can assist producers with farm-gate marketing decisions: linked to training both to help them interpret and act upon that information, and to organize collectively, it can also help them to understand marketing processes more fully and to develop strategies to achieve better and more stable prices for their agricultural produce. However, such information must be location-specific, timely and accurate, dynamic, and locally available and in a language understood by all of the rural population. Few government-run market information systems have adequately met the challenge of all of these requirements. In many countries, however, improved communications – radios and, more recently, mobile telephones – play an important part in reducing informational asymmetries.

2.5.4 Market Access Tools

The European commission (2012) identifies a number of market access tools that are in place or emerging in developing countries to resolve the market access and competitiveness challenges and promote agriculture intensification:

- i. Market information systems (MIS)
- ii. Inventory credit (IC) or the warehouse receipt system (WRS)
- iii. Agricultural commodity exchanges (ACE)
- iv. Contract farming (CF)
- v. Index-based insurance
- vi. Smoothing funds

2.5.4.1 Market information systems (MIS)

In 1995, the FAO defined an MIS as follows: ‘A service, usually operated by the public sector, which involves the collection on a regular basis of all information on prices and quantities of widely trade agriculture products from rural assembly markets, wholesale and retail markets, as appropriate, and dissemination of this information on a timely and regular basis through various media to farmers, traders, government officials, policy makers and others including consumers. MIS as essential tools in agricultural value chain performance They seeks to meet two major objectives:^[1]1. Provide market monitoring indicators and decision-making support to devise and steer agricultural and trade policies;^[2]2. Improve

transparency and market efficiency by providing operators with information on prices and market conditions. With respect to objective 2, they seek to:

- i. Redress the information asymmetry between players, to help poor farmers; Facilitate trade decisions for buying, selling and investing;
- ii. Improve small-scale farmers' negotiating capacity;
- iii. Improve market transparency, competition and trade-offs;
- iv. Improve the strategic guidelines given by public and private institutions; Reduce transaction costs (access to information).

Market information systems have developed over the past fifteen years. They now engage private operators such as professional organisations and companies, include information on aspects other than pricing alone, such as business opportunities, analyses, weather reports, studies and training and foster the emergence of inter-country MIS networks. These 'second-generation' or 2G MIS are therefore more effective in improving trade relations. Operated privately and utilising new ICTs, they are more reactive to market developments than 'first-generation' MIS, and provide a wider range of information than merely pricing data. They are able to disseminate information via SMS, voicemail, and so forth. One such scheme is eco-farmer in Zimbabwe and the mpesa system in Kenya and Tanzania. When the parties involved trust one another, remote transactions can be conducted even when a buyer has not actually seen the products. This is a development that may prove to be significant for agricultural markets.

The area where most existing MIS in developing countries can improve is their ability to provide adequate, timely information to the first link in the product value chain: small-scale producers. For information to be of use to them it must be up-to-date, comprehensible and directly usable for trading. Many MIS are still struggling to fulfil this requirement, not only because tools are cumbersome and inadequate or means of communication are poorly harnessed, but also because the intended beneficiaries (farmers) are inadequately trained or supervised in using the data. In addition, many MIS have not yet reached their financial sustainability threshold and are still seeking long-term institutional anchoring. Nevertheless, financial viability is gradually improving as users, producers and downstream players agree to pay for the service when the MIS is deemed sufficiently effective. Furthermore, creating MIS networks between several States and obtaining support from regional economic institutions should contribute to solving the problems of MIS financing and sustainability, classing them as public services.

2.5.4.2 Warehouse Receipt System

This is also known as inventory credit or warehouse inventory credit system. In practice, warehouse receipt financing takes place in two phases:

- i. After harvesting, producers deposit a quantity of goods at a warehouse. The warehouse manager issues the producer with a receipt (the guarantee). The producer takes the receipt to a bank (or MFI) and uses it as collateral for a loan of up to 100 % of the value of the merchandise on the day (although to reduce risk, more typically it is 80 % of the value). In exchange, the financial institution keeps the receipt as a guarantee. This initiates the transaction.

- ii. Prior to harvest (or on an agreed date), the producer identifies a buyer for his product and together they go to the financial institution to pay for the goods and present the certificate of deposit that allows the buyer to take possession of the stock. The financial institution draws up the statement for the producer, deducts the interest on the loan and the storage charges and pays the producer the remainder. This settles the transaction.

In addition to securing the stock for the buyer, the advantage of the procedure is that before selling, the trader can take out a short-term loan for a percentage of the stock value from a commercial bank using the warehouse receipt as collateral. When the buyer acquires the product, he pays the seller through the market institution and the bank, which charges a fee and recovers the principal and interest on the loan granted to the seller. If the seller defaults on repayment, the bank can sell the stock to a third party.

In addition to the security advantage, the system is also seen as a more aggressive way for smallholder farmers to take advantage of market fluctuations, freeing them from the age-old constraint of having to sell goods at a time when their abundance on the market drives prices down. Warehouse receipt financing thus provides concrete solutions for protecting produce, securing transactions and financing producers to buy agricultural products. The warehouse receipt provides collateral in rural areas where banks rarely accept land or property as collateral for loans because from a social and practical standpoint it is extremely difficult to use this type of asset if the borrower defaults.

A study conducted by UNCTAD analysed various warehouse receipt models in eastern and southern Africa, drawing a distinction between two kinds of approach: commercial and farmer-focused. The aim of the latter is to bulk surpluses to be marketed and to ensure local availability of food. It is divided into three sub-categories: 3(A): cooperative approaches to warehousing; 3(B): microfinance-linked approaches, and 3(C): improvements in rural storage of agricultural commodities. The UNCTAD study underscores the following:

- i. The importance of training competent operators while taking a pragmatic approach in the pursuit of social (inclusive) objectives.
- ii. The need to support savings and credit cooperatives by integrating them into a national network of well- managed microfinance.
- iii. The importance of improvements in rural storage of agricultural commodities which prioritises finding suitable methods for reducing post-harvest losses (according to the FAO this can range from 15 % to as much as 50 %).

Three conditions must always be considered for the WRS:

- i. The right infrastructure is needed to store goods.
- ii. For the operation to be profitable, markets of stored products must react with sufficient price increases between the harvest and the sale.
- iii. Design, implementation and sustainability are only possible if strong, capable farmers' organisations are ^[11]_{SEPs} actively engaged and if the financial intermediation system is appropriate.

WRS have been found to be successful in grains and export crops.

2.5.4.3 Agricultural Commodity Exchanges

An agriculture exchange is a private or public institution or platform, which allows exchange of standardised agricultural and therefore setting of prices, without the physical presence of the traded commodities. This is unlike traditional physical markets such as auctions and buying points. They seek to significantly boost agricultural production by making trading as easy as possible through centralising and 'dematerialising' transactions.

Agriculture commodities exchanges provide platforms consummation of spot and future transactions or contracts on spot markets and futures markets respectively. On the spot market, a contract is signed between a buyer and a seller at a given price for immediately delivery while on a futures market, a contract is signed at a set price for delivery at a later date. The futures market gives rise to derivatives market, such as futures contracts, options and forwards, which are primarily used for basic goods known as underlying assets (such as crude oil, metals, grain, oil, meat, sugar, coffee and tea).

The economic importance of agriculture commodity exchanges are as follows:

- i. Risk management, by using futures markets and derivatives.
- ii. Liquidity of securities due to the possibility of trading before the end of operations.
- iii. Price transparency
- iv. Provided market price information through the quotes made on exchanges make it which provide a measure $\{\frac{L}{SEP}\}$ of the value attributed by the market to an agricultural commodity or product, at different time horizons.

- v. Futures markets are advantageous for sellers, especially farmers, because they can secure their income and balance their operating account by obtaining a guaranteed sale price before or during the agricultural year, thereby averting several risks (exchange rates, lower selling prices and so forth). [1]

There are a number of preconditions to setting up formal agricultural commodity exchanges, many of which constitute major obstacles to smallholder agriculture intensification in developing countries:

- i. The traded goods must be standardised, with a nomenclature that is recognised by the various sectors involved.
- ii. The quality of each standard must be sufficiently defined and guaranteed by an independent, recognised monitoring system.
- iii. The lots sold must have a minimum size, taking into account business practices and technical and economic constraints.
- iv. Farmers must comply with the agreed delivery time and mode.
- v. Collateral should be used against the traded products to guarantee the physical transactions.

For these reasons, ACEs are more likely to benefit sectors that already have existing quality and group [1] production standards, primarily commodities for export to world markets such as coffee, cocoa, cotton and so forth. In order to promote agriculture intensification, ACEs should be developed as part of national strategies and shored up by solid business value chains. The key factor in determining the approach is capacity to engage smallholder

producers and there is need to adopt a pragmatic, gradual approach, focusing on sectors that are sufficiently organised and that already [SEP] have standardised products and a network of efficient intermediaries such as associations and the private sector.

2.5.4.4 Contract Farming

Contract farming is defined as “a contractual arrangement between farmers and a firm, whether oral or written, specifying one or more conditions of production and marketing of an agricultural product” (Stringfellow, 1995) and entails “relations between growers and private or state enterprises that substitute for open-market exchanges by linking nominally independent family farmers of widely variant assets with a central processing, export, or purchasing unit that regulates in advance price, production practices, product quality, and credit (Davis, 1979 as cited by Watts, 1994).

IFAD (2003) also notes that contract farming is agricultural production governed by an agreement made between a buyer and a producer regarding the production and marketing conditions of one or more agricultural products. Generally, a farmer agrees to provide certain quantities of an agricultural product in accordance with quality standards established by the buyer and at a time and place determined by the buyer. In return, the buyer agrees to purchase the product at the predetermined price and, in some cases, to support production by providing credit, inputs such as fertilizers, seeds, agrochemicals, extension services, land preparation and technical advice, for example. All these inputs and services are charged to the farmer. When farmers sale produce, deductions for these inputs and services are made. This reduces the benefit to the farmer making the gross income an inaccurate measure of the benefit to farmers.

Boland et al (2002) notes that contract farming is one of the basic types of vertical coordination alongside open marketing (traditional method used by producer to sell their commodities as price takers) and integration. In his journal on Economic Issues with vertical coordination he indicates that contract production and marketing refers to a firm committing to purchase a commodity from a producer at a price established in advance of the purchase. Boland notes that there are two basic types of contracts: marketing contracts and production contracts. The difference in the two types include management responsibility, crop ownership and provision of inputs. There are also a number of possible arrangements within the basic types including alterations such pricing, storage, transportation and quality determination. Boland et al advises that the most appropriate contract for a given situation depends on market structure. According to Boland et al, marketing contract identify a buyer, seller and product, and have two main provisions: (1) quantity; and (2) price. They are used to set a price and a market for a crop to be sold at a future date. Producers have a guaranteed buyer and price for their production, but supply most or all crop inputs, retain ownership until time of sale and have sole management responsibility. Price is determined by supply and demand conditions and quality may also be provided for in the contract.

Production contracts on the other hand have three main provisions: (1) production inputs supplied by contractor; (2) quantity and quality, and (3) type of compensation to farmer for services rendered. There is increased buyer control and risk sharing and as a result the producer portion of the crop value is lower than in marketing contracts. Production contracts may be production management or resources providing contracts. The former are popular in field crops such as fruits and vegetables. Producers provide most of the inputs and retain title. The contract may provide some inputs such as seed and provide management assistance. In exchange a processor agrees to purchase entire crop and provide economic incentives for

quality and quantity. Resources-providing contracts are common in the poultry industry. They involve the processor supplying most inputs for production and increased involvement in management practices. Producers often provide only land and labour and are compensated for their services more than their entrepreneurial abilities.

The use of contract farming increased in 1990s as producers sought to reduce risk exposure to price variations from supply and demand conditions after governments reduced their involvement in agricultural markets. Contract farming can be applied to all types of agricultural product and examples abound of successful contract farming arrangements for most crops and livestock. It has also worked well in the forestry, aquaculture and fibre production sectors as well as for flowers and tobacco. Although it is possible to use contract farming for virtually any product, it has been most successful in products with high added value and products for processing and/or export. The risk of side-selling and non-compliance with contracts is higher when the products are in strong local demand and traded by traditional methods.

Studies by IFAD (2003), have shown that CF buyers often prefer to draw up a contract with medium- and large-scale farmers to ensure compliance with technical standards and delivery times, and to reduce transaction costs. The study also indicate that contract farming can work against small-scale farmers in the case of cost differentiation strategies, by exploiting lower labour costs and transferring part of the market and production risk onto the farmer, potentially resulting in asymmetric trade relations. This is particularly true of sectors traditionally linked to exportation such as cotton, rubber and palm oil. However, this imbalance can be redressed if small-scale farmers are organised into producer organisations with economic objectives (grouping sales, input supplies, negotiating pricing and contractual

conditions, lobbying, and so forth). Support from the State in these areas is essential to strengthen the capacity of small-scale farmers and their organisations and to ensure compliance with contracts and regulations.

The table below provides an overview of the benefits, risks and disadvantages of contract farming for producers and buyers based on FAO (2002) Contract farming Guide.

Table 2.3: Overview of benefits, risks and disadvantages of contract farming for producers and buyers

For producers under contract	
Benefits	Disadvantages and risks
<p>The promoter often provides the inputs and production services. This is usually paid for on credit with money that the promoter/buyer pays the producer up front.</p> <p>It is easier to secure financing and directly purchase inputs and other services because banks deem the risk to be lower.</p> <p>Contract farming often utilises new technology and also allows farmers to learn new production methods.</p> <p>Farmers often face a lower price risk because prices are pre-agreed in many</p>	<p>With new crops in particular, farmers face the risk of market failure (a fall in demand) or technical production difficulties.</p> <p>Ineffective management or marketing problems can lead to buyers manipulating quotas to avoid buying the entire production under contract.</p> <p>Buyers can be unreliable or exploit a legal or de facto monopoly.</p> <p>Buyers' staff may be corrupt, particularly when it comes to allocating quotas or purchase assessment procedures (such as weight, quality and recording data).</p>

<p>contracts.</p> <p>Contract farming can afford new opportunities that would otherwise be out of reach for small-scale farmers.</p>	<p><input type="checkbox"/> Farmers can fall into debt due to production accidents and/or excessive advance payments that they cannot repay</p>
<p>For buyers</p>	
<p>Benefits</p>	<p>Disadvantages and risks</p>
<p>Contract farming in partnership with small-scale farmers is more Politically acceptable production on plantations, for example, where workers' wages are pitifully low.</p> <p><input type="checkbox"/> Working with small-scale farmers may overcome difficulties related to land access for major producers (known as the outgrower scheme).</p> <p>Production is more reliable than purchasing on the open market (quantity and quality).</p> <p><input type="checkbox"/> The company transfers part of the production risk to family farmers.</p> <p>Production volumes are more readily adapted to the market, due to smallholders' subsistence capacity.</p>	<p>When the land status of smallholders is precarious it may be harder to sign long-term contracts (conflicts, possible eviction).</p> <p><input type="checkbox"/> Cultural or social obligations may affect farmers' ability to produce according to buyer specifications.</p> <p>Poor management and lack of dialogue with farmers can lead to breaks in supplies and poor contract enforcement.</p> <p>Farmers may side sell to competing buyers, reducing the production flow to the processing industry.</p>

Contract farming is widely used for sugar production in Africa through outgrower schemes that link sugarcane farmers to the sugar factory. The set-ups are varied and changing. In Mozambique, contract farming was positive in expanding cotton growing, increasing production and overall satisfaction on the part of smallholders involved. In Mozambique and

Tanzania governments have shown signs of seeking to extend contract farming over vast areas with high agricultural potential, with a view to creating public-private partnerships (PPPs) that could significantly boost agricultural production and reduce rural poverty.

IFAD (2003) contents that contract farming on the whole will benefits small-scale farmers, provided that it complies with the principles of economic and social equity which depends on depends largely on:

- i. the authorities regulating and controlling the system;
- ii. transparent and balanced contractual arrangements;
- iii. the balance of power between the company and farmers, for which strong producer organisations are vital;
- iv. the degree of agricultural development and producers' ability to utilise competition between buyers. ^[L]_{SEP}

Case studies on contract farming have shown that the impact on farmers' income and standards of living is positive overall, particularly with regard to the following dimensions:

- i. contract farmers have a higher average income than independent farmers of the same products;
- ii. income is stable and secure;
- iii. the company bears some of the market risk;

- iv. small-scale farmers have access to channels, products, markets and production techniques that may ^{[[1]]}_{SEP} otherwise have been impossible;
- v. significant activity and income is generated for producers with limited land, particularly intensive above – ground production (for livestock: ostriches, milk, chickens).

IFAD (2003) however notes that there are risks related to asymmetric contractual relations in the cases of captive production leading to lower margins for farmers and potentially weakening their position. The main reasons for this are:

- i. scant transparency in contractual arrangements;
- ii. the company overcharges for agricultural inputs;
- iii. the company downgrades the quality of products they purchase;
- iv. the company offers lower purchase prices to farmers;
- v. companies can reduce the amount they buy from contract growers without prior notice or negotiation.

However, in the cases studied, these practices do not seem to be widespread, mainly because of the long-term strategy of companies that want to maintain a viable and sustainable sector. The UNCTAD World Investment Report 2009 indicates that the two most significant of ways foreign players can participate in agriculture are foreign direct investment (FDI) and contract farming. Contract farming is a major way to achieve Transnational Corporation involvement in agriculture from various perspectives: geographical distribution, intensity of activity in the country, product coverage and types of TNC involved. TNCs are involved in contract

farming and other forms of non-equity activities in over 110 countries in Africa, Asia and Latin America. Contract farming is also significant in many emerging and poor countries such as Brazil, Kenya and Vietnam. It is also applied to a wide range of products, from livestock to crops and food staples.

IFAD notes that in sub-Saharan Africa, contract farming is still rare in the food and livestock sectors, but it may gradually develop into a very promising means of organising agricultural value chains because it often gives smallholders quick access to markets and products that they could not otherwise achieve. For farmers, the main advantages of CF are access to new technologies and credit, access to equipment and specific expertise, and, to some extent, guaranteed prices and distribution and sale of their output.

The clear risk of CF is a high imbalance in economic relations, putting isolated smallholders at the mercy of powerful buyers who can generally exert pressure, which may lead to offshoring. To mitigate these effects, governments, with support from donors, can support producer organisations to help them achieve more clout in the value chain. There are pitfalls (and side effects): farmers can become trapped in cycles of debt; gender inequality; child labour (under pressure to honour contracts, the family head may utilise the rest of the family); the farmer shifts all production to cash crops.<sup>[L]
[SEP]</sup> The seven areas requiring improvement are:

- i. A long-term outlook underpinned by mutually beneficial understandings between both parties.
- ii. Support for producer organisations in negotiations and monitoring.

- iii. Gender equality.
- iv. Clear, transparent pricing mechanisms.
- v. Quality standards that are as clear, specific and straightforward as possible.
- vi. Environmental sustainability (particularly ensuring soil fertility in the long term rather than ^{[[]]} _{SEP} fertilisation in the short term).
- vii. Arbitration mechanisms with mediators

Differing models of association that already exist may be alternatives to contract farming, in addition to other options such as cooperatives (or other forms of association), joint ventures or associations between organised small-scale producers and firms in the value chain working on an equal footing, and organised production aimed at the local market..

2.5.4.5 Index-based Insurance

Index-based insurance anticipate adverse events based on weather forecasts and complex indexes and provide *ex ante* payments to producers affected by weather disasters. The indemnity amount is predetermined and automatically paid before the impact of the disaster as soon as predefined weather parameters reach a present threshold such as long dry periods, intense rainfall, water level and so forth. The use of of index-based insurance in Zimbabwe is limited to hail insurance in tobacco . Across the region, the use of this tool is more at the research phase than the promotion and expansion phase compared to MIS, WRS and CF (European Commission, 2012).

2.5.4.6 Smoothing funds

Smoothing funds include stabilisation funds and support funds to protect farmers from volatile international prices of largely traded commodities such as cotton, tobacco, tea. In West Africa these have been used to boost cotton production by helping producers curbing year-to-year fluctuations in world cotton prices through a system of levies and refunds, including setting a guaranteed floor price that is agreed on annually by all stakeholders. The pricing is transparently negotiated between players taking into consideration market trends and the funds are managed as part of an private inter-professional organization.

The use of smoothing funds was eroded with the advent of economic liberalisation which emphasized elimination of public subsidies mainly because of their effect of bleeding dry public resources when prices collapsed. According to European Commission (2012), the dilemma in West Africa was that when this mechanism was withdrawn, many cotton producers withdrew from the sector but could not find alternative sources of income.

Zimbabwe is applying the concept of smoothing funds through setting producer floor prices for cereal grains – wheat, maize and small grains. The use of weather index-based insurance has been tried by development partners in the context of voucher-based crop input support programmes. IFAD (2003) notes that for the mechanism to work, target sectors must be selected and mechanisms put in place to bear the financial impact in the long term and support professionalism among players emphasizing dialogue; creation of interprofessional organisations; training; information, and engaging beneficiaries in decision-making.

2.5.5 Linkages between Market Access Tools

There is a scale of interconnections between these tools (IFAD, 2003): a commodity exchange requires a local WRS linked to inventory credit mechanism, which are in turn more effective when buyers and sellers are informed through MIS. The warehouse receipts can be the basis for centralisation and dematerialising of transactions on ACEs. Risk management, through index-based insurance, is an ideal complement to CF and ACEs. Support funds in the form of floor prices can be used to stabilise prices on ACEs. The market price information generated by ACEs can be disseminated through MIS, which in turn make ACEs more transparent as a price determining mechanism. [11] [SEP]

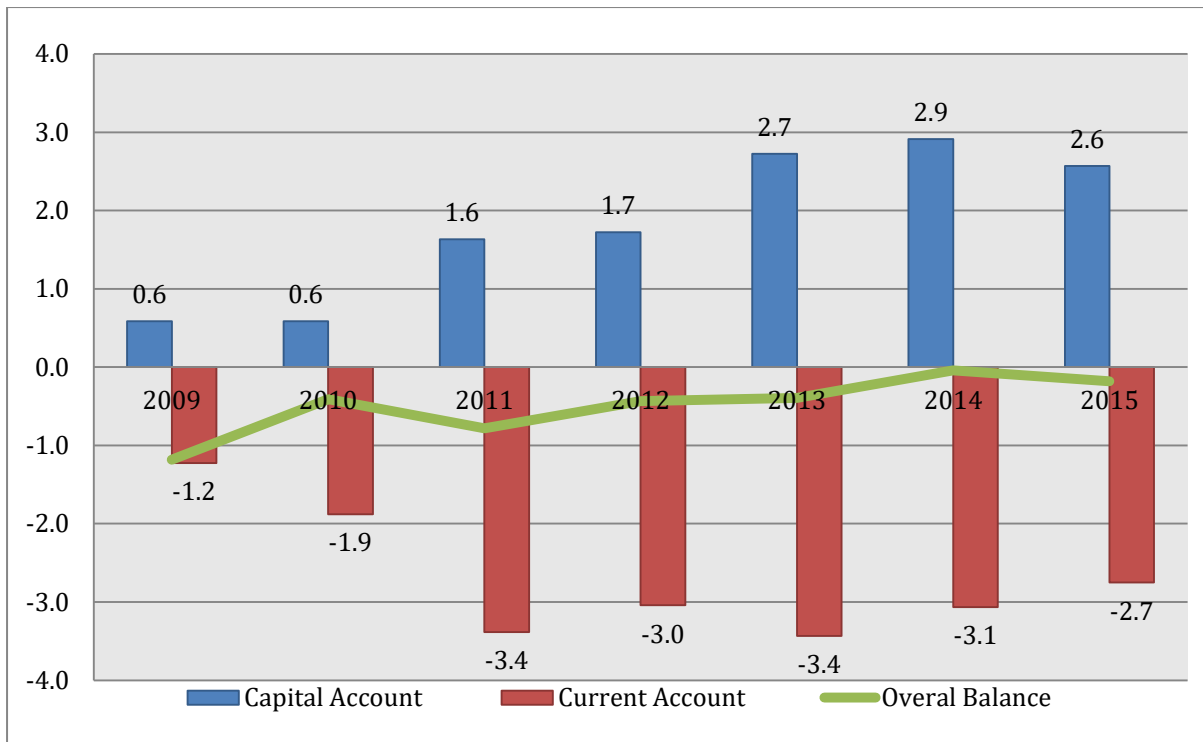
Studies by IFAD (2003) have shown that these tools have relatively little effect on the asymmetries in value chains, unless small-scale farmers are particularly well organised. Strong, capable producer organisations are necessary to ensure proper development, implementation and ‘maintenance’ of tools. It is therefore vital for these tools to evolve and adapt through an inclusive approach to analysing and developing value chains anchored on strong public and private sector interaction with ‘users’ – the small-scale farmers. Producer organisations also have an important role to play in ensuring the inclusive effect of these tools, while public authorities must show political will – consistency and compliance – and enforce good governance in the sector. These tools do not replace the role of the State of making sure that agricultural productivity gains are made in terms of land (inputs, irrigation and mechanisation) and work (training and organisation) through a solid land status, rural investments, efforts in research and of producers support schemes (IFAD, 2003).

2.6 AGRICULTURE COMPARATIVE ADVANTAGE AND COMPETITIVENESS

In pursuit of inclusive sustainable economic development agenda, Zimbabwe has to go through an agriculture intensification and diversification process aimed at increasing competitiveness leveraging on its comparative advantage in order to regain its status as Africa's Bread Basket. In this regard it is important to review some perspectives on comparative advantage and competitiveness to enable an informed assessment of the same in the tobacco production and marketing value chain.

The IFAD (2003) highlights that developing countries are more competitive in agricultural commodities than developed countries. Globalization and internationalization of production and markets have seen increases in competition on global market for agriculture commodities. Developing countries are competing to supply developed countries with agriculture commodities. And a nation's decline in export volumes, value and market share and trade deficit is evidence of loss of competitive advantage and competitiveness for agriculture in developing countries (IFAD, 2003). Zimbabwe's agriculture exports are currently depressed and being an agro-based economy, the country is running a trade deficit.

Fig 2.9: Balance of Payment Position for Zimbabwe (US\$ Billions): 2009 – 2015



Source: Reserve Bank of Zimbabwe (2014)

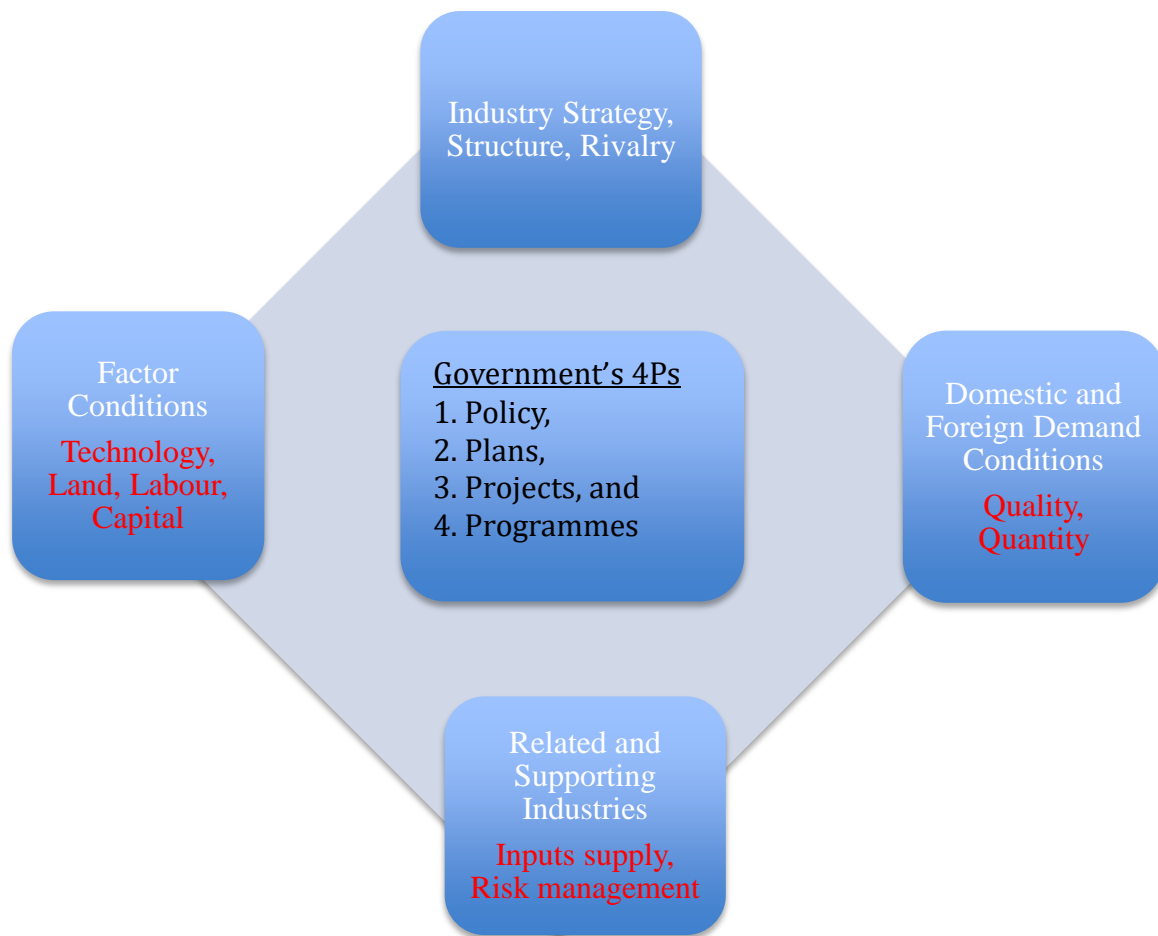
The IFAD (2003) argues that competitiveness and comparative advantage are fundamentally different. A country can experience a loss in competitiveness while maintaining its comparative advantage, or be competitive without having a comparative advantage. In the real world conduct of international trade the two are however inextricably linked. Comparative advantage is an economic theory based on opportunity costs and relative efficiencies with respect to resource use. IFAD further argues that the concept deals with whether an economic unit (person, region or nation) has an advantage in producing a particular good compared to the other goods that can be produced, and compared to the trading opportunities that may be available. Comparative advantage determines international specialization and what trade patterns would arise or "ought to be" in an undistorted world

based on differences in relative efficiencies (opportunity costs) between countries in the absence of trade and using social prices.

Unfortunately, the world is not free of distortions. Governments' policies – both domestic and trade – tend to alter relative prices. Markets do not always operate efficiently and there are rigidities that inhibit adjustments to world market conditions. This brings in the issue of competitiveness. Webster quoted in IFAD (2003) defines competition as, "the effort of two or more parties acting independently to secure the business of a third party by offering the most favorable terms." In this sense, competitiveness is a statement about differences in market prices. While relative prices among competitors determine the level of exports and market share, it is what makes goods cheaper in one country versus another that is at the crux of the competitiveness issue.

The types of products produced and the patterns of exchange on world markets are determined by the joint effects of policies (market distortions) and economic efficiency. Economic efficiency is strongly related to the endowment of factors such as land, labor and capital and is the basis for comparative advantage. This is illustrated in Porter's Diamond of national competitiveness.

Digram 2.2: Porter's Diamond of National Competitiveness



Source: Porter, 2009

IFAD (2003) indicates that in the short-term, movements in a country's competitiveness are highly dependent on the dynamic factors related to policy changes because factors, which determine comparative advantage or economic efficiency – technology, infrastructure, and basic resource endowments – are relatively fixed. In the long run the policy changes will also determine comparative advantage through influence of the technology adoption, investment, rates of growth in productivity and productive capacity, and prices for inputs and products. In a sense, competitiveness is a policy strategy chosen by a country to achieve a particular goal. Policies become the crucial determinant of the "terms offered" to a third party in competing for markets in the short term. For example, an export subsidy can turn a country, which

according to comparative advantage should be an importer, into an exporter. On the other hand, domestic policies can affect the domestic/world price relationship thereby reducing exports of relatively efficient countries. Thus, concepts of comparative advantage and competitiveness differ because of the distortions in markets brought about by government policies. While comparative advantage is a statement about what trade patterns "ought to be," competitiveness is a statement about what trade patterns "are."

The measures of competitiveness include trade volume and value, market shares and relative trade shares. Competitiveness is simply a comparison of how well a country has done in exporting some particular set of goods, let's say food, compared to how well it has done in exporting the total of all its goods. If, for example, a country has a 15 percent share of the world food market but only a 10 percent share of the world market for trade of all goods, then it is assigned a coefficient of 1.5 as its competitive advantage in food.

To understand if a nation will become more or less competitive one has to understand how other countries adjust to changing market conditions – how governments intervene in the market to compensate for some comparative disadvantage. Government policies are more important and pervasive than natural endowments in determining competitiveness and comparative advantage. The critical component in the short run is the policy factors, which often completely outweigh any comparative disadvantage on the basis of relative economic efficiencies. Policy factors are important in the longer term as well. They become the source of the "dynamics" of comparative advantage.

There are a number of policy factors that influence competitiveness and future comparative advantage for agriculture. The three most important policy areas are: domestic macroeconomic policies; domestic farm policies; and foreign trade and agricultural policies.

The macroeconomic policies include fiscal and monetary policies. The former focuses on taxes and government expenditure, while the later focuses on interest rates, money supply, reserve ratios and exchange rates. Domestic (farm) policies include farm programs such as price support and deficiency payment programs. Trade Policies include export subsidies.

2.7 SUSTAINABLE PRODUCTION, PRODUCTIVITY, MARKET ACCESS AND COMPETITIVENESS

2.7.1 Concepts and Practices

Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable agriculture integrates and gives equal weight to three main goals – environmental health, economic profitability, and social equity. These are closely intertwined and necessary for sustainable agriculture. Only by creating policies that integrates social, economic and political interests can societies promote more sustainable agriculture system.

Sustainable agriculture is an integrated system of plant and animal production practices having a site-specific application that will last over the long term:

- Satisfy human food and fibre needs. Farmers faced with poverty are often forced to mine natural resources like fertility to make ends meet even though environmental degradation will hurt their livelihood in the long run.
- Enhance environmental quality and the natural resource base upon which the agricultural economy depends. This includes management of the soil to enhance and protect soil quality; selection of species and varieties that are well suited to the site and to conditions on the farm; Diversification of crops (including livestock) and cultural practices to enhance the biological and economic stability of the farm; and efficient and humane use of inputs.
- Make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls.
- Sustain the economic viability of farm operations. Economic viability is a main pillar of sustainable agriculture, indicating that farming is business, and that farmers are entrepreneurs. To maintain or strengthen their competitiveness, growers steadily have to improve their productivity.
- Enhance the quality of life for farmers and society as a whole. Consideration of farmers' goals and lifestyle choices.

Understanding sustainability requires an agro ecosystem and food system approach. An agro-ecosystem is envisioned in its broadest sense, from individual fields, to farms to communities both locally and globally. Food system includes agro-ecosystem system plus distribution and consumption similarly span from farmer to local communities to global population. Systems that survive over long time usually do so because they are highly resilient, adaptive and have high diversity. Resilient is critical because most agro-ecosystems face conditions (including climate, pest populations, political contexts and other) that are often highly unpredictable and

rarely stable in the long run. Adaptability is a key component of resilience, as it may not always be possible or desirable for an ecosystem to regain the precise form and function it had before a disturbance, but it may be able to adjust itself and take a new form in the face of changing conditions. Diversity often aids in conferring adaptability, because the more variety with a food system, whether in terms of types of crops or cultural knowledge, the more tools and avenues a system will have to adapt to change.

Making the transition to sustainable agriculture is a process. For farmers, the transition to sustainable agriculture normally requires a series of small, realistic steps. Family economics and personal goals influence how fast or how far participants can go in the transition. Reaching toward the goal of sustainable agriculture is the responsibility of all participants in the system, including farmers, employees, policymakers, researchers, retailers, and consumers. Each group has its own part to play, its own unique contribution to make to strengthen the sustainable agriculture community.

Sustainable agriculture is not a single, well defined end goal. Scientific understanding about what constitutes sustainability in environmental, social, and economic terms is continuously evolving and is influenced by contemporary issues, perspectives, and values. For example, agriculture's ability to adapt to climate change was not considered as critical issue 20 years ago, but now is receiving increasing attention. In addition, the details of what constitutes a sustainable system may change from one set of conditions (e.g. soil types, climate, labour costs) to another and from one cultural and ideological perspective to another, resulting in the very term "sustainable" being a contested term. Therefore it is more useful and pertinent to think of agricultural systems as ranging along a continuum from sustainable to very unsustainable, rather than placed in a sustainable/unsustainable dichotomy.

2.7.2 The Sustainability Challenge for Increasing Productivity

The FAO (2011) argues that enhancing productivity in the agriculture sector will face multiple challenges over the coming decades. The sector must:

- Produce more food to feed an increasing population that will demand more diverse diet, contribute to overall development and poverty reduction, confront increased competition for alternative uses of finite land and water resources.
- Reduce economic, social and environmental costs and contribute to preserving biodiversity and restoring fragile ecosystems. Agriculture has been keeping pace with increasing population and delivering affordable food at significant economic, social and environmental costs in the form of land degradation, topsoil depletion, groundwater contamination, the decline of family farms, loss of biodiversity, greenhouse emissions contributing to climate change, continued neglect of the living and working conditions for farm labourers, increasing costs of production, and the disintegration of economic and social conditions in rural communities.
- Adapt to climate change. Climate change will bring higher average temperatures, changes in rainfall patterns, and more frequent extreme events. This will multiply threats to sustainable productivity enhancement, food security and poverty reduction.

The key feature of this challenge is an acceptance of the fact that agricultural policies should be based on more than the productivity criteria; that externalities from agricultural activities are of great importance, and that inter- and intra-generational equity are key parameters in

assessing agricultural policies. Addressing these challenges requires coordinated responses from the public and private sectors and civil society.

2.8 HISTORY OF TOBACCO PRODUCTION AND MARKETING

2.8.1 The Origins

Tobacco, one of the most important cash crops in today's farming, is native to the North and South American continents and was first discovered thousands of years ago. It first became known to the rest of the world when European explorers in the 15th and 16th centuries saw it being used as a medicine and as a hallucinogen by Native Americans. The explorers returned to Europe with the new-found plant and it was quickly adopted by rich and poor alike as a drug of choice (FAO, 2013). Banned at first by kings and popes, its economic effects and broad popularity forced acceptance among all cultures. It quickly spread throughout the civilized world and became a foundation for the growth of the American economy.

"Tobacco" is a name used for plants of the genus *Nicotiana* of the Solanaceae (nightshade) family. The name is also used for the product manufactured from tobacco leaves and used in cigars, cigarettes, snuff, and pipe and chewing tobacco. The tobacco plant is in the same botanical family as tomatoes, potatoes, peppers or eggplants. An adaptive species, it can be grown economically from 50° Northern to 40° Southern latitude (BAT, 2014). Different species of the tobacco plant, with different characteristics associated with smoking (e.g. fast burning, slow burning, mild, strong), have become popular in different parts of the world. The primary active ingredient of tobacco is the alkaloid nicotine, which is responsible for its

narcotic and soothing qualities (The Columbia Encyclopedia). The growing of tobacco as a crop was pioneered by communities in the Andes between 5000 and 3000 BC. From the Andes of South America tobacco spread north and then on to the colonies, islands and continents beyond. With steadily increasing demand, tobacco plants were transported for cultivation to countries all over the world, (FAO, 2013)

2.8.2 How It Was Used

Tobacco chewing was probably the first way that tobacco was consumed. Anthropologists have also speculated that ‘snuffing’ taking in powdered tobacco through the nose probably pre-dated smoking. Snuffing tubes are among the earliest tobacco artifacts discovered in the Americas. Native Americans used tobacco as a medicine for all manner of ills. The European observers reported back miraculous results. The Spanish physician Monardes of Seville included tobacco in his new world herbal, a description of herbs and medicines from the Americas published in 1571, ascribing to it the power to cure many ills.

The early Spanish explorers were probably the first Europeans to try smoking tobacco leaf. They wrapped leaf in corn husk to produce the forerunner of the cigarette. Cigars are typically larger in size, and are wrapped in the tobacco leaf itself. As well as smoking tobacco, Spanish explorers cultivated plants in botanical gardens as a medicinal curiosity. BAT 2014 concludes that, more than 100 countries grow tobacco with China as the largest producer of the crop, followed by the USA, Brazil, India, Zimbabwe and Turkey. Tobacco thrives in poorer soils, providing farmers with a welcome alternative crop. In many cases, it provides a higher income than any other smallholder crop.)

2.8.3 Political significance

Inevitably, as the use and cultivation of tobacco grew so did its political and financial significance. The colonies where tobacco was grown became highly valuable territories, attracting settlers keen to make their fortunes despite often hostile conditions. An example is the state of Virginia in the United States. In the short period between 1618 and 1640 the annual size of the tobacco harvest in Virginia rose from 20,000 pounds to 1.5 million pounds. The tobacco trade contributed to the population growing from 18,000 to 78,000 during that time. It was not only growers and manufacturers of tobacco products who sought financial gain from tobacco. Elizabeth I of England introduced a tobacco tax at two old pence (less than one penny) per pound. King Philip III of Spain tried to control cultivation by decreeing tobacco could only be grown in Spanish colonies.

2.8.4 Tobacco in Zimbabwe

2.8.4.1 Production and Marketing

According to ZTA (2004), indigenous people grew tobacco (a type called Nyoka tobacco) before European settlers came into Zimbabwe. The first claim to successful growing flue-cured tobacco was made in 1894 in Mutare and a Jesuit priest at Chishawasha Mission, Father Richartz, exhibited the first commercially grown tobacco at the first Agricultural Show held in Harare in 1897.

Tobacco growing, in the *Nicotiana rustica* strain, grows in Zimbabwe naturally and people have gathered it, dried it and smoked it for centuries. The Jesuit fathers at Chishawasha Mission and a handful of settlers started to cultivate it. Mark Lingard of the Agricultural Department imported 15 different varieties from America in 1898. Zimbabwe, thanks to its soils and climate, grows some of the world's finest flavour tobacco from Tengwe in the north-west to Mutare in the north east. The ITGA (1996) contents that farming and marketing methods have been refined to a point where Zimbabwe is became leader in world tobacco production in terms of quality and research.

In 1903 E.H. South planted tobacco from seed he had brought in from the States on his farm on the banks of Lake Chivero and built the first barn to cure it. In 1910, the first auction sales took place in Zimbabwe but were later abandoned in 1914 due to lack of competition between buyers and over-production. From then on, the crop was sold through various methods including sales by private treaty and co-operative selling, where growers were contracted to sell their crops to the Tobacco Co-operative Society.

Archie Henderson, grower and managing director of Tobacco Auctions Ltd, was the first person to use steam in flue-curing tobacco. He left his farm to the nation and Henderson Research Station remains an important resource to Zimbabwe farmers. In 1919 United Tobacco (now BAT) established Romsley estate staffed by American-trained men who provided free expert advice and development finance. In 1924 the first tobacco research station was established in Hillside, Bulawayo (much of the air-cured crop was grown in Matabeleland). As the Tobacco Research Board or Kutsaga, named after the farm where it now operates, it has been a world leader in tobacco research. Kutsaga continues this work and is offering promising new tobacco varieties for trial up to date (TIMB 2011).

Many marketing problems were experienced especially during the depression of the 1930's and in 1934 there was such a surplus that 20% of each grower's crop was removed from the open market and later disposed of privately and some destroyed. By 1935, it became apparent to growers as well as buyers that a more orderly system of sale was desirable. Therefore, legislation was introduced under pressure from a growers' organization. In 1936, the Tobacco Marketing and Levy Act was promulgated. This Act provided for the formation of the Tobacco Marketing Board (now the Tobacco Industry and Marketing Board) and the compulsory selling of tobacco through Auction Floors.

In 1947, international economic forces upset the market place and resultant negotiations resulted in the "London Agreement" which offered preferential buying opportunities for United Kingdom manufacturers, thus compromising the concept of free and unfettered auctions. The agreement was revised in 1953 and remained in force until 1961. The free and unfettered auction system was re-introduced in 1962 (TIMB, 2011) but later again interrupted by the unilateral declaration of independence (UDI) in November 1965. At Independence in 1980, the tobacco industry once again saw a return to the free and unfettered auction selling system for flue-cured (Virginia) tobacco. In 2004 the growing and marketing system was changed with the introduction of contract growing and marketing of tobacco, to operate alongside auction tobacco marketing.

2.8.4.2 Tobacco Producing Areas and Varieties

The crop does well on sandy loam soils where most grain crops would require a lot of fertilizers. Hence the crop does not compete with food cropping. Its production uses only 3% of Zimbabwe's arable land. Tobacco is competitive than most bulk crops of low value because

Zimbabwe is land locked, and is a strategic crop that provides employment, foreign currency and also improves the livelihoods of the farmers and the nation at large.

Three main types of tobacco grown in Zimbabwe are Virginia (flue-cured), burley (air-cured) and oriental (sun-cured) tobacco. Of these, flue-cured is by far the most important and is generally produced in the better rainfall areas in natural regions II and III.

Diagram 2.3.: Common Flue-Cured Tobacco Growing Areas of Zimbabwe

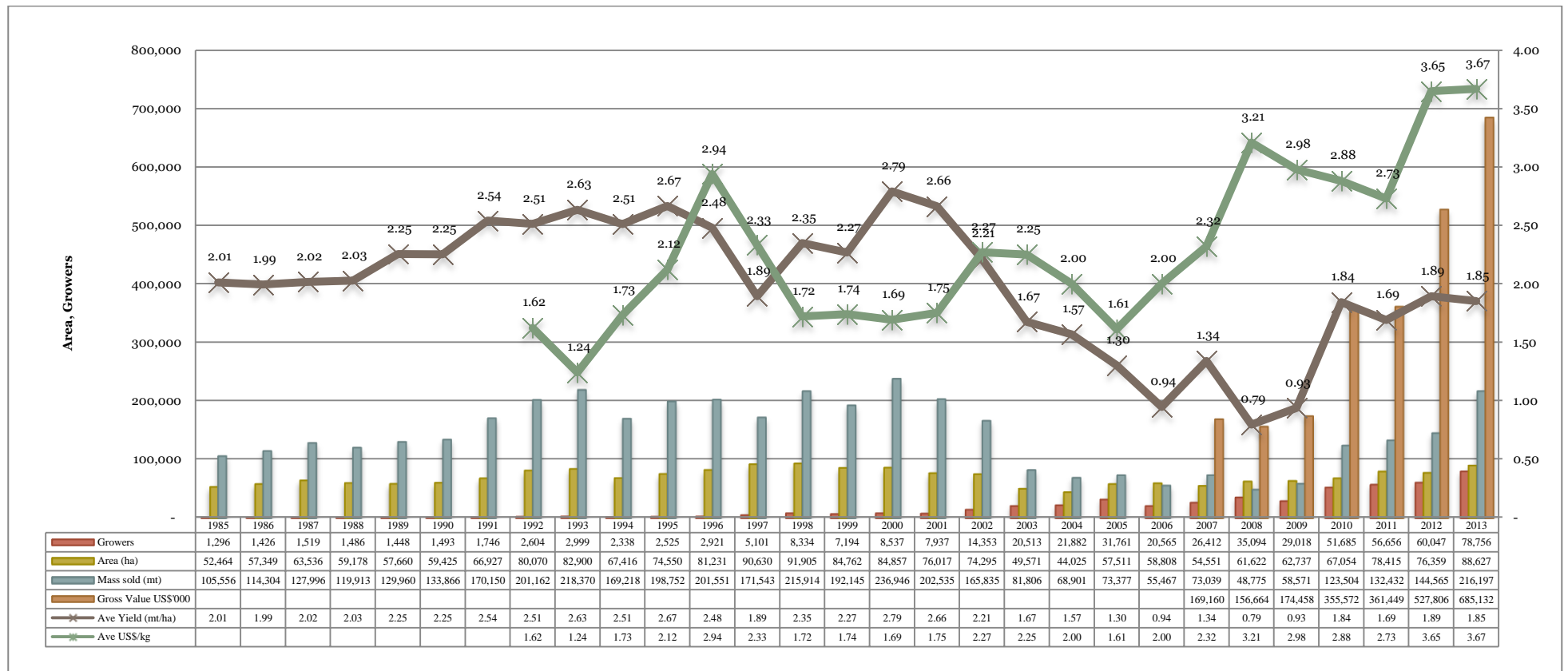


Source: TIMB, 2014

Air-cured and sun-cured tobacco are predominantly smallholder crops though they are grown in the same natural regions with the flue-cured tobacco (Rukuni and Eicher, 1994). Prior to the 2000s, in contrast to sun-cured and air-cured tobacco, flue-cured tobacco was mainly grown by the Large Scale Commercial farmers (LSC). Today the tobacco production structure is largely smallholder farmers comprising the Communal, Small-scale Commercial Farmers, A1 resettlement and A2 Resettlement farmers.

2.8.4.3 Production Trends

Fig 2.10: Evolution of Tobacco Production Zimbabwe: 1985 – 2014



Source: TIMB, 2013

Period: 1980 -1990

Following the country's independence in 1980 there was an initial drop in production and number of production units. Trend was reversed quickly such that by the late 1980's annual production was over 120 million kg, the hectareage was over 57 000 and the number of growers had stabilized at around 1 500 large-scale commercial growers.

Period: 1990 – 2000

During the 1990's a slow land resettlement programme saw the number of indigenous growers rising to around 6 500, and with about 1 700 large-scale commercial growers by 2000. The area planted to tobacco peaked in 1998 at about 92 000 ha and annual sales reached a record of 237 million kg in 2000, (ZTA, 2014)

Period: 2001 – 2008

The period was largely dominated by the land reform programme. Large-scale farms were sub-divided and land allocated to indigenous farmers. This rapidly increased the number of growers thereby increasing the potential tobacco production base. After three successive drought seasons followed by one characterized by excessive rain during its latter half, annual production started to increase, spurred on by de-regulations (ZTA, 2014)

Production Trends 2009 – 13

Period characterized by rapid recovery of production and increase in grower base . A total of 58.5 million kg were produced valued at US\$174.5 million in 2009. This increased to 123.5 million kg at US\$355.7 million in 2010, 132.5 million kg at US\$361.5 million in 2011 and 144.5 million kg at US\$540 million in 2012 and 166.7 million kg at US\$610 million in 2013.

2.8.5 Key Drivers of Tobacco Production and Marketing

The ITGA (2010) identifies three main factors as shaping tobacco production and marketing:

1. Delocalisation of key world producers such as China to low-cost and quality producing country. The FAO (2003) indicates that the international community has been providing various forms of financial assistance to Malawi and Zimbabwe. These countries and Brazil are very price competitive. The organisation states that export unit value of tobacco leaf from US is more than twice the world average, reflecting the higher quality but also the higher production costs of US tobacco. The minimum wage in developed countries is at least five times more than wages in many developing countries and ten times more than wages in Malawi and Zimbabwe(FAO, 2003).
2. Change in tobacco trade from the auction to contract. The ITGA (2010) indicates that while it was only Brazil and Argentina that were 100% contract in 2005, the list included US, Canada by 2010 and to-date only Zimbabwe and Malawi still have auction tobacco marketing.
3. Tobacco control measures which include anti-tobacco campaigns and number of regulatory and institutional measures with international impact that seek to throttle consumption and supply of tobacco – smoking bans, taxes on cigarette consumption. The anti-tobacco campaigns culminated in the establishment of the Framework Convention

for Tobacco control (FCTC) whose work commenced in 1999 and the framework came into force in February 2005.

2.8.6 Framework Convention for Tobacco Control

The FCTC regards tobacco as a dangerous commodity with health hazards. In 1999, the World Bank estimated that smoking is responsible for 4 million deaths in the world each year (FAO, 2003). The ITGA (2010) summarises the provisions of the framework as a number of measures to reduce production and utilisation of tobacco as follows:

- i. Elimination of advertising and promotion,
- ii. Protection of the environment tobacco smoke (smoking bans),
- iii. Larger healthy warning signs (30 – 50%),
- iv. Pictorial warnings on packaging of tobacco
- v. Ingredients disclosure
- vi. Prohibition of sales to minors (age, verification, elimination of vending machines),
- vii. Price and tax measures to reduce consumption, and
- viii. Combat illicit trade in tobacco

The number of signatories to the convention stood at 168 by 2010. Zimbabwe became a member of the WHO/FCTC in July 2014. Many countries including Zimbabwe have accepted the reality that the consumption of tobacco and related products has negative development effects on nations (FAO, 2003) and have started to institute active measures to reduce

smoking and other tobacco use as a policy for reducing tobacco and tobacco-related social costs. Zimbabwe instituted Statutory Instrument 264 of 2002, the Public Health (Tobacco Control) Regulations of 2002, which provides for the following among other things:

- i. Control of smoking in public premises, and public transport
- ii. Mandatory erection of No Smoking Signs in public premises
- iii. Prohibition of trading tobacco products to minors
- iv. Mandatory inscription of health warning messages in English on all imported tobacco products sold in Zimbabwe
- v. Control of advertising and promotion of tobacco products including institution of public health warnings on cigarette packaging
- vi. Establishment of a Tobacco Control Committee whose duties include recommending policies and regulations on tobacco control.
- vii. Re-introduction of tobacco levy to producers of tobacco.

The FCTC seeks to exclude tobacco from international trade agreements and investment treaties, encourage countries to move to alternative economically viable crop and livestock enterprises, and eventually stop to tobacco production and use. The GoZ (2014) indicates that from a policy perspective, the objectives of finding economically viable alternative crops to tobacco is highly appreciated. However for sustainability, the livelihoods of farmers and their local communities should be given priority in any such policy development. To this end any move to such alternative crops must be as a result of evidenced based, well-funded and workable solutions based on the realities of the domestic markets and how they relate to regional and international markets. Policies must be locally relevant and be contextualized in a smooth transition process to alternative crops. This cannot be achieved overnight because

the whole value chain has a contribution in making the policy relevant and workable.

The FAO (2003) indicates that many countries will continue to depend heavily on tobacco growing and tobacco related processing and manufacture for employment. According to FAO (2003) economies such as Malawi and Zimbabwe would suffer markedly from the impact of such measures as FCTC, and would require assistance from international donors focussed clearly at facilitating adjustment both within agriculture and between agriculture and other sectors of the economy. The GoZ (2014), in its country position on the FCTC, alongside other major tobacco producers, expressed concern at the FCTC's efforts to exclude tobacco from international trade and investment agreements arguing that Free Trade Agreements (FTA) and Bilateral Investment Treaties are not obstacles to public health regulations as they also have public health provisions.

The position paper also argues that the FCTC's position defies logic of practical lessons learnt from the Asian Tigers (Taiwan, Japan, Malaysia, Korea and Singapore). In the context of the development trajectories of the Asian Tigers and the United Nations Millennium Declaration (IFAD, 2003), trade is an important engine of growth, both as an earner of foreign exchange, and through its multiplier effects as a generator of income and employment. In developing countries, the Southern Africa Development Community (SADC) and Zimbabwe in particular, tobacco trade is significant and represents an important source of social and economic well-being.

The FOA (2003) notes that tobacco and tobacco products are traded and consumed legally and its production and trade is subject to the same rules and regulations as other products.

The organisation also notes that consumption of tobacco is largely by adult population of 15 years and above and its demand is actually expected to increase. The figures given by FAO estimates that in 2000, about 1.1 to 1.2 million people smoked worldwide and that the number of smokers is expected to increase to 1.6 million by 2025 as a result of growth in adult population and increased tobacco consumption.

2.9 THE TOBACCO ECONOMY AND DEVELOPMENT THEORIES

2.9.1 Tobacco Trade and Development

The FAO (2003) contents that in developing countries, the Southern Africa Development Community (SADC) and Zimbabwe in particular, tobacco trade is significant and represents an important source of social and economic well being. The ILO (2010) estimates that the tobacco sector employs about 100 million people worldwide. In Zimbabwe at peak production in the 1990s, the tobacco industry employed about 50% of all people employed in commercial agriculture. This estimate did not include other activities and downstream industries that exist to service the tobacco industry. It was also the country's single largest foreign currency earner and accounted for about a third of total country's exports and contributed about 12% to the national gross domestic product (TIMB, 2011). Zimbabwe tobacco exports once accounted for 20% of the world's flue-cured tobacco as the the main ingredient in cigarettes. Tobacco has also been a springboard for the production of other crops. Tobacco provides the best economic return per hectare amongst all the major annual crops grown in Zimbabwe. Income from tobacco is used by growers to develop their farms, cattle production, irrigation schemes etc (FAO, 2013). The ZTA (2014) estimates that the tobacco **production base is at** plus 100, 000 growing units, 80% of whom are are small-scale

growing up to two hectares. The total area under tobacco annually is estimated at 120, 000 hectares, production of 180 million kg valued at US\$670 million. With this size of produce the tobacco industry is valued at over US\$1.5 billion with an estimated 1. 2 million directly dependent on the crop. This figure is quadrupled to an estimated 4.8 million people if dependants are included.

2.9.2 Development Prospects of the Tobacco Economy

2.9.2.1 National Circular Flow of Tobacco Income

Tobacco is currently the most single influential commodity in agriculture and the economy based on revenue and foreign currency generation. In reviewing the literature, the study conceptualised the tobacco economy based on the concept of national income to illustrate growth options through policy interventions and why it is important to understand the tobacco value chain. The tobacco national income is measured by the tobacco Gross Domestic Product (GDP) and Tobacco Net National Income (NNP) (Stanlake, 1985) where the former is the value of tobacco goods and service produced in an economy by both citizens and non-citizens and NNP is the value of tobacco goods and service produced in an economy by its citizens. All tobacco produced should will be consumed locally and internationally. Based on the expenditure approach for measuring national income (Stanlake, 1985) the national tobacco income will be given by the following equation:

$$Y = C + G + I + (X - M), \text{ where}$$

$Y = \text{Tobacco Income}$

$C = \text{Domestic Consumption of Tobacco}$

$G = \text{Government Spending on Tobacco}$

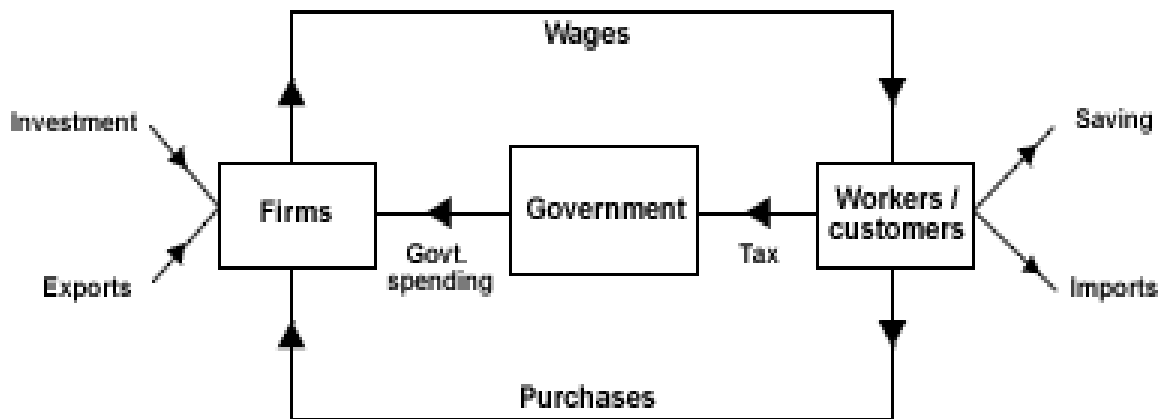
$I = \text{Investment}_{\text{SEP}}^{\text{I}}$ in Tobacco Industry

$X = \text{Exports of Tobacco}$

$M = \text{Imports}_{\text{SEP}}^{\text{M}}$ of Tobacco

This flow of the tobacco income can be presented diagrammatically in a simple two sectors open economy with government as follows:

Diagram 2.4: The Circular Flow of Tobacco Income



The national tobacco income flows from households through their consumption into firms who pay households for their labour. Households sometimes spend their money on imports, save some money for the future and pay government taxes. These form leakages from the circular flow. Firms export some of goods produced and use some of the money to invest in capital goods. These expenditures form injections into the flow of income. The tobacco economy is in equilibrium when injections match the leakages.

If the government is to manage the tobacco economy effectively it must have instruments which are capable of controlling the expenditure variables. The main instruments will be Government expenditure and taxes to create surpluses and deficiencies to offset imbalances in the private sector. Other instruments include monetary policies, and use of fiscal measures, exchange rate policies and direct controls to influence imports and exports. The objective is to facilitate and incentivize a higher rate of private investment (I). Such investment will be reinforced through the multiplier effect given by the following.

The Multiplier = $\frac{1}{MPS+MPM+MPT}$, where

MPS = Marginal Propensity to Save

MPM = Marginal Propensity to Import

MPT = Marginal Rate of Taxation

According to Stanlake (1985), the term MPS + MPM + MPT represents that proportion of any increase in income which leaks out of the circular flow. The multiplier effect is that an increase in investment (I) or government expenditure (G), independent consumption (C) or exports (X) will set in motion a series of successive spending and saving at different levels in the domestic tobacco economy. The proportion of the income which is passed on to the different levels of spending is reduced by leakages – savings, imports and taxation – until it become immeasurably small. The effect is that the final value of the tobacco income will equal the initial investment multiplied by the value of the multiplier.

2.9.2.2 Harrod Domar Theory

The potential of Zimbabwe to grow based on the tobacco can also be illustrated using the Harrod Domar (H-D) development theory. According to Todaro (1998), the theory would require that the tobacco industry must save (S) and invest (I) to increase the capital stock (K) which will bring about growth. According to the H-D theory of development (Todaro, 1998), the net savings ratio (s) is a fixed proportion of the national tobacco output (Y)

$$S = sY$$

Total Investment (I) is determined by the level of Savings (S).

$$I = S = sY \quad (i)$$

New investment is defined as a change in capital stocks (K).

$$I = \Delta K \quad (ii)$$

The total capital stock K has a direct relationship to national tobacco output (Y) where the capital-output ratio is k as given below:

$$K/Y = k \quad (iii)$$

$$\Delta K/\Delta Y = k \quad (iv)$$

$$\Delta K = k\Delta Y \quad (v)$$

Based on equation i, ii and v it follows that:

$$I = \Delta K = k\Delta Y = sY$$

$$k\Delta Y = sY$$

$$\Delta Y/Y = s/k$$

Hence based on the H-D model, the growth rate of the tobacco economy ($\Delta Y/Y$) is determined jointly by the net savings (s) and the tobacco capital output ratio (k). The more the tobacco industry saves and invest in capital stocks, the more the industry and the country will grow. The higher the capital output ratio the lower the growth rates.

2.9.3 Development Theory Experiences in the Tobacco Economy

2.9.3.1 The Neoclassical Dependence Theory

Todaro (1998) also refers to this model as the centre periphery development theory of development that is an outgrowth of the Marxist thinking. The model argues that the continued existence of underdevelopment is a result of the historical evolution of a highly unequal international capitalistic system of rich – poor country relationships. The model explains that the world comprises the centre and periphery. The centre is a group of powerful, wealthy nations, while the periphery has many weak and poor developing nations. The periphery produces primary products and is dependent on the centre for capital, technology, exports of raw materials and imports of finished products. The centre is exploiting the periphery knowingly or unknowingly for its raw materials. This international capitalistic system is perpetuated knowingly or unknowingly by small elite class who enjoy high incomes, social status and political power rewarded by special interest groups such as multi-

national corporations, national bilateral aid agencies and multi-lateral assistances organisations (IMF and WB).

The dependency theory advocates for poor nations to de-link as little as possible but institute inward directed development based on trade with other developing countries along the line followed by Taiwan and South Korea, and more state interventions. The need for state intervention should be cognisant of the dictates of the dualistic development theory. The dualistic development theory according to Todaro (1998) points out the existence and persistence of substantial, even increasing divergence between rich and poor nations, and rich and poor people on various levels. The theory sites the following elements of dualism:

- i. Modern and traditional methods of production co-exist in urban and rural areas;
- ii. Wealthy and highly educated elites co-exist with masses of illiterate poor people
- iii. Powerful and wealthy industrialised nations co-exist with weak, impoverished peasant societies in the international economy.

The theory states that this co-existence is chronic not transitional. It's not temporal, in which case time will eliminate the divergences. The inequalities will actually grow as the co-existence will not lift the inferior element but develop its underdevelopment.

The CP model explains the case with tobacco in Zimbabwe. The country is producing and exporting processed unmanufactured tobacco products, while it imports finished tobacco products such as cigarettes. Benefits to Zimbabwe will be reflected by tobacco trade surplus and a positive capital account. Zimbabwe will stand to benefit from exploring more value

addition of tobacco and tobacco products in order to benefit from the various tobacco production and marketing models by restructuring the trade mix.

2.9.3.2 Tobacco and the Market Fundamentalism Development Theory

The market fundamentalism challenges statism recommended under the dependence theory in developing nations. According to Todaro (1998), the model states that underdevelopment results from poor resources allocation due to incorrect pricing policies and too much intervention by developing countries. The model content that to develop developing nations should allow market forces to come into play. Liberalisation of national markets draws additional domestic and foreign investment thus increases capital accumulation necessary for economy development (Todaro, 1998) based on the H-D Model.

Zimbabwe's experience of market fundamentalism was with the Economic Structural Adjustment Programme (ESAP) which was adopted in early 1990s. The country liberalised the marketing of all agriculture commodities, but maintained floor prices for grains. The tobacco industry is one sector where Zimbabwe has allowed market forces to rule with government playing a regulatory role. Because of the perceived success that the sector has recorded, many are keen to expand the model to other crop and livestock enterprises. The major concern however is that of false development paradigm.

2.9.3.3 Tobacco Diversification and False Paradigm Development Theory

This study was primarily motivated by the false paradigm development theory. According to Todaro (1998) states that underdevelopment of developing nations is as a result of faulty,

inappropriate advice by well-meaning but uninformed experts from developed country assistance agencies and multi-national donor organisations. Zimbabwe's experience with ESAP (the Washinton Consensus) which resulted in de-industrialisation, increasing poverty and food and nutrition security as a result local companies succumbed to regional and international competition is testimony that the false paradigm development theory is a reality. Before Zimbabwe can pin all its hopes for agriculture intensification and diversification through transfer of successful tobacco production and marketing models, it is important that the benefits of the tobacco production and marketing models to Zimbabwe and the farming community be examined closely and a clear understanding of the industry dynamics established to understand sources of productivity and provide policy guidelines.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter details the research methodology used for in the study. Kato (2002) and Myers, (2007) refer to methodology as the strategy of or approach to inquiry. It moves from the underlying philosophical assumptions to the research design, data collection and the analytical framework. The most common distinctions of research methods which are between quantitative and qualitative research methods (Kato, 2002) were adopted in this study.

3.2 RESEARCH STRATEGY

3.2.1 Research Methodology

The study adopted a mixed research that was largely quantitative (positivist). The study used qualitative (interpretive) research methods to explain the results (Gable, 1994, Kato 2002, Mayer, 2007). The research collected facts and data describing purely objective, publicly observable aspects of the tobacco production and marketing industry behaviour and the subjective meaning that this behaviour had for the industry success. As attested by Gable, (1994) this was informed by the fact that results from quantitative are greatly improved when used in conjunction with qualitative research methods. Kato (2002) also support the use of mixed methodology arguing that research results produced by quantitative and qualitative approaches are not completely truthful because one analysis or observation does not apply to all cases. However he contends that piling facts would be gradually near to the truth. Kato

(2002) advises that the best method for getting data which is useful in practice is to use the good points from both quantitative and qualitative research.

Gall and Borg (1999) quoted in Kato (2002) describe quantitative research as an approach to scientific inquiry whose characteristics are epistemological beliefs in objective reality, the analysis of reality into measurable variable, the study of samples that represent defined populations and reliance on statistical methods to analyse data. Myers (2007) agrees with Kato (2002) that quantitative research is positivist by nature and is generally impersonal and objective having been developed in the natural sciences to study natural phenomena. The use of the quantitative approach was thus motivated by the fact that the phenomenon or variable – economic benefits to farmers and the country – under investigations is measurable, and that data on tobacco production and marketing is available outsider the industry players .

The quantitative research strategy was used to investigate the economic benefits of tobacco production and marketing to farmers and the country as a whole, and test (1) the hypothesis that farmers and the economy benefit more under contract than auction system; (2) the association between the economic benefits and farm level characteristics; and (3) the association between production model and the farm level characteristics.

The qualitative research approach to inquiry based on an interpretive epistemology was adopted to explain, evaluate and develop a more understanding beyond figures or data, of tobacco production and marketing from the view point of researcher and the participant (Gable, 1994and Kato, 2002) to get tobacco industry value chain players' perspectives on what works in tobacco production and marketing.

The study used farm business financial management techniques, which include the cash flow, net enterprise income and net worth concepts to assess the economic benefits to the tobacco farmers. The study applied the value chain concept to get an understanding of the industry players under the alternative production models. The study also used various economic development theories including the Harrod Domar, neo-classical dependence, market fundamentalism and false paradigm development to explore the benefits of tobacco and marketing to the economy.

3.2.2 Research Philosophies

The research is based on a positivist, constructive, and interpretive ontology, axiology and epistemology depending on the variable under investigation. The positivist philosophy relates to the economic benefits of tobacco production and marketing to farmers and the economy and how they relate to farm level characteristics such as gender, agro-ecological zones, irrigation technology and experience. These are measurable and quantifiable and inquiry to find the value of such benefit is value free and that the truth, that is, whether farmers and the economy are benefiting is outside the knower or industry stakeholders.

The study was also guided by constructivism and interpretivism. The assumption is that key tobacco industry stakeholders construct or have constructed their own understanding and knowledge of the industry value chain through experiencing things and reflecting on those experiences. The knowledge of the tobacco industry value chain dynamics that have seen productivity gains and maintenance of regional and international market access and competitiveness tobacco production and marketing cannot be separated from the stakeholders in the industry. Table 3.1 below shows a comparison between quantitative and qualitative research methodologies based on ontology, epistemology and methodology.

Table 3.1: Comparison between Quantitative and Qualitative Research Methodologies

	Positivists	Post-positivist
Philosophy	Objectivism	Constructivism, Interpretivism, Naturalism
Epistemology: Acquisition of knowledge and nature of knowing	Knower and known are independent. The truth is outside the knower.	Knower and known cannot be separated Reality and knowledge is embedded in social interactions
Ontology: Nature of reality, truth and knowledge	Reality is fixed, measurable and countable	Reality is constructed and constantly changes with experiences
Axiology: Value of researcher	Inquiry is researcher's value free	Research is value bond. Research is influenced by researcher's values.
Methodology: Research Process	Quantitative Deductive: Emphasis on hypothesis/ theory testing Structured approach- The study process is predetermined. Population known: Random sampling used to select interviewees Structured questionnaire	Qualitative Inductive: Produces theories from data Purposeful sampling Open-ended questions
Advantages		
Disadvantages	Cannot follow-up or learn during the research	Allows follow-up and learning during the research

Sources: Lecture Notes (Matunhu, 2013), Gable, 1994; Kato, 2002; Golafshari, 2003; and Myers (2007)

3.2.3 Research Design

The research design integrated the positivist quantitative and the interpretive qualitative designs. According to Gable (1994) and Kato (2002), the most common quantitative research methods accepted in social sciences include survey method, laboratory experiments and formal methods such as econometrics and numerical methods such as mathematical modelling. The study adopted the survey research design, which involves the administration of a survey instrument (questionnaire) on an identified sample of the population. Kato (2002) indicates that a survey can either be cross-sectional or longitudinal in design. The former is static involving measuring a phenomenon at a particular time, while the later is dynamic and able to follow the dynamic development of a phenomenon under investigation. The study adopted the cross-sectional design for the cost benefit analysis at farmer's level in order to delivery results in the expected time. At the national level the study adopted a longitudinal design as the data on production, imports and exports trends was readily available.

Myers (2007) states that qualitative research designs include case study research and ethnography. Gable (1994) adds the third one which is the longitudinal study. The research study instituted researcher observations and in-depth interviews with identified contractors, input suppliers, processors, auction floors and regulatory authorities to: (1) study the natural value chain setting of the industry and generate theories from practice; (2) understand the nature and complexity of tobacco production and marketing processes and problems; and (3) get valuable insights into the future of the tobacco industry and options for expansion and diversification to other alternative crop and livestock enterprises (Gable, 2015). Data was obtained using interviews, and semi-structured questionnaires, documents and texts, and the

researcher's impressions and reactions (Myers (2007)). The researchers' observation and views were also an important part of the research design.

3.3 DATA COLLECTION

3.3.1 Secondary Data

The study carried out a desk study to collect secondary data and information on tobacco production, imports, exports and prices trends. This included the review of Government policy documents, media reports, Reserve Bank of Zimbabwe and TIMB Annual Reports, and other research that has been done in the field.

3.3.2 Primary Data

3.3.2.1 Target Population

The study targeted tobacco growers and tobacco contractors across the country. The study also targeted key informants in the tobacco value chain including farmers' organisations, auction floors and industry regulating authorities.

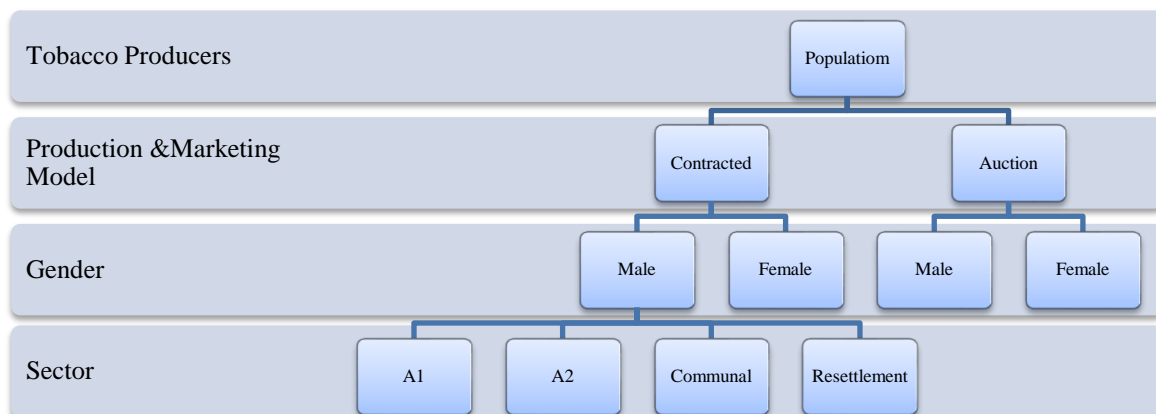
3.3.2.2 Sampling Methodology

Sampling involved selecting a representative sub-set of observations from a population (Wegner, 1997) of tobacco producers and contractors to determine characteristics of the random variables under study.

Selection of Farmers

The sampling of farmers used a stratified random sampling technique based on the TIMB's national database of tobacco producers. The research adopted a three-stage stratified random sampling techniques. Farmers were categorised into two segments (strata) based on whether they are contracted or auction tobacco growers. In each of the production model-based strata, farmers were further stratified by gender. The gender-based strata was further categorised by sector. This methodology was used in order to achieved a balanced design for the study in respect of the contract and auction models, gender and sector to ensure equal representation in the sample of characteristics that may have *a priori* influence on the level of income or economic benefits accruing to farmers and the economy. According to the balanced design is key to increase the statistical power of estimation of the Chi-square and Analysis of Variance (Anova) which the study used in the analysis.

Diagram 3.1: The Sampling Framework for Tobacco Producers



The farmers selected for the study were selected from the sector-based sub-strata based on systematic random sampling methodology.

Selection of Contractors

Tobacco contractors included merchants and processors. The selection of the contractors to be surveyed was based on convenience sampling. The TIMB database of all the contractors, processors and auction floors for 2015 was used. All these were contacted physically and or by telephone to arrange for interview meetings. The selected and interviewed contractors, processors and auctions were only those that agreed to face to face meetings.

Selection of Key Informants

The key informants were selected purposefully for their roles in the tobacco value chain. The interviewed key informants included Auction Floors, representatives of tobacco growers (Zimbabwe Tobacco Association (ZTA)), input suppliers (Zimbabwe Tobacco Seed Association (ZTSA), Zimbabwe Fertiliser Trade Association (ZFTA)) and regulatory

authorities (TIMB and Tobacco Research Board (TRB), Ministry of Agriculture Mechanisation and Irrigation Development (MAMID), Ministry of Finance and Economic Development (MFED) and Reserve Bank of Zimbabwe).

3.3.2.3 Data Collection Tools

Desk Study

Use was made of desk study to collect secondary data and information on tobacco production and marketing, imports, exports, prices trends. This involved a review of policy documents, statistical bulletins, and the TIMB annual reports.

Questionnaires

The TIMB was used as the key informant for grower information using its database of tobacco growers. A structure questionnaire was sent to TIMB to generate a listing of the farmers. In addition to listing the growers, TIMB also provided primary data on key variables for the study. The variables include the grower identify, area and district in which the grower is located, irrigated and dryland area, farmers' experience, tobacco output, auction floors or contractor to which deliveries were made, the quality grades and prices achieved, deductions and payout to the grower. The respective agro-ecological zones for the farmer were inferred from the area and district of the farmer. Follow-up interviews were held with the selected growers to establish input packages and their value for various contractors. This was especially done for purposes of triangulation and validation of data and information on contract input packages.

Key Informants Interviews

The study interviewed one Auction Floor, TIMB, TRB, ZTA, RBZ, the Zimbabwe Fertiliser Trade Association, MAMID, MFED and RBZ. The interviews were guided by a checklist of open-ended questions. These were used to give respondents an opportunity to give explanations to industry observations. The RBZ provided information on tobacco current account to assess the tobacco industry trade balance.

Interviews with Value Chain Players

The study interviewed seven (7) contractors comprising one (1) processor and six (6) merchants using a questionnaire with open ended questions which were then coded for analysis. The interviews contractors provided primary data on tobacco contracting models, input packages provided and their values as well as information on challenges and possible solutions. Contractors also provided information on the scope for contracting alternative crop and livestock enterprises to tobacco.

3.3.3 Data Analysis Tools

Table 3.2: Objective, Questions, Hypothesis Analytical Framework

Objectives	Questions	Hypothesis	Analytical Tool(s)
<p>To assess the tobacco industry value chain structure, and alternative tobacco production and marketing models and how they promote productivity gains, and global market access and competitiveness;</p>	<p>What is the tobacco value chain structure in Zimbabwe?</p> <p>What are the alternative tobacco production and marketing models in Zimbabwe?</p> <p>What productivity gains, and domestic, regional and global market access and competitiveness have been achieved in tobacco?</p>		<p>Value Chain Analysis</p>
<p>To determine the association between the alternative tobacco production and marketing models and the various farm level characteristics including sector, gender, agro-ecology, irrigation status and farmer experience as well as their</p>	<p>What is there a relationship between the tobacco production and marketing model and the farmer level characteristics including sector, gender, agro-ecology and technology;</p>	<p>There is no relationship between the tobacco production and marketing models and farmer level characteristics</p>	<p>Chi-square Test</p>

Objectives	Questions	Hypothesis	Analytical Tool(s)
impact on determinants of income such as quality grades achieved.			
To evaluate the economic benefits accruing to farmers under contract and auction tobacco production models and establish if farmers and the economy are benefiting more from contract or auction tobacco production and marketing models	<p>What are the cost and benefits under contract and auction tobacco production systems based on standard budget and survey data?</p> <p>Which model is more beneficial to farmers and the economy?</p>	Tobacco farmers and the nation economy do not benefit more from production and marketing of tobacco under contract farming arrangements.	<p>Cost Benefit Analysis</p> <p>Descriptive Statistics</p> <p>One-way Anova</p>
To assess how farm level characteristics such as sector, gender, agro-ecology, irrigation status and experience condition the economic benefits under alternative tobacco production and marketing models at farm levels; and	How are the economic benefits under auction and contract tobacco production and marketing model conditioned by farm level dimensions such as farm size gender, agro-ecology, technology, educational level?	Farm level characteristics do not condition the level of economic benefits that accrue to farmers and the economy under alternative tobacco production and marketing models.	<p>Descriptive Statistics</p> <p>Factorial Analysis of Variance (ANOVA)</p>

3.3.3.1 Value Chain Analysis

The study used the value chain analysis approach to go beyond the figures of the quantitative results from the cost benefit analysis, the chi-square test and analysis of variance. According to IFAD (2012), the value chain analysis methodology can be used to assess actors and factors that influence the performance of the tobacco industry and relationships among the tobacco value chain players and identify the main constraints to increased efficiency, productivity and competitiveness of the tobacco industry and how these constraints can be overcome. This is supported by the World Bank (2010). The bank notes that value chains are a key framework for understanding how inputs and services are brought together and then used to grow, transform, or manufacture a product; how the product then moves physically from the producer to the customer; and how value increases along the way.

The bank further argues that, the value chain perspective provides important means to understand business-to-business relationships that connect the chain, mechanisms for increasing efficiency, and ways to enable businesses to increase productivity and add value. It also provides a reference point for improvements in supporting services and the business environment. It can contribute to pro-poor initiatives and better linking of small businesses with the market. The value chain approach guides and drive high-impact and sustainable initiatives focused on improving productivity, competitiveness, entrepreneurship, and the growth of small and medium enterprises.

3.3.3.2 Cost Benefit Analysis

Partial and Full Budgets

The study used the net enterprise and net cash flow cost benefit analyses techniques to make a comparative analysis of the alternative tobacco production and marketing models. These were performed using two budgeting techniques: (1) the full budget analysis which was based on standard tobacco production and marketing budgets incorporating all costs – cash and non-cash - incurred by a grower per hectare; and (2) partial budget analysis which was based on actual sales revenues, deductions and payouts to growers from the sample survey. The later method was considered to be partial budgeting because the deductions (costs) were only limited to what the contractor had advanced to contracted growers. These were deductions made through the TIMB stop order system, net of levy related deductions. The deductions for the non-contracted were based on the contract package valued using market prices.

The full budget analysis was used to establish profitability and viability of contract and auction tobacco production and marketing. The study noted that the standard budgets assumed uniform quality, price and yield across the tobacco production and marketing models. Yet, these income determinants are influenced by the model of production and marketing and farm level characteristics, and are likely to differ across farm level characteristics. In order to see the effect of the model and farm level characteristics on viability and profitability and establish which model was more beneficial to farmers and the economy, the partial budget was adopted based on sample survey data. The sales revenue, prices and quality data from the sample survey already incorporated the effect of farm level characteristics on the determinants of net income.

The full and partial budget both used net income and net cash flow as decision criteria for profitability and viability respectively.

Net Tobacco Income Budget

The net tobacco income budget was used to evaluate if farmers are viable under contract and auction system. Castle et al (1972), states that net income represents the return to the grower for management and net worth invested into the business. It indicates what is available from the year's operations to pay income tax, family living expenses, and to re-invest in the business. The net tobacco income is the difference between revenue from the sale of tobacco and expenses incurred by the grower to realise that revenue:

$$\textit{Net Tobacco Income} = \textit{Revenue} - \textit{Expenses}$$

According to Abbot (1990) tobacco revenue is income obtained from growing and selling of tobacco. Castle et al (1972) adds that such revenue represents the value of production for the period and only include sales resulting from the normal operations of the farm business.

For the standard budget revenue is a product of the total quantity of tobacco delivered and the average price per kg of tobacco.

$$\textit{Revenue} = QP_a$$

Where:

Q = Total quantity of tobacco delivered, and

P_a = Average price

For the sample survey data (in the partial analysis), revenue was equal to the sum of the products of quantity and price per delivery.

$$Revenue = \sum_1^n Q_n P_n$$

Where:

n = Number of delivery

Q_n = Quantity of tobacco sold in the n^{th} delivery

P_n = Price of a kg of tobacco obtained for the n^{th} delivery

Expenses under the standard budget included both cash and non-cash expenses. All costs were included. Cash expenses included hired labour, repairs, seed, fertilisers, chemicals, feed, coal, fuel and wages.

$$Expenses = \sum_1^i E_{ci} + \sum_1^i E_{nci}$$

Where:

E_{ci} = the i^{th} Cash Expenses Item

E_{nci} = The i^{th} Non Cash Expenses

For the sample survey data, expenses equals the sum of deduction per every delivery.

$$Expenses = \sum_1^n D_n$$

Where:

N = The n^{th} delivery

D_n = Deductions from the n^{th} delivery

The study adopted that tobacco production and marketing benefits farmers if the tobacco enterprise is generating a positive net income under the full and partial budget analyses.

$$\textbf{Full Budget: Net Tobacco Income} > QP_a - \left[\sum_1^i E_{ci} + \sum_1^i E_{nci} \right]$$

$$\textbf{Partial Budget: Net Tobacco Income} > \sum_1^n Q_n P_n - \sum_1^n D_n$$

Net Cashflow

Warren (1982) and Abbot *etal* (1990) refers to cash as money either in hand or in a bank account and argue that a farm business should ensure that it has enough cash to meet its obligations as they become due. Warren (1982) refers to cash flow as the movement of cash into and out of the farm enterprise business during a given period. Castle *etal* (1972) indicates that the cash flow statement summarises the farm business's sources and uses of cash and provides information about the liquidity and loan repayment capacity of the farm.

The study instituted the net cashflow technique using the full budget to see if tobacco production and marketing generates positive free cash flows after accounting for all revenue and capital expenditure requirements for the next season. This was important according to Castle *etal* (1972), who points out that even when the enterprise is making reasonable profit, it may be headed for financing problems if the business fails to generate sufficient cash to meet all business, debt repayments, tax and other key services.

According to Warren (1982) free cash flow are obtained by adding back none cash expenses during a given period to net income and subtracting the required re-investment – being revenue and capital expenditure requirements – into the business for the next season.

$$FCF = Y + \sum_1^i E_{nci} + \sum_1^i F_i + \sum_1^i W_i$$

Where:

FCF = Free Cash Flows

Y = Net tobacco Income

F = Fixed asset re-investment requirement

W = Working capital re-investment requirement

The study adopted the decision criteria that tobacco is viable if it is generating positive free cash flows after re-investment requirements.

3.3.3.3 Descriptive Statistics

The study used descriptive statistics including mean and standard deviation to describe the distribution of key variables from the sample data under each tobacco production and marketing model: auction, contract marketing, and production and marketing model. The key variables included tobacco area, yield and price which were considered as critical in determining the variable under study – net tobacco income. The descriptive statistics were used in interpreting the results from the chi-square and anova analysis.

The study also sought to understand how these key determinant of net tobacco income are influenced by farm level characteristics. In this regard, descriptive statistics were also generated for each model broken down by farm level characteristics to describe the observed effects of such characteristics on the mean and standard deviations of the key determinants of productivity and net tobacco income.

3.3.3.4 Inferential Statistics

Chi-square Test

The chi-square involved the cross tabulated of tobacco production and marketing models with the various farm level characteristics including gender, age, farm size, natural region and irrigation status to establish whether there was association between the production and marketing models and the farmer level characteristics.

The quality of tobacco delivered is crucial in determining the level of economic benefits that accrue to growers because of its influence on prices. The study also cross-tabulated (1) quality and farm level characteristics; (2) quality and model; and (3) quality and marketing channel to determine whether there was actually an association between the different quality grades and the farmer level characteristics, model and marketing channel respectively.

Analysis of Variance

One-Way Anova

The study adopted the one-way anova to test the differences in the group means of the dependent variable broken down by the levels of independent variables. The dependent variable was net tobacco income and the independent variable was the alternative tobacco production and marketing model with three levels – auction, contract marketing, and contract production and marketing. The study adopted one-way anova to test the difference in the net income among models and test the hypothesis that farmers and the economy do not benefit

more under contract and the alternative hypothesis that farmers and the economy benefit more under contract farming arrangements.

$$u_{cm} = u_{cpm} = u_a$$

Where

u_{cm} = the mean net tobacco income under contract marketing

u_{cpm} = the mean net tobacco income under contract production and marketing

u_a = the mean net tobacco income under auction.

The one-way anova hypothesis test used sample survey data as opposed to the standard budgets data obtained from the value chain analysis. This was done to ensure that the effect of farm level characteristics is taken into account in the analysis. The study understood the standard budget to assume uniform quality and average price hence ignoring the impact of farm level characteristics on these key determinants of net income. The one-way anova was chosen based on Dolgun (2012) who advise that one-way anova is relevant when there is one continuous variable (net tobacco income) and one categorical variable (production models with three (3) levels – auction, contract marketing and contract production and marketing).

The study adopted net income is a function of area, yield and prices (quality) and used the one-way anova to test the statistical significance in the mean area, yield and prices across production and marketing models. In other words:

- i. Mean Areas are equal across models
- ii. Mean yield are equal across models
- iii. Mean prices are equal across models.

This confirmed the respective area, yield and price effects of the production and marketing models on net tobacco income.

Factorial Anova

According to Swayer (2010), anova is useful in experimental designs with one continuous dependent variable and a multiple of experimental groups with one or more independent categorical variables. The Institute of Digital Research and Education further explains that a factorial anova has two or more categorical independent variables with or without interactions and a single normally distributed interval variable. The dependent variable for the study was net tobacco income and the independent variables are the various levels of the farm level factors – gender, sector, farm size, agro-ecological zone, irrigation, experience.

The study evaluated how these independent variables conditioned, influence or affect the net tobacco income under contract marketing, contract production and marketing, and auction separately. The study run a 6 x 27 factorial ANOVA under each tobacco production and marketing model to test the significance of the difference in the means of the dependent variable (net tobacco income) groups based on or broken down by levels of the independent variables (main effects) as well as levels of interactions between independent variables.

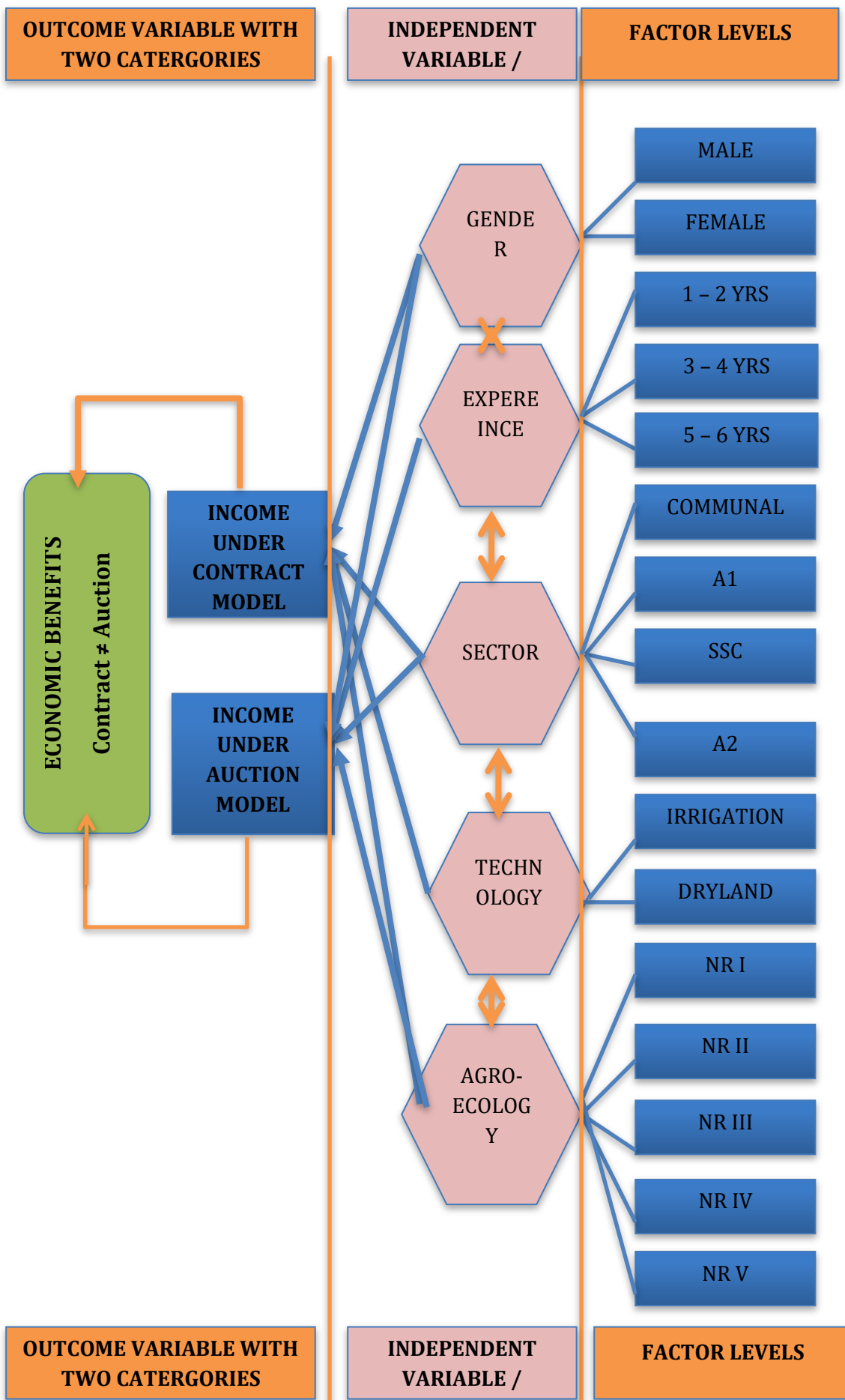
The main effect is the effect of an independent variable (factor) on a dependent variable, determined separate from the effects of other independent variable. The main effect is like a one-factor anova. Interactions describe an interplay between independent variables such that different levels of the independent variables have non-additive effects on the dependent variable. There is an interaction between two factors when the dependent variable response at levels of one factor differ from those produced at levels of the other factor(s).

Table 3.3: Variables for Anova Under each Tobacco Production and Marketing Model

Symbol	Main Effect and Interaction	Groups	H ₀ : There are no differences in the group means under each model
Main Effects			
X ₁	Farm size	3	$u_1 = u_2 = u_3$
X ₂	Irrigation Status	6	$u_1 = u_2 = u_3 = u_4 = u_5 = u_6$
X ₃	Agro-ecological zone	6	$u_1 = u_2 = u_3 = u_4 = u_5 = u_6$
X ₄	Sector	4	$u_1 = u_2 = u_3 = u_4$
X ₅	Experience in tobacco production	6	$u_1 = u_2 = u_3 = u_4 = u_5 = u_6$
X ₆	Gender of the Farmer	2	$u_1 = u_2$
Interactions Effects			
X ₁ X ₂	Farm size and Irrigation Status	18	$u_1 = u_2 = u_3 = u_4 = u_5 = u_6 = \dots = u_{18}$
X ₁ X ₆	Farm size * Gender	6	$u_1 = u_2 = u_3 = u_4 = u_5 = u_6$
X ₁ X ₂ X ₆	Farm size * Gender * Irrigation Status	32	$u_1 = u_2 = u_3 = u_4 = u_5 = u_6 = \dots = u_{32}$
X ₁ X ₂ X ₆ X ₄	Farm size * Gender * Irrigation Status * Sector	128	$u_1 = u_2 = u_3 = u_4 = u_5 = u_6 = \dots = u_{128}$

Digramme 3.2 shows the pictorial conceptualisation of the economic benefits (dependent variable), and the factors (independent variables) and the factor levels.

Diagram 3.2 The ANOVA Factor, Level and Outcome Analytical Framework



CHAPTER 4: RESULTS AND DISCUSSION

4.1 INTRODUCTION

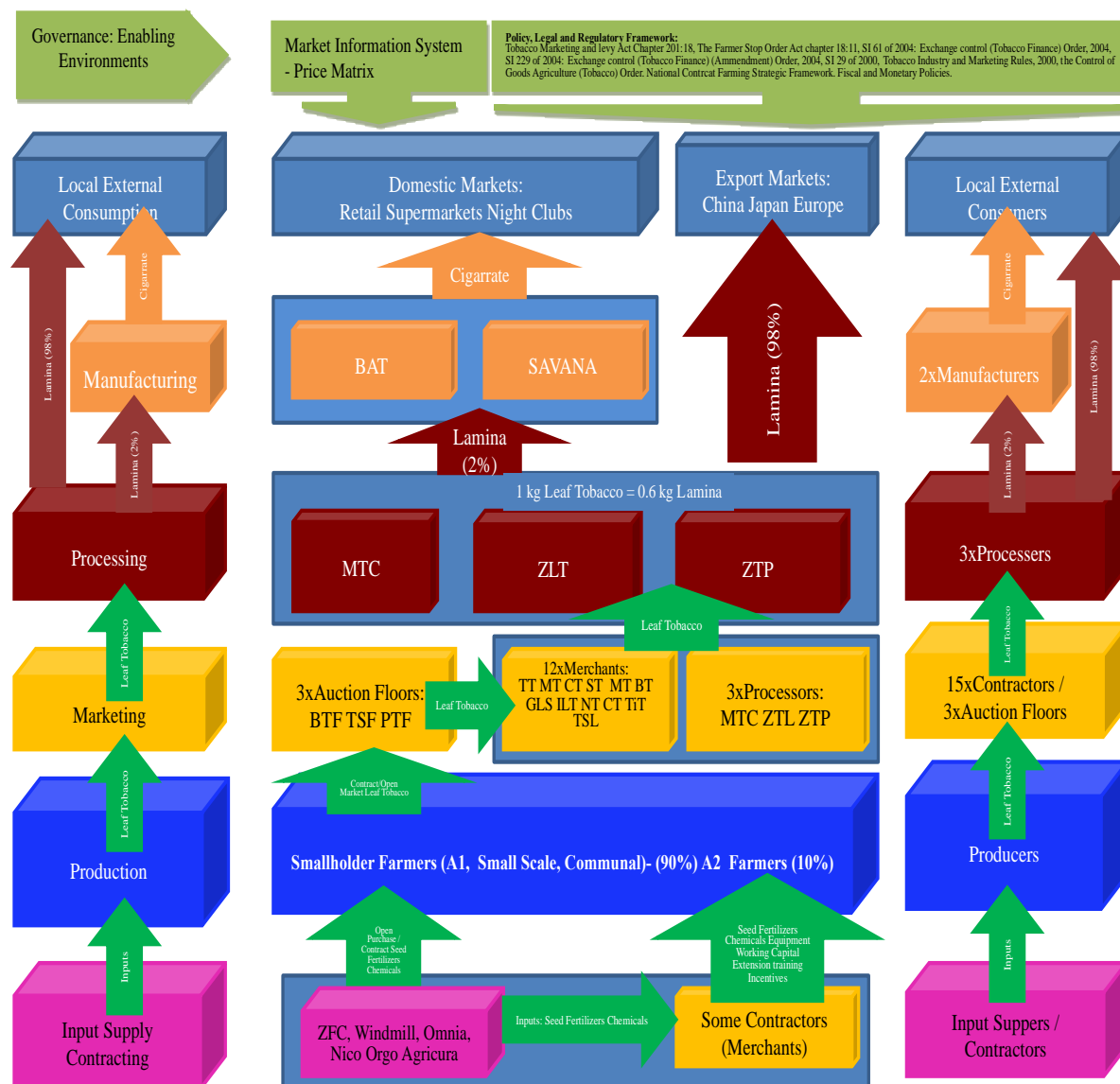
This chapter presents the results of the study starting with the tobacco value chain structure and sources of productivity in the second part of the chapter. The third part presents findings relating to global and regional tobacco competitiveness. The fourth part of the chapter gives an evaluation of the tobacco production and marketing models to establish which model the economy benefits the most from. The fifth part evaluates the future of tobacco in light of the FCTC while the sixth evaluates agriculture intensification options based on the experience of tobacco. The last part of the chapter presents the socio-economic characteristics of the sampled tobacco growers, descriptive statistics, chi-square tests and anova results.

4.2 TOBACCO INDUSTRY VALUE CHAIN RESULTS AND ANALYSIS

4.2.1 The Value Chain Structure

The tobacco industry has a complete and integrated local market-based value chain that converts 98% of the tobacco produced locally to unmanufactured semi processed tobacco for exported as lamina for export to China, Britain and Japan. The remaining 2% of is manufactured into cigarettes for sale on the local market.

Diagram 4.1: Tobacco Value Chain Functions, Actors, and Product Flows



Source: Author (Structure Adopted from Duguma (2012))

The study established that the tobacco value chain has a competitive input supply support industry comprising two local manufacturers competing with two large and numerous other small fertilizer traders. The production stage has 97,000 tobacco growers out of which 90% and 10% are smallholder and commercial scale growers respectively. The marketing stage of the value chain comprises 3 auction floors, 12 tobacco merchants and 3 processors who are also at the next stage of the value chain - processing. The big players (ZLT, Tribac) have linkages with Transnational Companies and these are financing small merchants to contract

for deliveries to them. The processors convert the green leaf to lamina for export. The manufacturing stage of the value stage has two players who manufacture cigarettes for domestic market.

4.2.2 Sources of Productivity, Market Access, Competitiveness

4.2.2.1 Value Chain Coordination Mechanisms

The study revealed that the major source of productivity, market access and competitiveness for the tobacco value chain was the emergence of a new vertical coordination mechanisms in 2004 – contract farming – that is ensuring an efficient flow of information, inputs and outputs, and finances across the value chain.

The study established that there are three (3) tobacco value chain coordination mechanisms or production and marketing models. These were: (1) auction (open) production and marketing; (2) contract marketing; and (3) contract production and marketing.

Table 4.1: Tobacco Production and Marketing Models (Value Chain Coordination Mechanisms)

Analytical Dimensions	Tobacco Production and Marketing Models		
	Auction	Contract	
		Contract Marketing	Contract Production and Marketing
Input Supply	Growers supply own inputs.	Growers supply own inputs. Four (4) contractors used contract marketing.	Contractors provided growers with inputs. All of the 6 interviewed contractors used this model.
		Contractors use a combination of the two.	
Input Packages	No input pack. Farmers provide the full input requirements.	No input pack. Farmers provide the full input requirements.	Seedbed Pack, Field Pack (Fertilizer & chemical), Curing Pack, Working Capital Pack (for land preparation, wages, irrigation) Afforestation Pack. Extra packs include school fees. Pack do not necessarily match growers' total input requirements but is based on target grower's assessed risk. The small scale pack ranged from US\$1,200 – US\$5000 per ha. The commercial pack range from US\$5 – 14,000. The major difference with small-scale pack emanates from

Analytical Dimensions	Tobacco Production and Marketing Models		
	Auction	Contract	
		Contract Marketing	Contract Production and Marketing
			increases in working capital for wages and irrigation, and other consumption funding as school fees and fuel.
Administration of Inputs to Growers	Growers buy own inputs directly from suppliers using own funds and deliver to farm.	Growers buy own inputs directly from suppliers using own funds and deliver to farm.	1. Contractors buy inputs directly from suppliers and distribute them to farmers. All merchant-contractors used this model.
			2. Growers mobilise resources from suppliers and contractor pays suppliers directly. The one processor-contractor interviewed was involved used this model.
Input Pricing policy	Prevailing market price	Prevailing market price	1. Market Price + Mark-up + Administration Fees + Interest Charge. All 4-merchant contractors were using this policy. Mark-up ranged between 10-20%. Interest 10 – 12%. Admin US\$50 – US\$150.
			2. Market Price + Interest Charge. The processor-contractor used this policy.

Analytical Dimensions	Tobacco Production and Marketing Models		
	Auction	Contract	
		Contract Marketing	Contract Production and Marketing
			3. Market Price. One merchant contractor used this policy.
Production support		Extension and technical support services	New production technologies Extension and technical support services
Marketing Channel	Three Auction floors.	Growers sales produce to contractor.	
Marketing Partnerships		Growers deliver produce to partner contractor or auction floor with grading space and staff. The floors charge bales weighing fees, sales commission, and clearance fees.	
Grading and Pricing of Produce	Auction staff supervised by TIMB graders	Contractor or Auction Staff under the supervision of TIMB graders	
Pricing of Leaf Tobacco	Auction Price	TIMB Grade-Price Matrix + Premium	

The study attributed the difference in the administration of inputs and input pricing policy between merchants and processors to the difference in the business model. Processors are more interested in ensuring throughput to their plants than making money out of input distribution. In the same vein there is an emerging trend where processors (and big merchants) are integrating backwards into contracting of farmers by forming equity ventures or non-equity partnerships in order to ensure throughput to processing plant.

The study observed that 100% of the contractors in addition to buying their contracted crop, also participate on the auction floor to determine the price-grade matrix, which represents the minimum price for the contract marketing system. The value chain leaders on the private sector side are companies with international linkages. These are Tianze and Tribac (merchants), and MTC, ZLT (processors). Tianze is linked to the China government, Tribac to Japan International Tobacco, MTC to Alliance International, and ZLT to Universal Tobacco Company, America. These have floors to which tobacco is delivered and have easy access to offshore financing which they also are channelling to their local counterparts who they partner for contracting of farmers

Table 4.2: Input Packs for Processors and and Merchants (Key Informant)

Type_Contractor		N	Mean	Std. Deviation
Processor	Seed_Pack	2	43.48	12.763
	Land_Chem\$	2	404.05	432.68
	Comp_C\$	2	45.94	2.74

Type_Contractor		N	Mean	Std. Deviation
	AN\$	2	35.42	2.00
	Cash_Labour	2	100.00	141.42
	Coal	2	250.50	64.356
	Cost_Ha	2	1,387.24	92.631
	Interest_Rate	2	9.50	.71
	Coal_Market	2	195.00	0.00
	AM_Market\$	2	33.00	0.00
	CompC_Market\$	2	33.00	0.00
Merchant	Seed_Pack	11	98.17	136.85
	Land_Chem\$	11	142.28	102.43
	Comp_C\$	11	47.78	8.94
	AN\$	11	37.85	5.52
	Cash_Labour	11	141.81	136.15
	Coal	11	221.85	100.72
	Cost_Ha	9	2,191.31	1260.34
	Interest_Rate	11	9.45	3.55
	Coal_Market	11	195.00	0.00
	AM_Market\$	11	33.00	0.00
	CompC_Market\$	11	33.0000	0.00

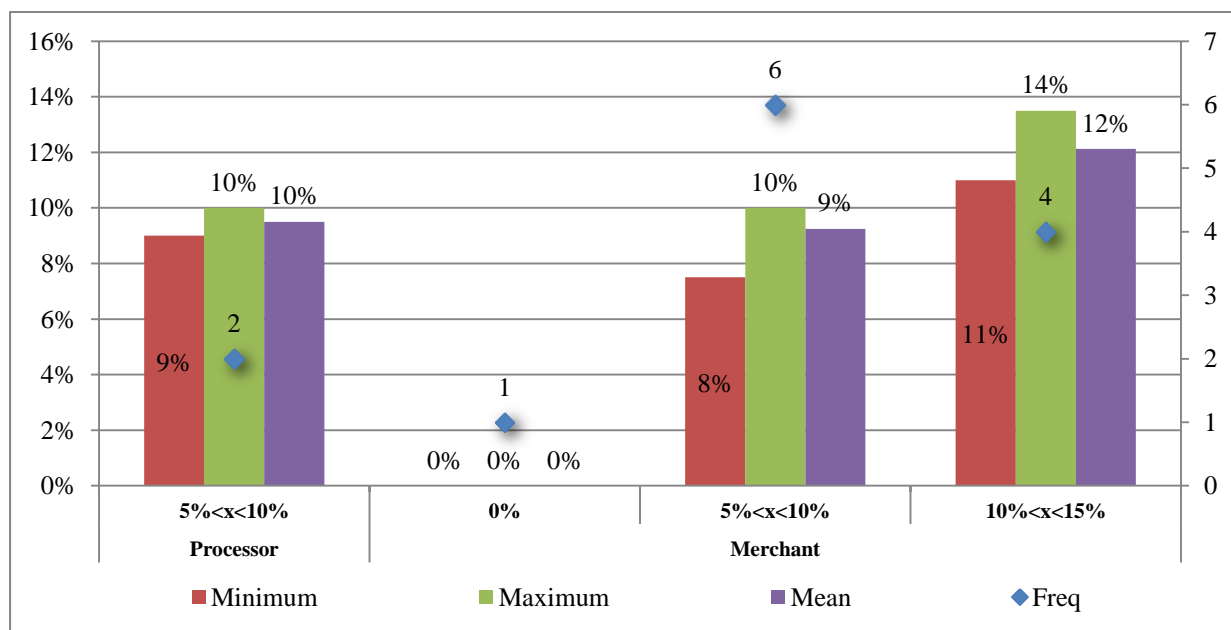
Table 4.3: Contract Input Pack For Small Scale Growers (Contractor Submissions)

Components	Inputs	Cash/Service	US\$
Seedbed			
Seed	✓		25
Fertilizer	✓		18
Chemicals	✓		22
			65
Field Costs			
Fertilizers	✓		590
Chemicals	✓		85
Transport In			57
			732
Working Capital		✓	163
Coal / Wood	✓		157
Protective clothing:	✓		56
Packaging Materials	✓		140
			421
Maize Seed	✓		19
Trees	✓		21
Insurance		✓	68
Administration Fees			115
Interest charge			
Extras		✓	
Total costs			1,530

The study established that the average contract input package based on analysis of data from key informants was US\$2045.12 per hectare. When the data was split by type of contractor, it was established that the average input pack for a merchant per hectare was higher at US\$2,191.31 compared to US\$1,387.24 for processors. However, merchants and processors charged nearly the same interest rates at 9.45% to 9.5% respectively. Based on submissions from contractors, the input pack was estimated at US\$1,530 per hectare.

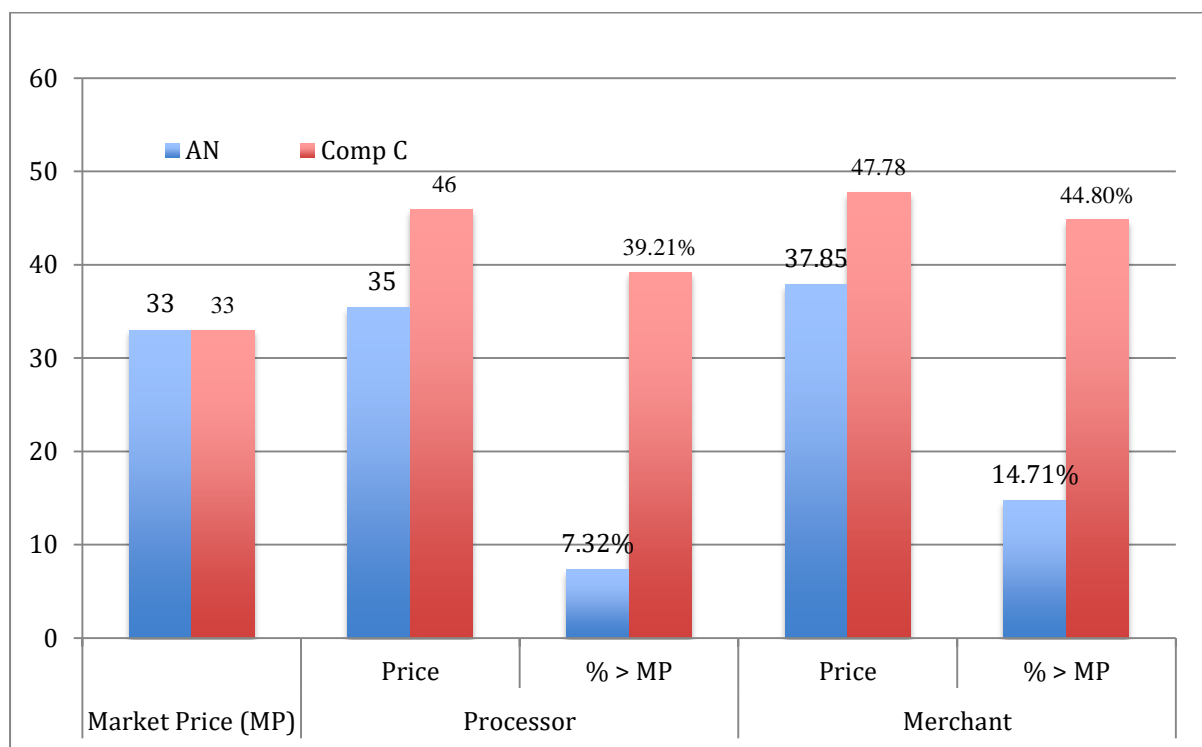
The study learned that contractors' input packages are not based on growers' total requirements. Contractors alleged that growers have a tendency to take everything on offer and even ask for more in the form of school fees and fuel for non-farm operations. The study observed that contractors are having challenges in establishing a viable input and working capital package for their various categories of growers.

Fig 4.1: Interest Rates Charged by Different Contractors



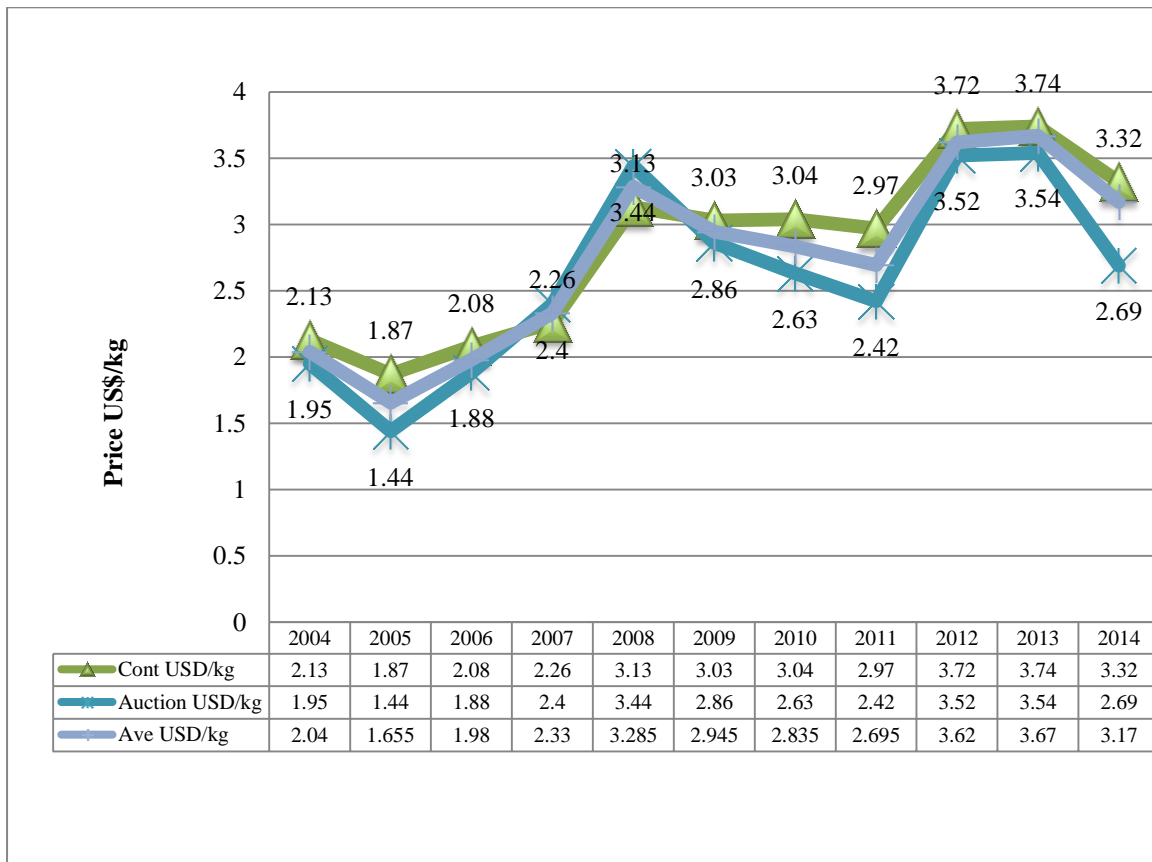
The study established that out of 13 contractors, 2 were processors and 11 merchants. All processors had interest ranging between 9 and 10%. Six of the merchant had interest ranging from 8% - 10% while 4 had interest ranging from 11% - 15% and one charged 0% interest.

Fig: 4.2: Comparison of Contract and Market Prices



Contractors of all type charged prices higher than market prices. Based on Ammonium Nitrate (AN) and Compound C (Comp C), the study established that merchants were above market price by 15% and 45% respectively while processors were 7% and 39% respectively. The highest percentage above market price is on Comp C than on AN because the later is in high demand at the beginning of the season.

Fig 4.3: Prices Paid under Auction and Contract Floors



When contract was introduced in 2004 it paid above auction prices. However, in 2007 and 2008 it was the auction which paid more. Following the introduction of the policy that contract prices cannot be lower than auction prices in 2009, the contract market is consistently paid more than the auction system. The experience of 2007 and 2008 gives testimony of how contractors can be powerful and growers are at their mercy.

Table 4.4: Value Chain Players' Perspectives on Tobacco Production and Marketing

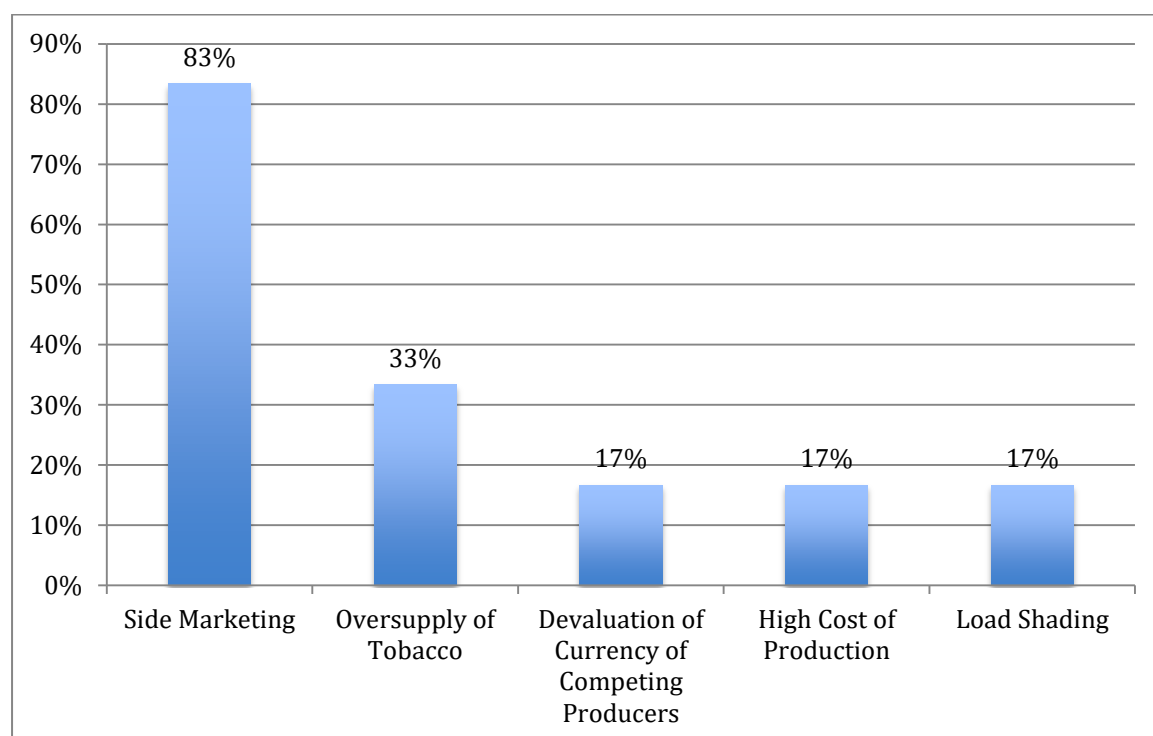
Dimensions	Input Suppliers	Farmers/Organisation	Contractors		Auction Floors	Regulatory Authorities
			Merchants	Processors		
Challenges in tobacco production and marketing	<p>High cost of production.</p> <p>Cheap imports of fertilisers and chemicals crowding out local producers.</p> <p>Economy not benefiting from tobacco production</p>	<p>Expensive contract inputs</p> <p>The quantities of inputs provided by contractors are below requirements</p> <p>Contractors paying low output prices</p> <p>Emergence of middlemen</p> <p>Farmers get low prices on the auction floors than middlemen.</p>	<p>Side marketing and accumulating debt. Recoveries ranging from 70 – 95%.</p> <p>Length and expensive debt recovery process up to US\$1000 to be able to attach property.</p>	<p>Side marketing and accumulating debt. Recoveries ranged from 90 – 95% of contract value.</p>	<p>Unavailability of funding for farmers. Contract fast replacing auction.</p>	<p>Anti-tobacco campaigns threaten tobacco production.</p> <p>Over production of tobacco resulting in declining prices.</p> <p>Contracted output now too low at 21% to be determining the price of tobacco.</p> <p>Side marketing results from diversion of inputs, inadequate monitoring on the part of contractors resulting in low productivity and over-borrowing on the part of farmers for non-productive use.</p>
Proposed solutions to challenges	<p>Limit imports licensing of cheap imports.</p> <p>Increase duty on imports of products which can be produced locally.</p>	<p>Contractors need to pay viable prices for farmers not side market.</p> <p>The government should intervene to deal with middlemen at auction floors.</p> <p>Enter into corporate</p>	<p>The TIMB grower registration system should be reviewed to ensure one plot one grower number.</p> <p>There is need to review the debt recovery legislation to allow the writing off of debt without having to incur</p>	<p>The TIMB grower registration system should be reviewed to ensure one plot one grower number.</p>	<p>The TIMB grower registration system should be reviewed to ensure one plot one grower number.</p>	<p>Tobacco production should be limited to below 160 million kg.</p> <p>Consider using negotiated price at the beginning of season instead of auction.</p> <p>Census to remove ghost farmers from database of growers – In 2014 22,000 farmers out of 97,000 did not deliver. Institute electronic</p>

Dimensions	Input Suppliers	Farmers/Organisation	Contractors		Auction Floors	Regulatory Authorities
			Merchants	Processors		
		farming partnerships with growers that are owing. The contractor has production management and give the grower 10% of harvest. 5% goes to repayment of debt and the other given directly to the grower.	the legal costs that mostly above what is to be recovered.			<p>tagging of bales.</p> <p>Government should consider mandatory lending to agriculture such as in Brazil where 15% total loan book should go to agriculture.</p> <p>Farmers should avoid production and marketing contract. They should focus on marketing contracts and borrow against the contracts.</p>
Future of tobacco production and marketing: Auction vs. Contract Farming	<p>Contractors should buy their inputs locally to support local industry.</p> <p>This will allow high sales volume and profits to retool local industry.</p>	<p>The auction system remains key to protecting farmers from contractors through a transparent price discovery system.</p> <p>If farmers regain access to funding from banks, the auction system will remain useful.</p>	<p>Contract farming is threatened by accumulating debt as a result of side marketing.</p> <p>Need to curb side marketing through tight registration of growers.</p>	<p>Contract farming is threatened by accumulating debt as a result of side marketing.</p> <p>Side marketing needs to be curbed.</p>	<p>The auction floor will continue to be relevant if farmers' access to finance increases. The auction is important to protect growers from contractors.</p> <p>The auction also remains important for new contractors.</p>	<p>The auction is fast disappearing through vertical integration as the market want to take control of quality through good agriculture practises and market detecting sustainable issues. The world trend is to have preplanting prices. This has been possible in Tanzania, Brazil, India and China with less than 100 grades. Zimbabwe has over 450 grades.</p> <p>However, preplanting price will not allow growers to benefit from market forces.</p>

Dimensions	Input Suppliers	Farmers/Organisation	Contractors		Auction Floors	Regulatory Authorities
			Merchants	Processors		
Future of tobacco production and marketing: Expansion vs. Diversification		The low producer prices are pushing farmers out of tobacco into alternative crop enterprises.	<p>There is increasing focus on small scale tobacco production. This increases yield and quality through improved monitoring and production control.</p> <p>The world market has made indications that it will not be able to absorb more than 160 million kg of Zimbabwe tobacco.</p>	Government should address the issue of side marketing.	The future of tobacco is threatened by the FCTC.	The growth of tobacco is limited by FCTC and what the world market can absorb. The world can only absorb 160 million kg.
Scope for extending tobacco production and marketing model to alternatives crop and livestock enterprises		<p>Tobacco is currently the product that attracts the most funding.</p> <p>Notwithstanding emerging middlemen, the regulatory framework ensures a viable minimum prices</p>	The marketing of tobacco is orderly and has a functional reliable stop order system. This should be replicated in other enterprises to attract funding. Players trust the regulating board has autonomy for decisions.	We are specialised in tobacco.	The contract and auction system are already in use in other sectors such as cotton, grain, horticulture and livestock. Interference limiting impact.	<p>The auction system is already in use in cattle and cotton.</p> <p>Contract is already in use in a variety of agriculture commodities including maize, wheat, cotton and horticulture.</p> <p>The levies are used to develop industry in terms of research, training and address afforestation issues.</p> <p>The parent Ministry has limited interference in the governance of the tobacco industry.</p>

The value chain perspectives revealed a great deal of divergent views on the cost of inputs provided by contractors and the extent of the side marketing problem. The study coded the value chain analysis responses on challenges were coded for analysis.

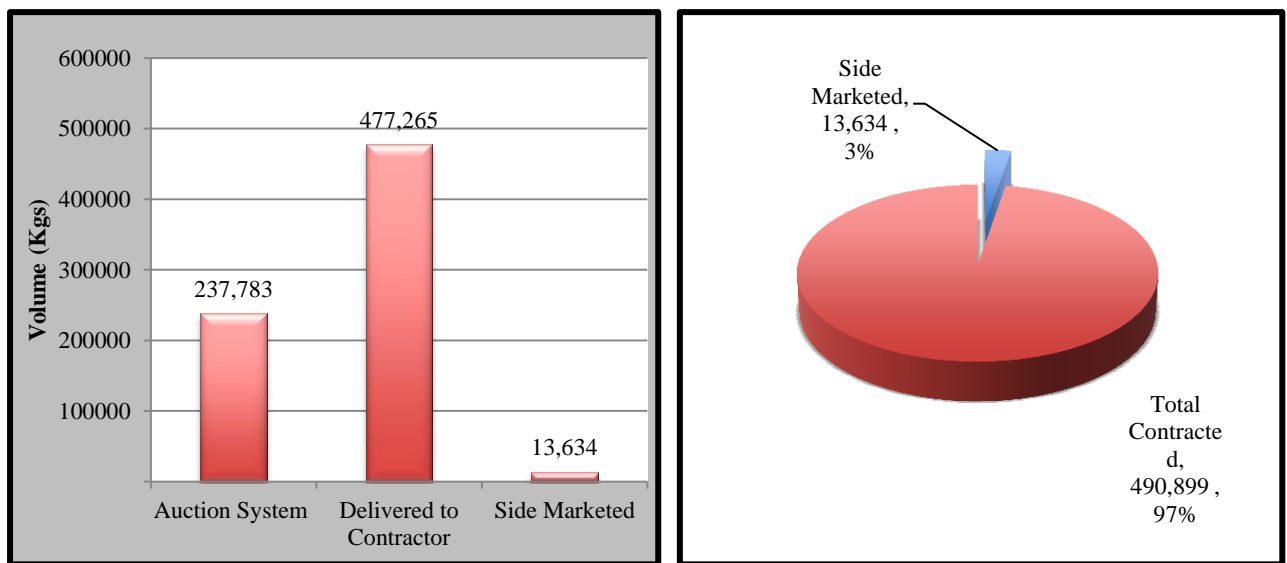
Fig 4.4: Challenges Faced by Contractors in Tobacco Production and Marketing



Those who cited side marketing indicated that the main reason was due to the relaxed system of grower registration that allowed one plot to have more than one grower number resulting what industry referred to as ghost growers. The regulating authority confirmed the need to address issues of ghost growers through tightening of the registration system.

From the sample survey data, the study established the following extent of side marketing in terms the total number of kilogrammes and percentage side marketed.

Fig 4.5: Extent of Side Marketing Kilogrammes and Percentage



The study concluded that the major causes of accumulating debt are side marketing, over-borrowing and divergence of inputs which results in low productivity.

4.2.2.2 Governance of the Tobacco Value Chain

The study looked at the governance of the tobacco industry across a number of dimensions which include policy and regulatory, coordination mechanisms, farmer organisation and corporate parenting. The study revealed that the tobacco industry is one of the industries that government has allowed market forces to guide production and marketing decisions while it

takes a regulatory function of directing and controlling the industry through the Tobacco Industry and Marketing Board (TIMB) which was established in terms of the Tobacco Marketing and levy Act Chapter 201:18. Other regulatory instruments revealed include the Farmer Stop Order Act chapter 18:11, SI 61 of 2004: Exchange control (Tobacco Finance) Order, 2004, SI 229 of 2004: Exchange control (Tobacco Finance) (Amendment) Order, 2004, SI 29 of 2000, Tobacco Industry and Marketing Rules, 2000, the SI 350 of the Control of Goods (Agriculture Order). Also regulating the industry is the letter from Exchange Control allowing domestic financing of tobacco production to the tune of US\$1 million.

The study established that the TIMB registers all tobacco value chain players – farmers, buyers, contractors (merchants, processors), auction floors and graders. The industry unlike other sectors has a functional stop order system that is administered by TIMB payment system. The study revealed a very healthy relationship between the regulatory authority and the parent Ministry which was found to be instituting a standalone type of parenting style focusing on appointment of staff to key positions, board appointments, and approval and monitoring of budgets particularly on the use of tobacco levies in the industry. The tobacco levy was used 75:25 for TIMB. The study established that both the TIMB and TRB had substantive Chief Executive Officers and Board of Directors. Tobacco merchants confirmed that there was very minimal interference by the parent Ministry and that the TIMB Act was fully in charge right across the value chain including issuance of import and export permits.

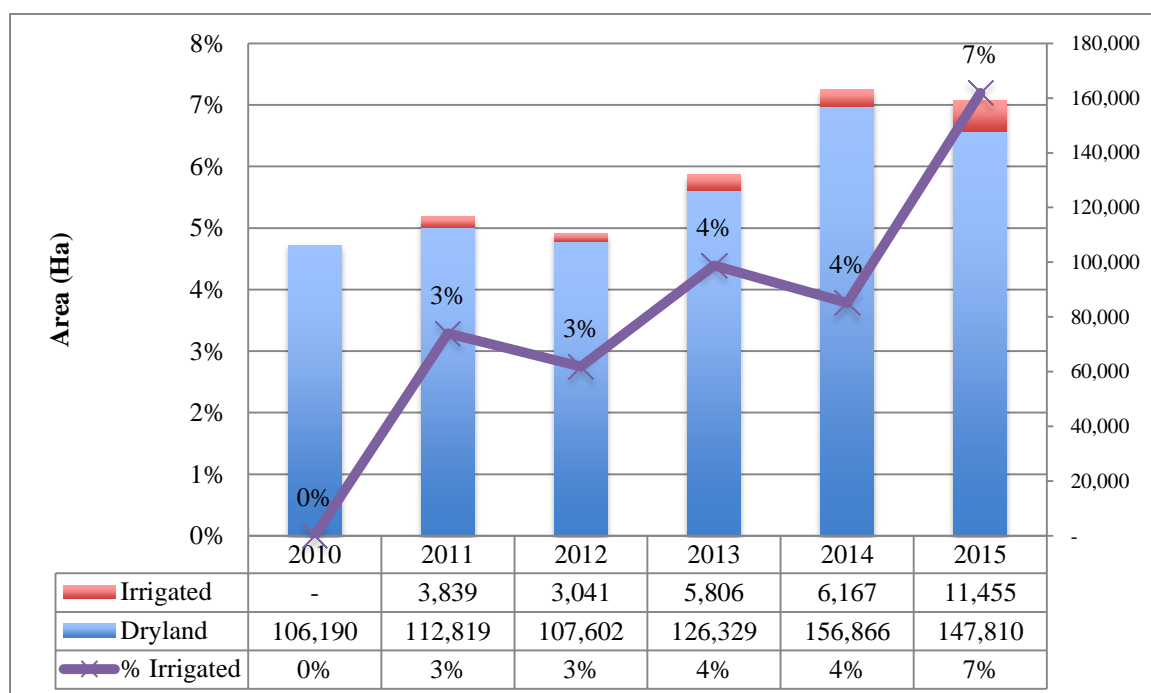
The study established that the governance system had nurtured a high level of trust and respect for the lead public sector value chain player (TIMB) who was reported to have maintained a close liaison all value chain players on issues that affect the industry. Farmers however, lamented the failure of the regulatory authority to reign in on emerging unscrupulous tobacco

buyers at auction floors. The study observed that there are emerging middlemen buying tobacco from growers at lower price and selling to auction floors and contractors. Contractors bamed the relaxed registration system which they felt provided a window for side marketing and this kind of behaviour

4.2.2.3 Production Structure

The study established that one of the major sources of productivity and competitiveness for the tobacco value chain was the changes in the production structure in terms of area under the crop, number of growers and introduction of new production and marketing models.

Figure 4.6: Increase in Area Under Irrigated Tobacco: 2010 - 2015

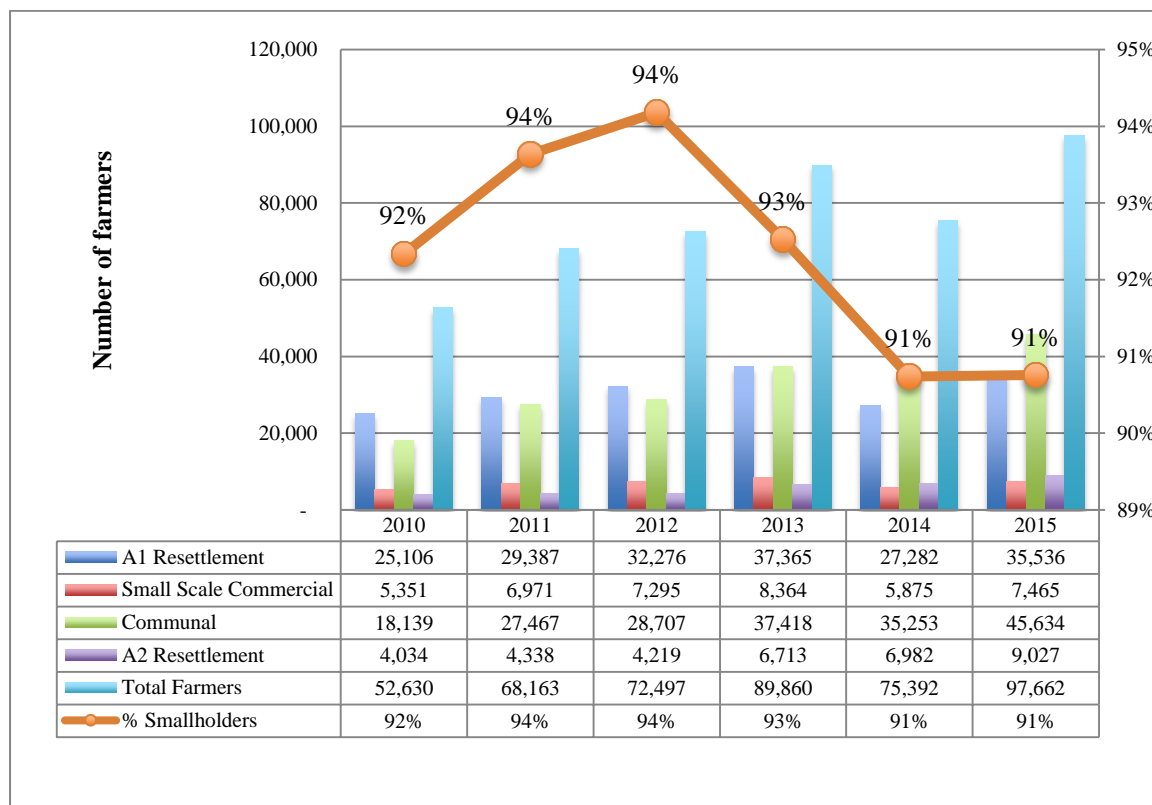


Source: Survey Results, 2015

The area under tobacco increased from 106,190 hectares in 2010 to 147,810 hectares in 2015.

During the same period irrigated area increased from 0% in 2010 to 7% in 2015.

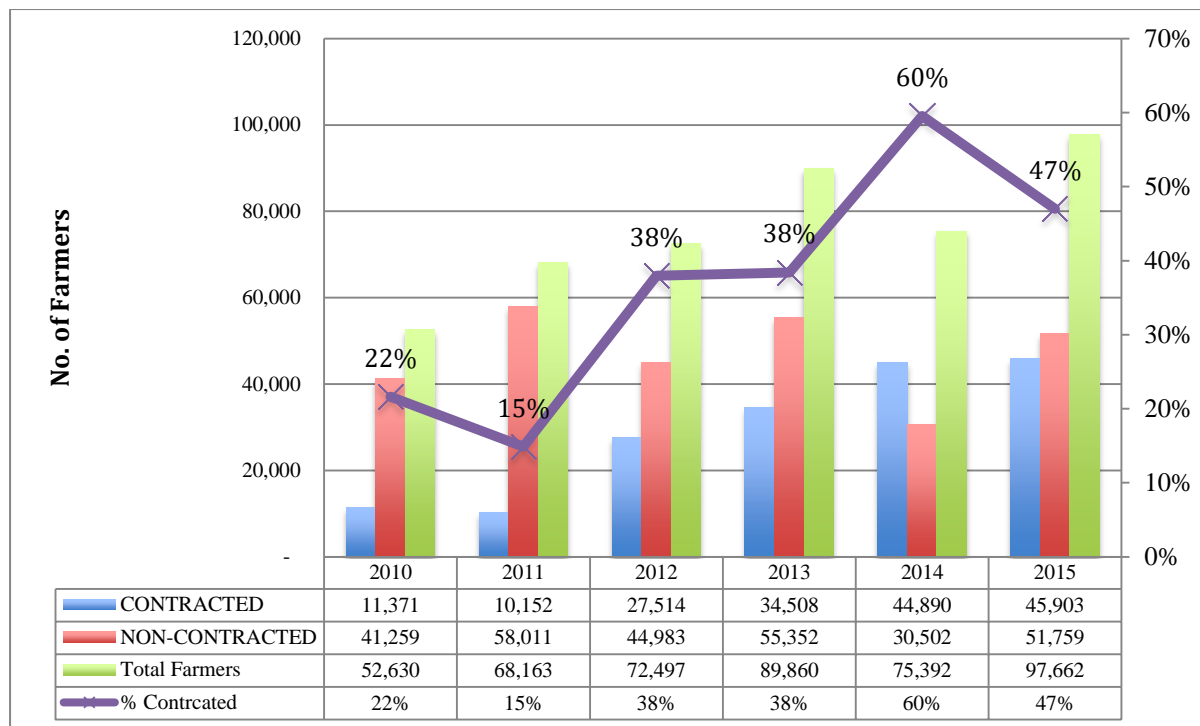
Figure 4.7: Increase in the Number of Growers by Sector: 2010 - 2015



Source: Survey Results, 2015

The total number of tobacco growers increased from 52,630 in 2010 to 97,662 in 2015. This increase was a result of increases in communal and A2 resettlement farmers, which more than doubled in the same period. A1 and small-scale increased during the same period. The smallholder farmers fluctuated between 91% in 2015 and 94% in 2012.

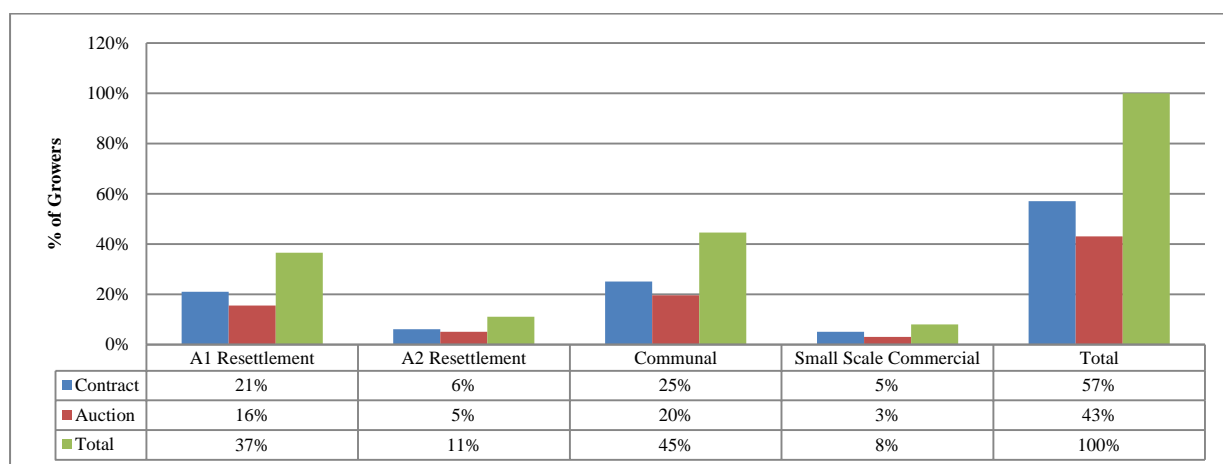
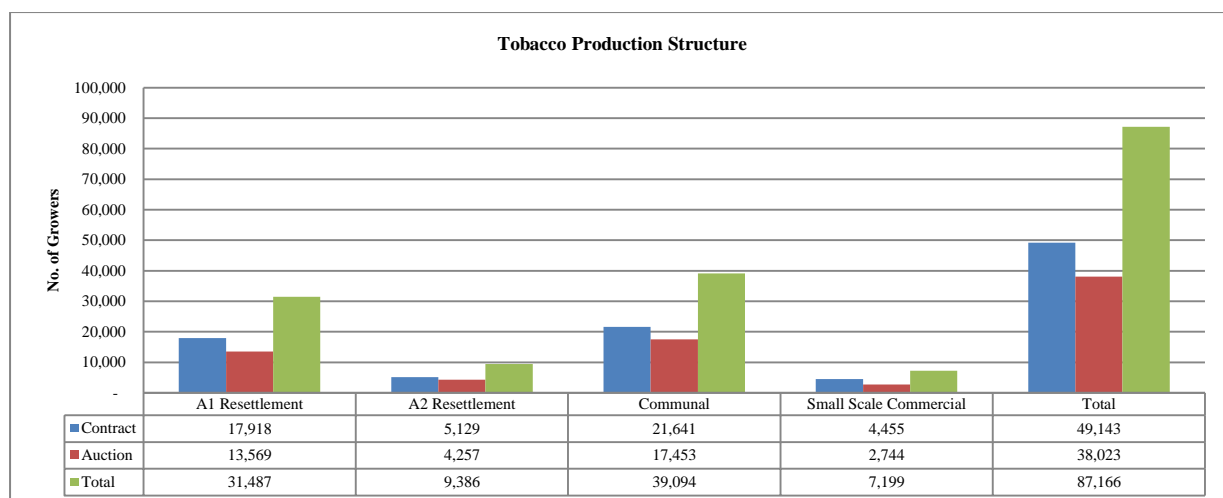
Fig 4.8: Introduction of New Tobacco Production and Marketing Models: 2010 – 2015



Source: Survey Results, 2015

The contract farming system was introduced in 2004 to operate alongside the auction system. This increased the supply of inputs and brought into production potential growers who were being constrained by resources. The number of growers increased from 52,630 in 2010 to 97,662 in 2015.

Fig 4.9: Current Tobacco Production Structure Based on 2014 Statistics of Growers



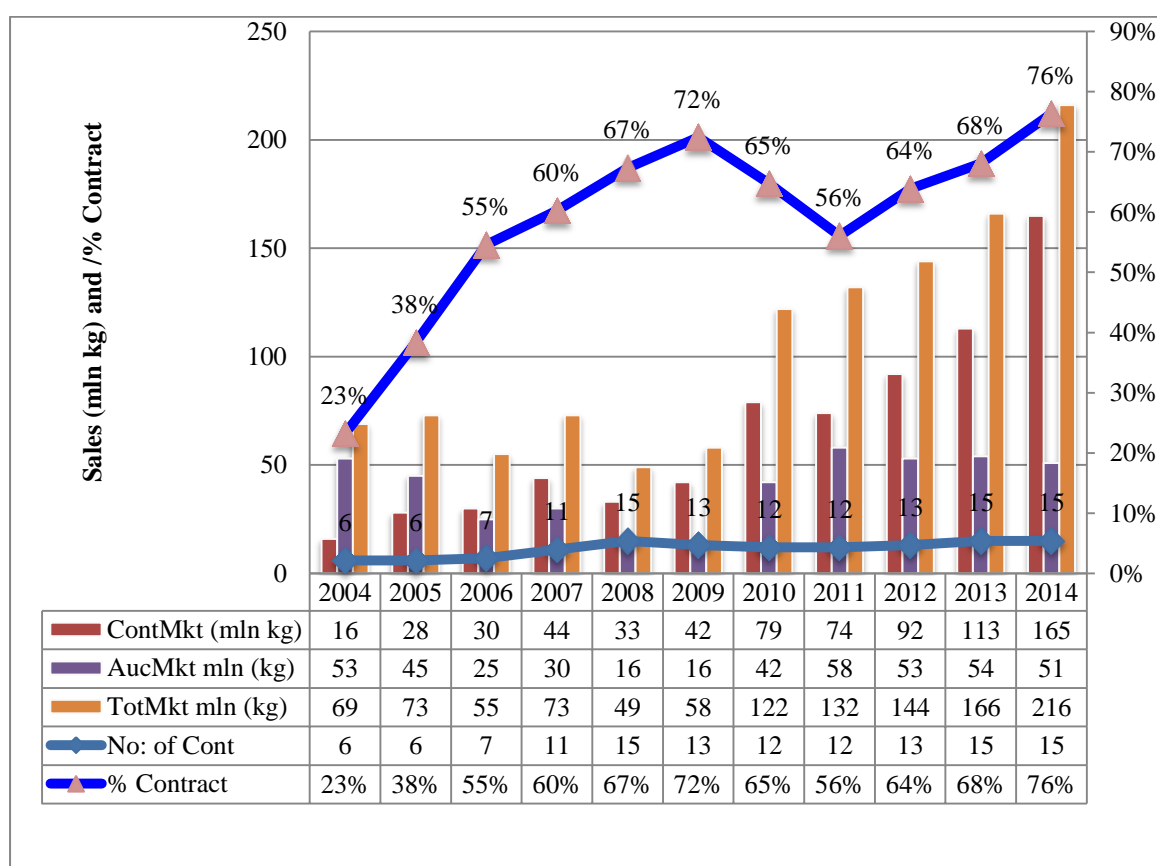
Source: TIMB, 2014

The study found out that during the 2014/15 season fifty seven percent (57%) of tobacco growers were financed under contract farming while 43% of the growers were self-financed under the auction system. The major players under both the contract and auction systems are the A1 resettlement (21% and 16% respectively) and communal farmers (25% and 20% respectively). On the overall smallholders, constitute 89% of tobacco producing farmers being 94% and 95% under contract and auction system respectively.

4.2.2.4 Marketing Structure

The tobacco marketing system is dual. All tobacco grown under contract is marketed through the contractor while that which is self-finance is marketed through the auction systems. The pervasive nature to contract farming can be seen from the market structure side.

Fig 4.10: Changes in Market Structure – Contract vs. Auction: 2004 - 2015



The contract market started in 2004 with 6 contractors. The number increased to 15 by 2013.

During the 2013/2014 farming season, 76% of tobacco that came to the market was

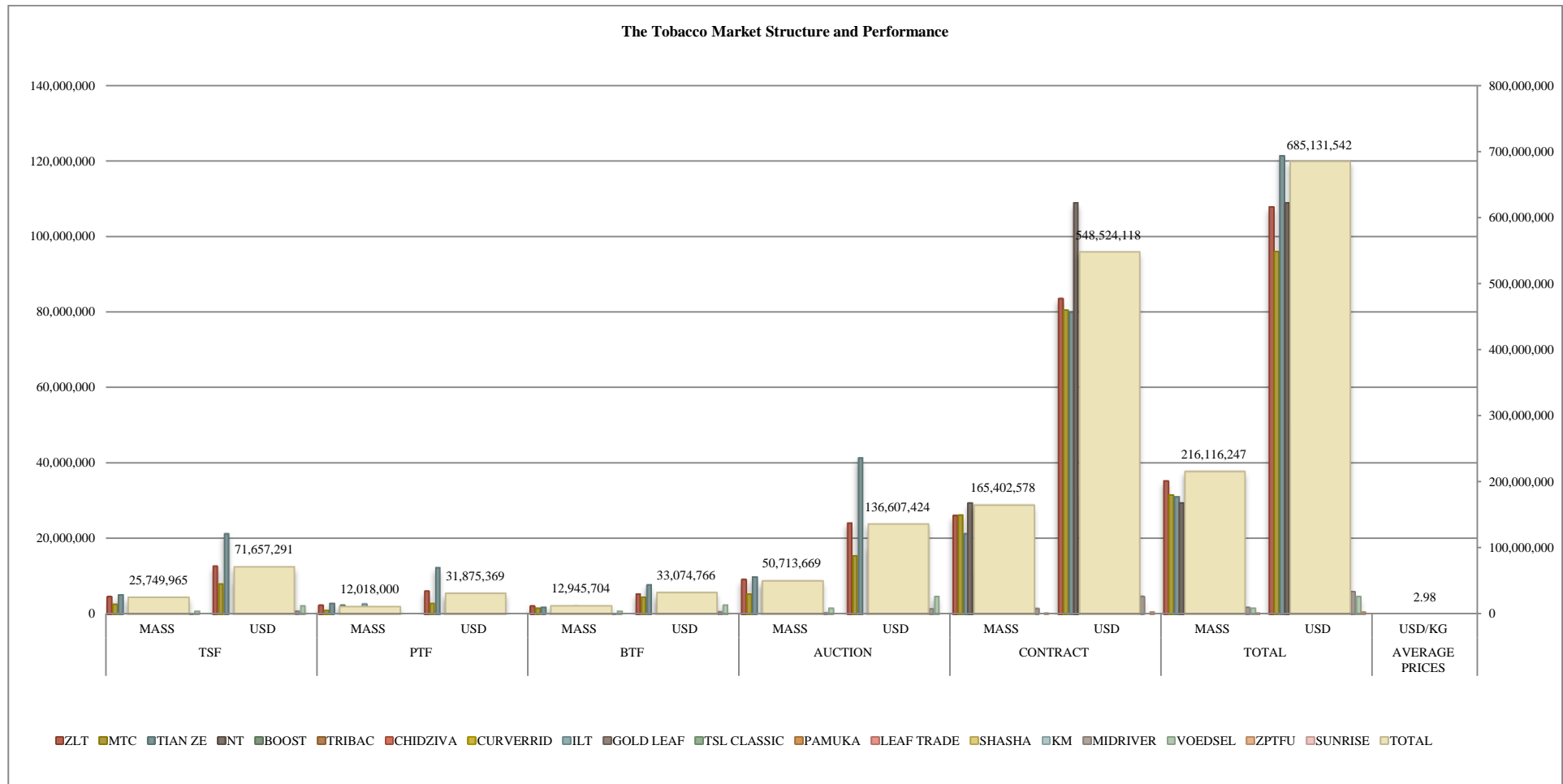
grown under contract while the balance (24%) was self-financed directly by farmers, banks and other financiers. In terms of productivity 57% of the tobacco growing households are producing 76% of the marketed crop on the contract market while 43% of the households are producing 24% of the crop on the auction system. This shows that contract growers are more productive than independent growers. This however fails to give an indication of which grower (self-financed or contracted) is benefiting more from tobacco growing in terms of net income per hectare of tobacco grown.

The study established that the world over, contract tobacco production and marketing is fast replacing the auction system. To date only Zimbabwe and Malawi remain with auction floors with all other producers now 100% being contract (ITGA, 2010). The TIMB indicates that contract farming started in 2004 with 6 contractors, a number which increased to 15 by 2013. The idea was to increase funding to the tobacco industry. The growth in contract farming over the last two decades, has been and continues to be motivated by crippling liquidity challenges and the need to adequately finance agriculture and tobacco production. Contract farming has increasingly become an alternative source of working capital that effectively mobilise private sector support into the on-going land and agrarian reform process aimed at increasing production, productivity, market access and competitiveness (GoZ 2014).

The interviewed auction floor argued that the auction system will continue to be under threat as long as access to financing remains a challenge for tobacco growers. The question is “are farmers and the nation going to derive the more benefits from 100% contract farming?” There were mixed reactions to this question. At the grower level, farmers are arguing that inputs provided under contract farming are priced above the market levels and that prices under contract are low. In order to find out if a grower is benefiting there is need to compare

productivity gains to loss of revenue through price and increased costs of inputs. At the national level, the fertiliser industry has argued that the bulky of tobacco inputs availed by contractors are imported as in most cases contracting companies import the inputs from outside the country where they are relatively cheap. This means that at the nation level resources used to import inputs would be repatriated back plus interest reducing the tobacco contribution to the country's Gross Domestic Product (GDP). There is need to factor in costs and see what the net revenue generated is and the cashflow as well.

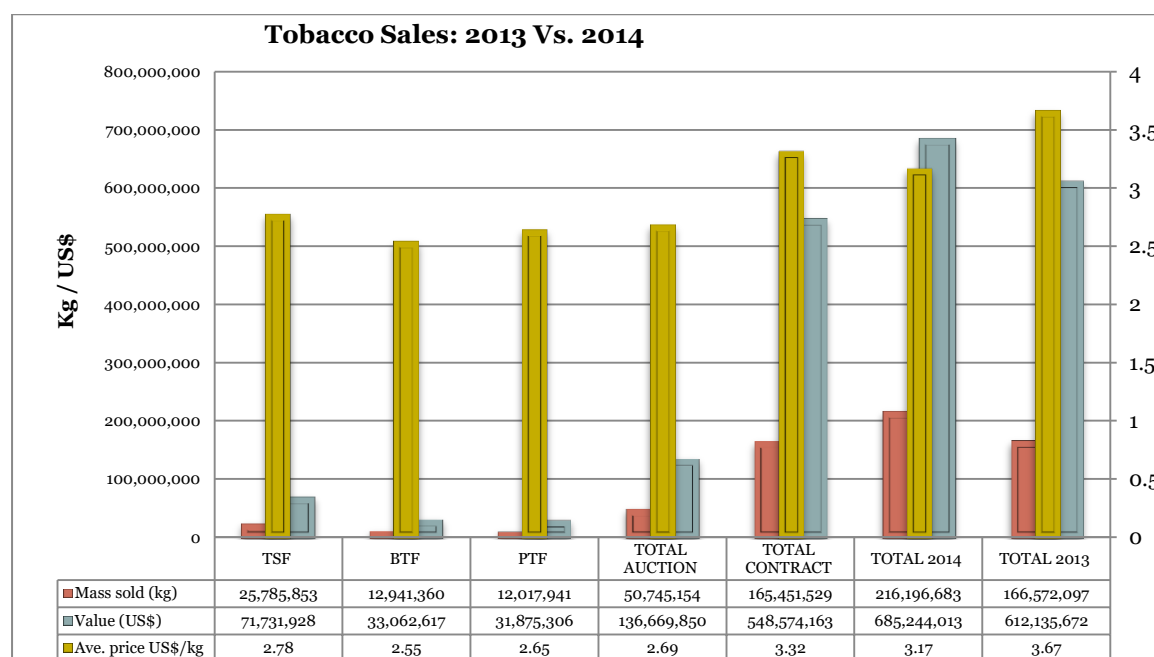
Fig 4.11: Tobacco Market Structure and Performance for the 2014 Marketing Season



Source: TIMB, 2014

The market structure is competitive. During the 2014 marketing season, there were 14 contractors and 3 auction floors indicating that both the contract and auction systems are highly competitive markets. A total of 50.7 million kilograms worth US\$136.6 million were sold under the auction system while 165 million kilograms worth US\$548.5 million were sold under the contract system. Figure 2.15 compares contract and auction systems for 2013 and 2014 marketing seasons.

Fig 4.12: Tobacco Sales under Auction and Contract System: 2013 vs. 2014



Source: TIMB 2014

There was more production (216 million kilograms) and foreign currency (US\$685 million) generated in 2014 than in 2013. This represents a 33% increase on mass sold, 11% increase on value against a decline of 14% in the average price per kg. The contracting activity also increased in 2014 achieving an average price of US\$3.32/kg compared to US\$2.69/kg for the auction

system in the same year. The contract price is higher than the auction price.

4.2.3 Farmer Organisation

The tobacco industry has a growers association – Zimbabwe Tobacco Association which was formed in 1928. The association is one of the largest farmers association with 70,000 smallholder and 5,000 commercial tobacco farmers. The association provides information to its members such as market information to growers, issues that affect farmers, providing information through quarterly magazine, emails and SMS on what will be happening in the industry, for example, ZESA. The Association also interact with contractors (merchants and processors) on issues of pricing, inputs and lobby with government on tobacco issues.

There are also tobacco associations are under the four (4) farmers unions: Zimbabwe Farmers' Union, National Zimbabwe Commercial Farmers Union (ZCFU), Commercial Farmers Union (CFU) and Zimbabwe National Farmers Union (ZNFU). The high level of farmer organisation is yet to have a positive impact in terms of improving farmers' ability to utilise the opportunity of competing contractors and select those with the best terms in respect of interest rates, input administration fees and mark-ups. Farmers continue to cry foul.

4.2.4 Other Sources Productivity, Market Access and Competitiveness

The study observed the following tobacco value chain sources of productivity gains and maintainance of global and regional market access and competitiveness:

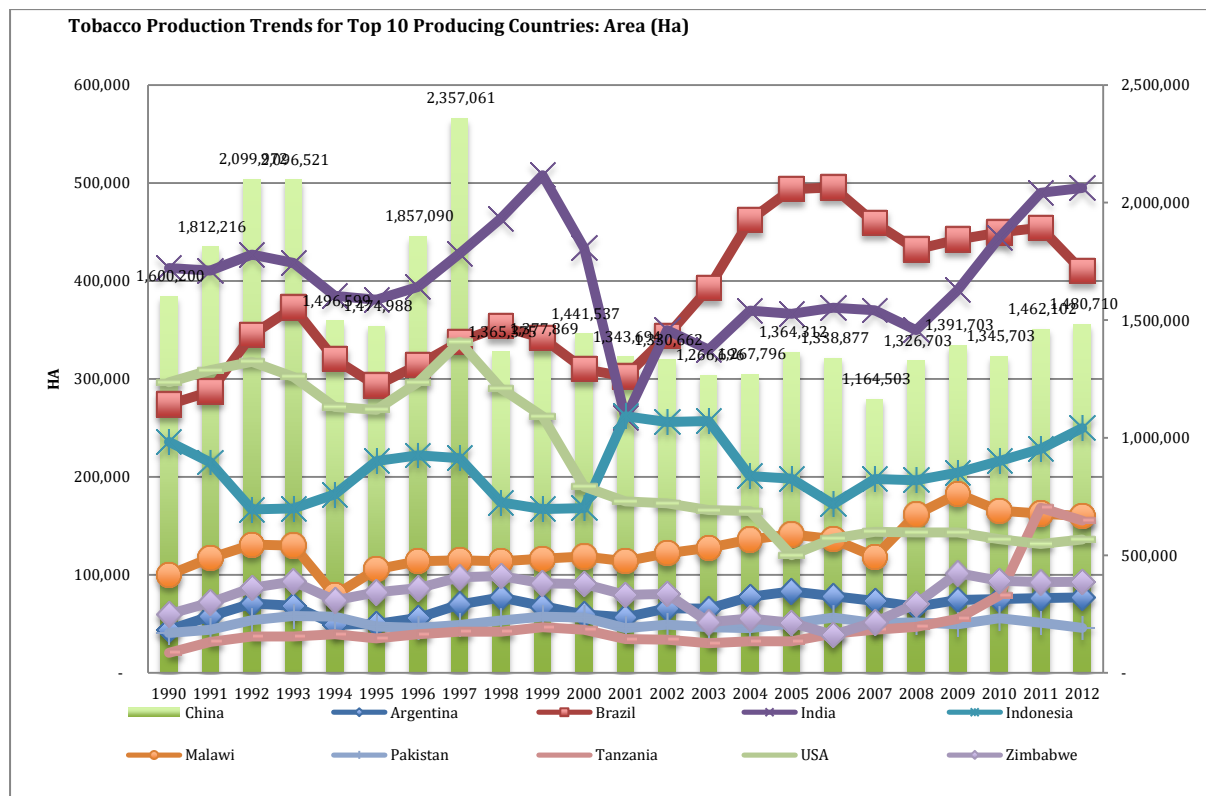
- i. Both the auction and contract system provided physical market places where growers bring their produce for grading and pricing. This is lacking in other enterprises such as horticulture, which are rotting before they see the market.
- ii. The existence of acceptable international standard grades for tobacco
- iii. Second generation market information systems provided by contractors have gone beyond market information provision to include quality.
- iv. Tobacco hail insurance for managing losses due to crop being destroyed by hail
- v. The participation of Transnational Corporation provided promotes easy access to finance and profitable markets.

4.3 GLOBAL AND REGIONAL COMPETITIVENESS OF TOBACCO INDUSTRY

4.3.1 Productivity and Competitiveness

The study showed that tobacco has achieved and maintained global and regional productivity as Zimbabwe is among the top 10 global tobacco producing countries both in terms of area, production and value of produce.

Fig 4.13: Tobacco Production Trends for Top 10 Producing countries (HA)

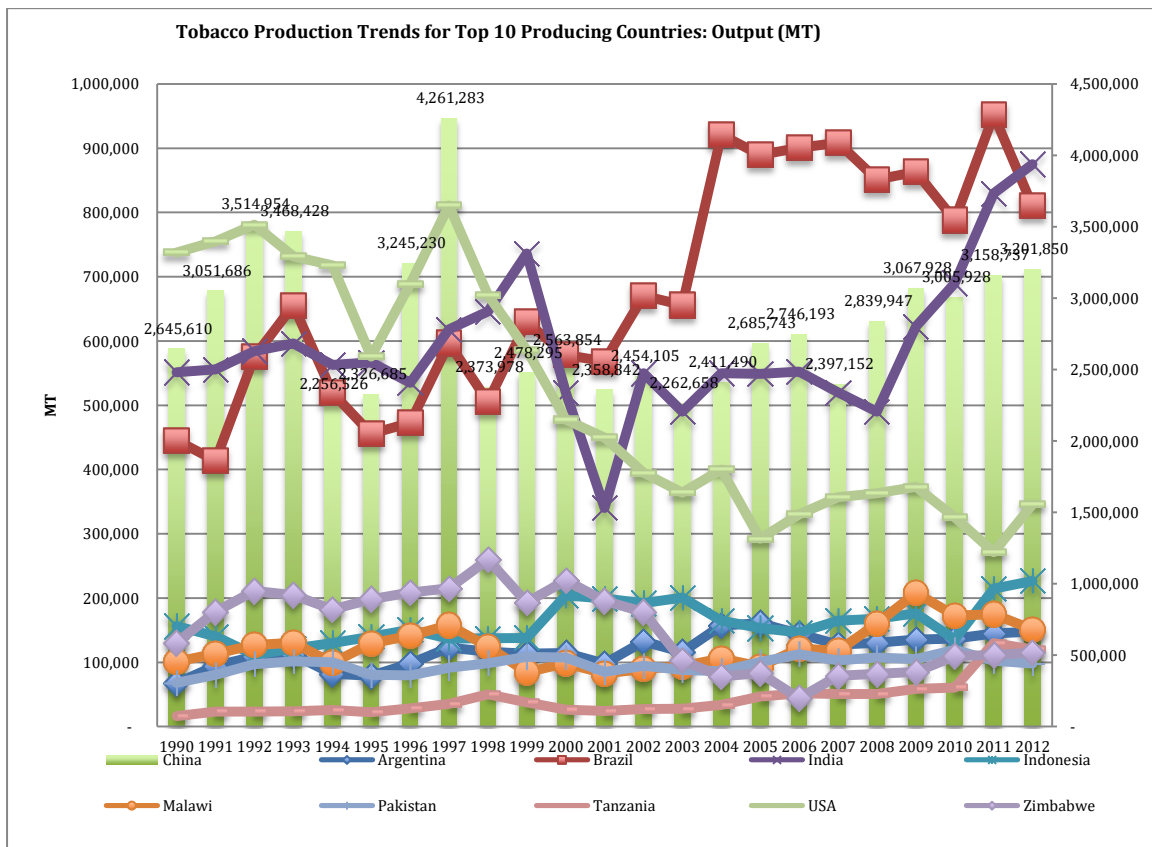


Source: TIMB, 2014

China has the largest area under tobacco at 1.5 million hectares followed by india at 0.5 million hectares, Brazil at 0.4 million hectares and Indonesia at 0.249 million hectares.

Zimbabwe is number 8 in terms ahead of Parkistan and Argentina which are beloww 0.1 million hectares. The trend in area under tobacco production is positive for developing countries, while that for USA fell drastically. The UAS area has fallen from 0.3 million hectares in 1990 to slightly above 0.1 million hectares in 2012. There is the impact of the FCTC which are being highly felt in the developed world. This decline in area is seemingly being replaced by increasing area in the developing countries.

Fig 4.14 Tobacco Production Trends for Top 10 Producing countries (MT)

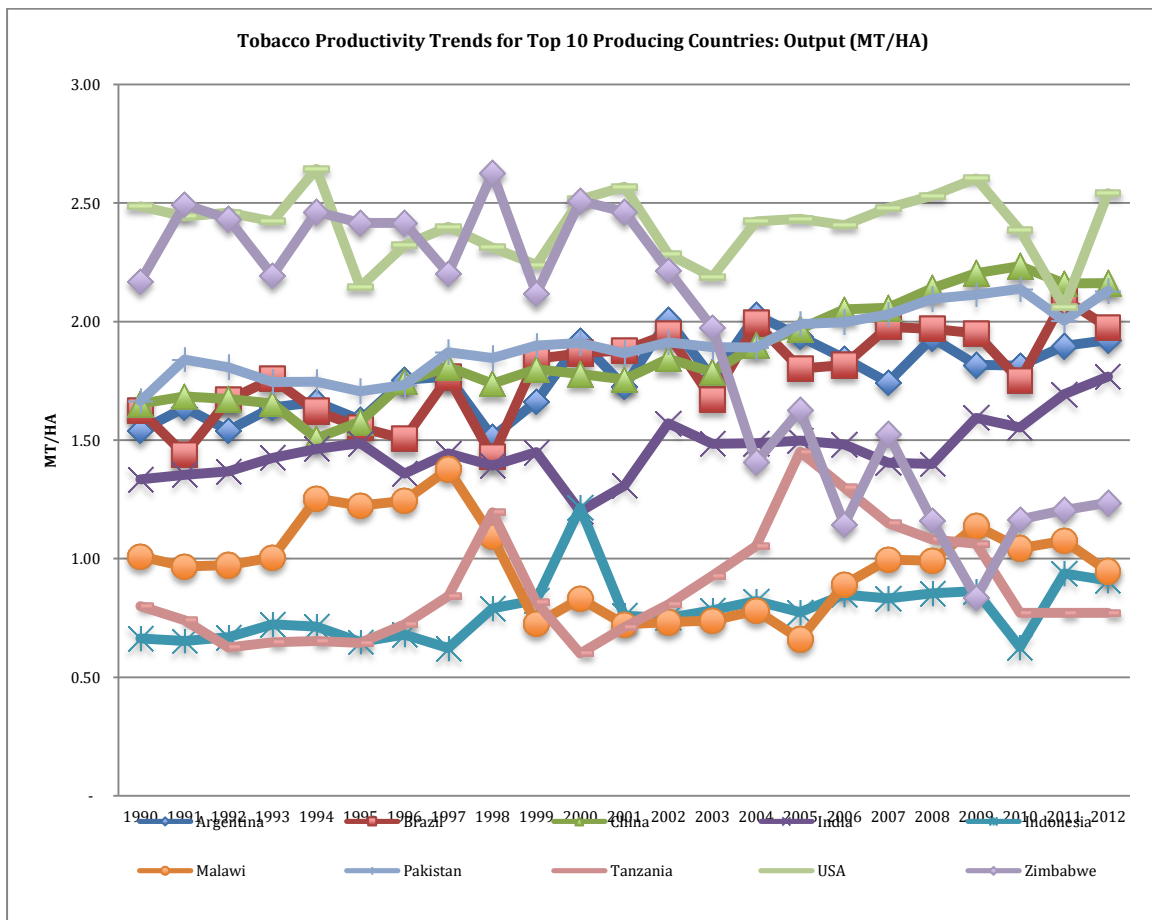


Source: TIMB, 2014

On consideration of production, China remains the number 1 tobacco producer followed by India and Brazil. The USA moves up to number 4 beating Indonesia, Tanzania and Malawi

which had larger areas. Zimbabwe slips to number 9 beating only Pakistan. Again the trends are positive for developing nations while that of USA is falling drastically.

Fig 4.15: Tobacco Production Trends for Top 10 Producing countries (MT/HA)

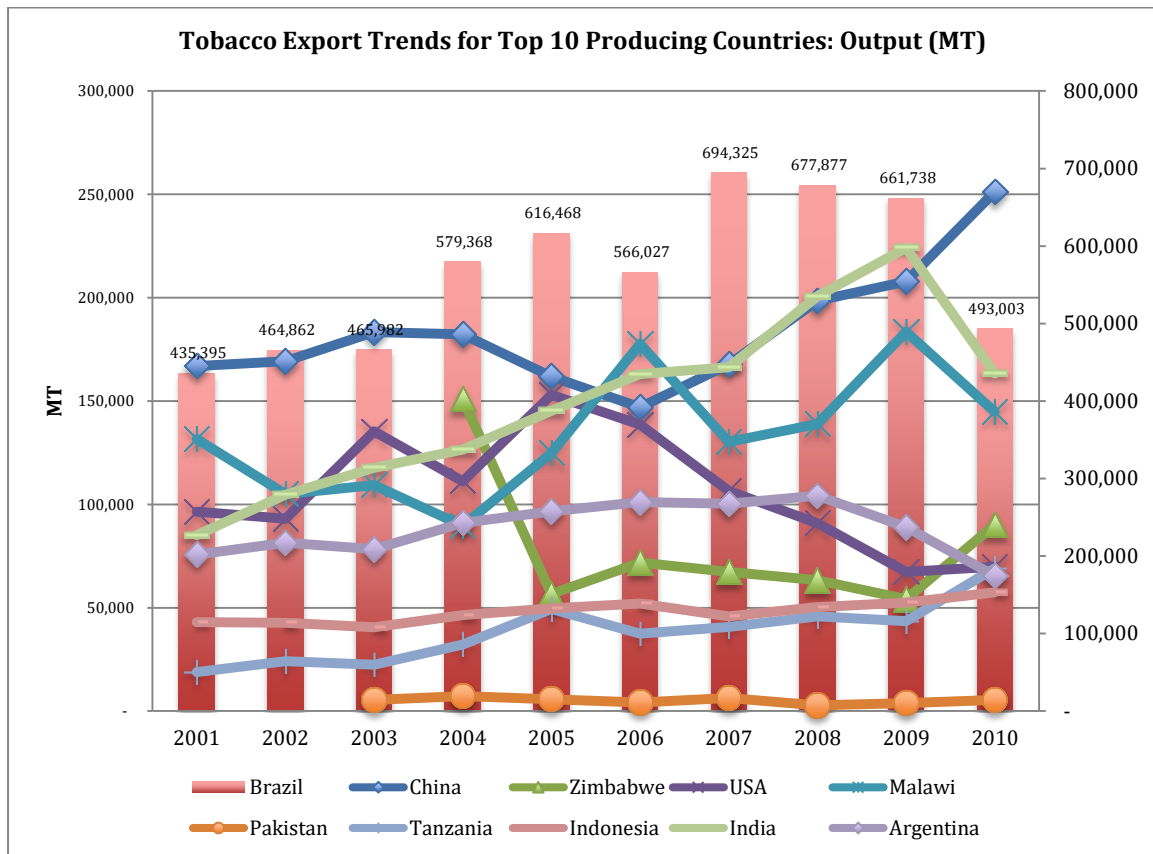


Source: TIMB, 2014

On consideration of productivity, the USA becomes tops, followed by China, Parkistan, Brazil, Argentina, india. Zimbabwe occupies the 7th place ahead of Malawi, Tanzania and Indonesia. The productivity trends are positive for all except Zimbabwe which has fallen 2.63 t/ha in 1998 to an all time low of 0.84 t/ha in 2009. This increased to 1.24 t/ha in 2012.

4.3.2 Market Acces and Competiveness

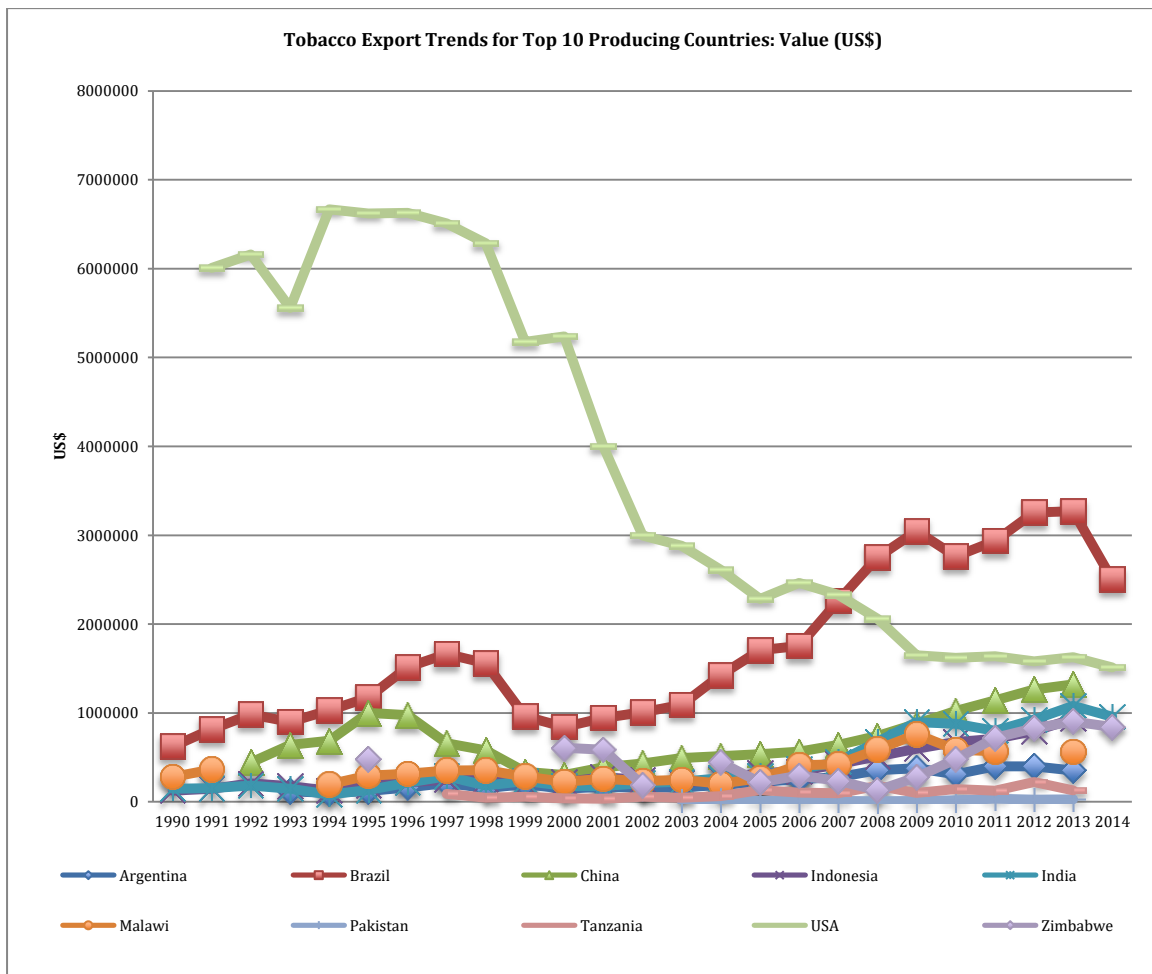
Fig 4.16: Tobacco Export Trends for Top 10 Producing countries (MT)



Source: TIMB, 2014

Zimbabwe is among the top 10 exporters. The top 10 exporters in terms of volume of exports in 2010 is Brazil, followed by China, India and Malawi. Zimbabwe is in the 5th place ahead of Tanzania, Argentina, USA, Pakistan and Indonesia. This is a fall from 3rd place in 2005.

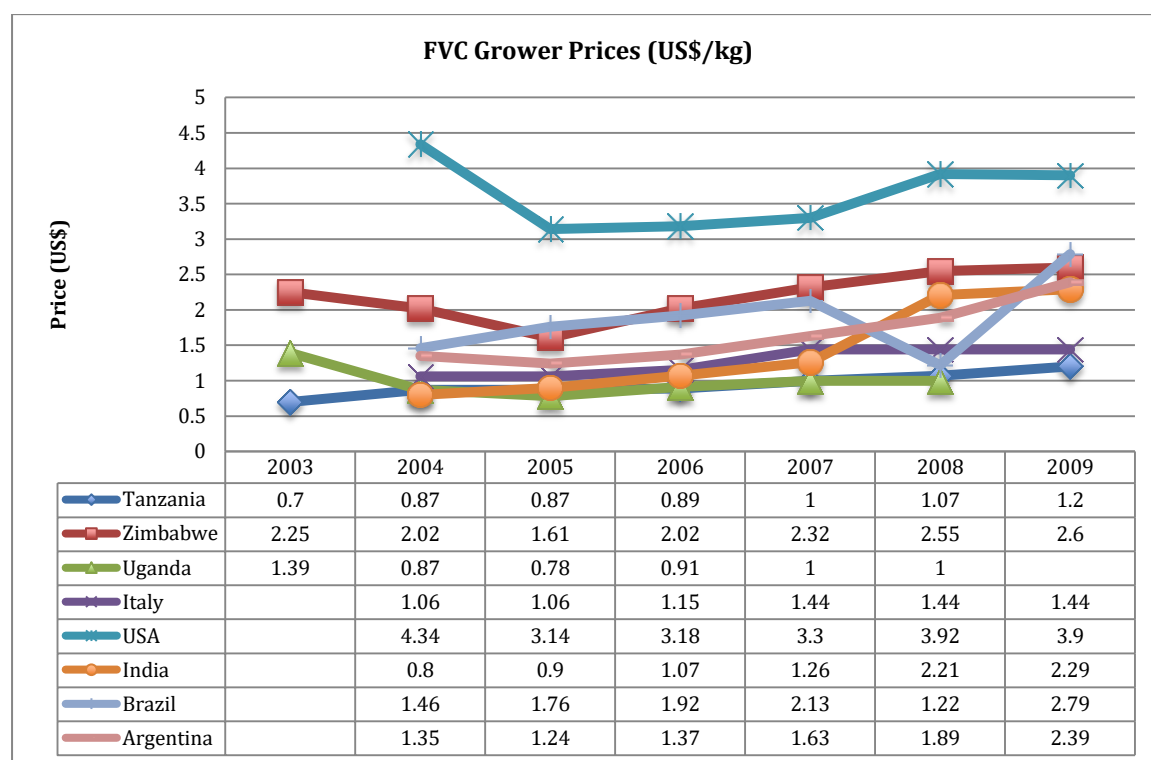
Fig 4.17: Tobacco Export Trends for Top 10 Producing countries (US\$)



Source: TIMB, 2014

The trends show an increasing dependence on export of tobacco by developing countries while the developed world are reducing tobacco export. The decline in the developed world reflects reduction in production as a result of the impact of FCTC, which has had more impact on the western countries. However their exports remain on number 2 in value terms, while Zimbabwe is at number 5 as a major export after Brazil (number 1), China and India.

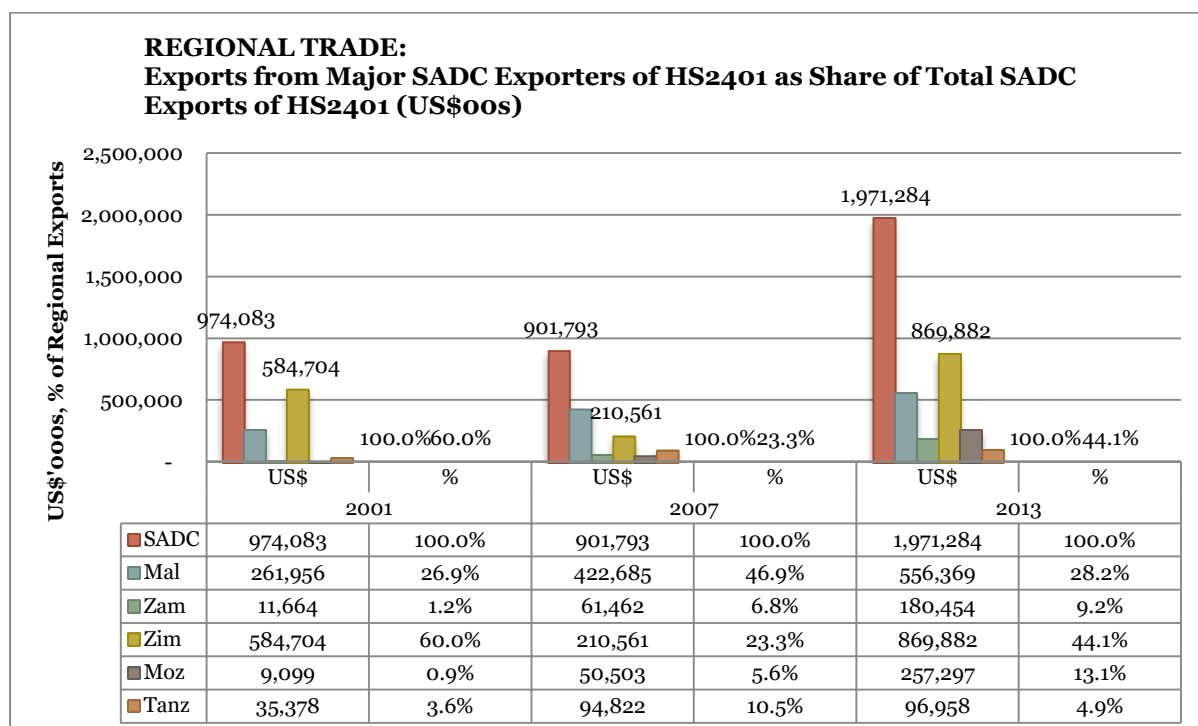
Fig 4.18: Tobacco Grower Prices (US\$): 2003 - 2009



Source: TIMB, 2014

The prices of tobacco are on a steady increase for developing countries, while for developed countries as reflected by the USA, they are on a downward trend. The downward trend can be attributed to the impact of the FCTC, which has significantly reduced demand in western countries. Against a background where most prices of agriculture commodity prices are declining, tobacco remains key to developing countries for foreign currency generation. Its balance of trade would have significant implications for the GDP.

Fig 4.19: Tobacco Exports from Major Exporters as Share of Total Exports in SADC

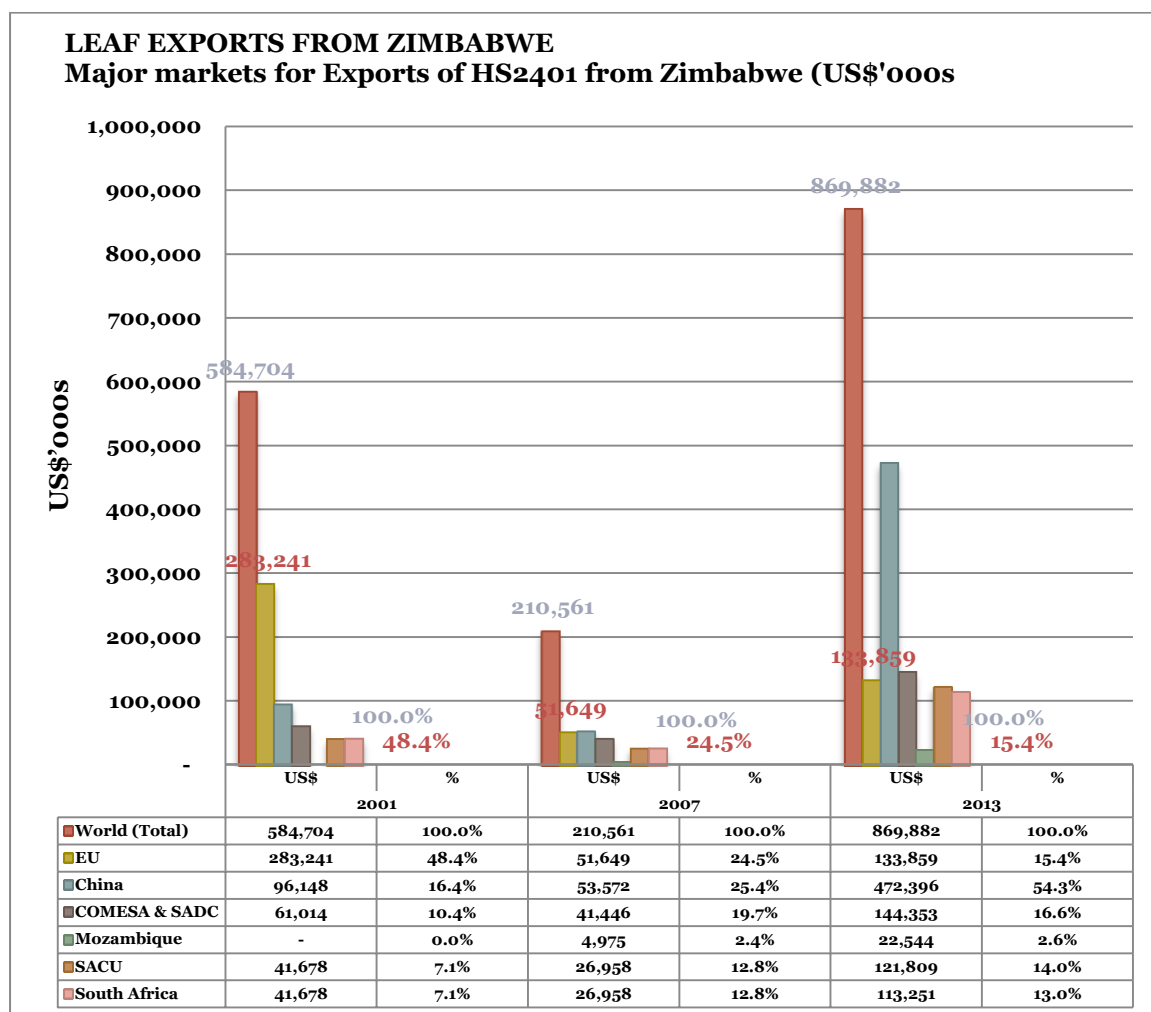


Source: TIMB, 2014

Zimbabwe is a major exporter of tobacco and tobacco products in SADC at 44% of exports followed by Malawi at 28%. This implies that a ban or reduction in tobacco production and use will have a negative effect on the regional trade balance, with Zimbabwe and Malawi most affected. In order not to cushion such trade, imbalances that may arise alternative crops should be put in place. The tobacco production and marketing model should be extended to existing crop enterprises to effectively replace tobacco in line with the FCTC.

Figure 4.20 shows exports from Zimbabwe to major destinations across the world to show the impact of the anti-tobacco campaigns.

Fig 4.20: Major Tobacco Leaf Export Destinations for Zimbabwe

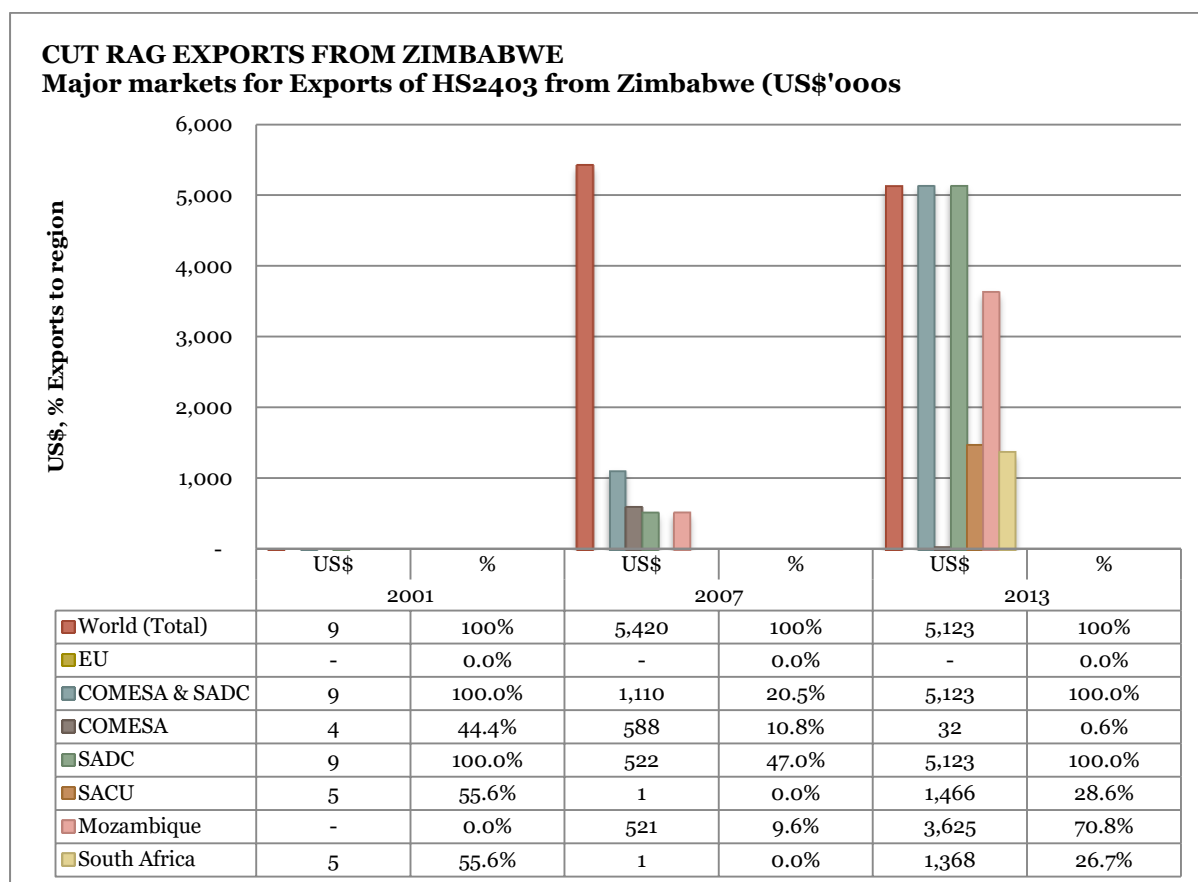


Source: TIMB, 2014

There is a decline in demand for tobacco production and use in the developed world compared to the developing world. The EU was major market with 48% in 2001. This market fell to 15.4% in 2013, being replaced by China, SADC and SACU, which increased from 16%, 10% and 7.1% to 54.3%, 16.6% and 14.0% respectively. This increase is riding on Free Trade Areas (FTA) and bi-lateral agreements.

The declining tobacco market in the developed world is further confirmed by figure 4.18 and 4.19 which give analyses of exports of cut rugs and cigarettes respectively to key regional and international markets.

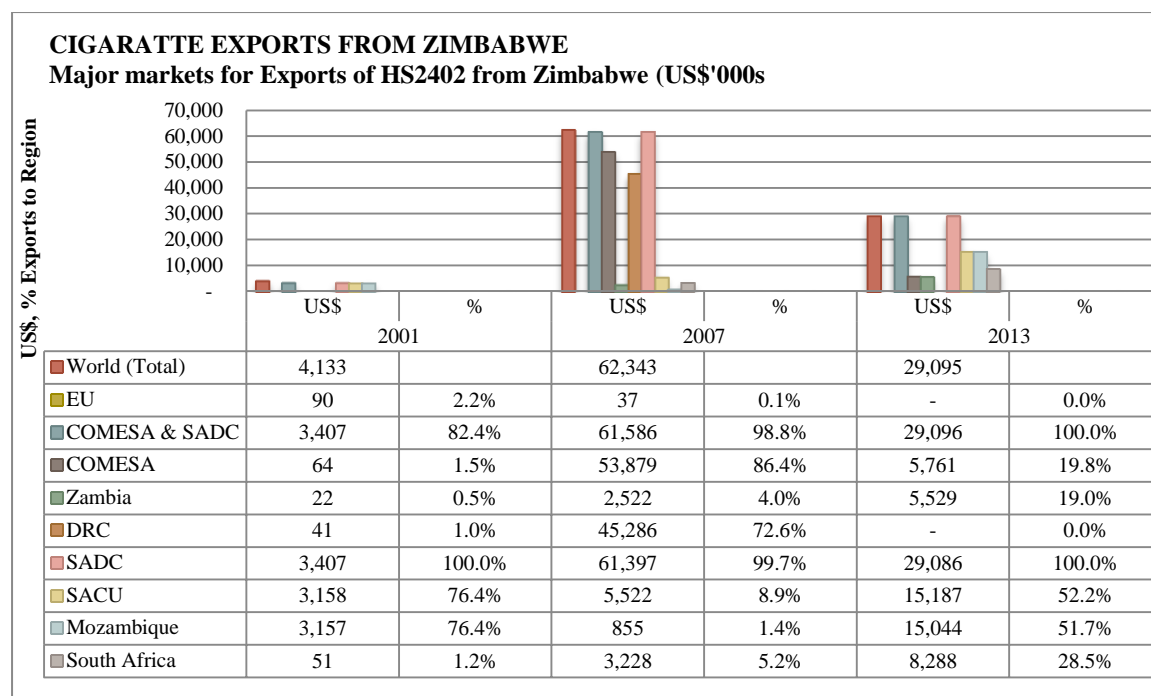
Fig 4.21: Major Tobacco Cut Rag Export Destinations for Zimbabwe



Source: TIMB, 2014

Zimbabwe has no market for cut rag in the EU. There is need for support and continued access to SADC, SACU, Mozambique and South Africa markets where market share is 100%, 28.6%, 70.8% and 26.7% respectively.

Fig 4.22: Major Cigarette Export Destinations for Zimbabwe



Cigarettes have lost the EU markets and but gained significantly the SADC SACU, Mozambique and South Africa markets. This is good for Zimbabwe, but as the anti-tobacco campaigns take effect in these markets Zimbabwe will be first to feel the pinch on its export earnings and contribution of agriculture to the GDP. Hence need to extend the successful model of tobacco production and marketing to other potentially profitable enterprises has its long-term, forward-looking merits.

4.4 ECONOMIC EVALUATION OF TOBACCO PRODUCTION MARKETING

4.4.1 Standard 1 Ha Tobacco Net Income Budget

The study used standard cost of production models from a study by TIMB. The models included that for large-scale (area > 5 ha) irrigated, large-scale dryland, medium scale (2 ha < area <= 5 ha), small scale (area <= 2 ha) contracted and small-scale non-contracted.

Table 4.5: Standard 1 Ha Tobacco Budget for Large, Medium and Small Scale Growers

	LScIrrig	LSc Dryland	MSc	SScContract	SScUncontract
Seedbed cost	US\$				
Seed	25.00	25.00	25.00	25.00	25.00
Fertilizer	18.80	33.80	11.00	8.96	8.96
Chemicals	80.30	105.30	54.45	19.45	19.45
	124.10	164.10	90.45	53.41	53.41
Field Costs					
Fertilizers	820.00	728.00	486.00	382.00	382.00
Chemicals	554.75	519.75	207.00	97.00	79.00
Transport In	125.22	99.00	74.55	70.00	70.00
Labour	2,259.68	2,131.70	1,292.00	1,332.00	1,332.00
	3,759.65	3,478.45	2,059.55	1,881.00	1,863.00
Curing fuel	1,116.20	1,019.00	1,048.00	200.00	100.00
Overheads	1,537.96	1,064.51	396.00	20.00	20.00
Protective clothing	70.00	70.00	-	5.00	5.00
Amortization charge	2,195.57	1,068.46	739.85	237.50	237.50
Insurance	312.21	242.22	186.21	136.37	98.24
Packaging Materials	156.23	125.24	162.27	123.38	94.49
Transport Out	345.58	268.11	206.11	150.95	108.74
	9,617.50	7,500.09	4,888.43	2,807.61	2,580.38
Interest charge	581.40	529.71	375.26	254.51	231.79
Total costs	10,198.90	8,029.80	5,263.69	3,062.12	2,812.17
Yield Assumption	3,283.00	2,547.00	1,958.00	1,434.00	1,033.00
Price Assumption	3.17	3.17	3.17	3.17	3.17
Revenue	10,407.11	8,073.99	6,206.86	4,545.78	3,274.61
Net Income	208.21	44.19	943.17	1,483.66	462.44
Cost of producing kg	3.11	3.15	2.69	2.14	2.72
Net Income per kg	0.06	0.02	0.48	1.03	0.45

The study observed that contracted growers were the most more profitable with the least cost of production at US\$2.14/kg compared to their non-contracted counterparts at US\$2.72/kg. The medium-scale, large scale irrigated, and large-scale dry land growers were US\$2.69/kg, US\$3.11/kg and US\$3.15/kg respectively. The small-scale growers enjoy a net income of US\$1.03/kg while their non-contracted counterparts enjoy US\$0.45/kg. Medium scale enjoy net income of US\$0.48/kg with large-scale growers only breaking even.

The study concluded that farmers and the economy benefit more under small-scale contracted tobacco production and marketing and that there are very low economic incentives for large-scale tobacco production. The study noted however that the standard budget assumed average a uniform quality and price the across the different grower sizes. The yield assumptions only took irrigation status and farm size into consideration. The study sought to further interrogate how yield, quality and price by influenced differently or otherwise by other farm level characteristics such as gender, sector and natural region.

4.4.2 Contract Tobacco Cash flow Budget

The study used the monthly cash requirements from the cost of production model used by grower representatives and developed a monthly annual cashflow based on the standard small scale contract tobacco budget to assess viability, that where the grower would be able to payback back the contractor. The viability was assessed at two levels: (1) before revenue and capital expenditure requirements for next season to assess if grower would be able to pay back his dues at the end of the marketing session; and (2) after revenue and capital expenditure requirements for next growing season to assess if the grower would be able to finance the immediate season's inputs and own consumption without going back to the contractor.

Table 4.6: Small-scale 1 Ha Contract Tobacco Cash flow Budget

	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Seed	25														25
Fertilizers	4	4			191	191									382
Chemicals	10	10			49	49									97
Transport In					35	35									70
Labour	111	111	111	111	111	111	111	111	111	111	111	111			1,332
Curing fuel			50		50	50		50							200
Overheads					10	10									20
Protective clothing					5										5
Amortization					119	119									238
Insurance											34	34	34	34	136
Packaging Materials											31	31	31	31	123
Transport Out											38	38	38	38	151
Total costs	150	125	161	111	569	564	111	161	111	111	214	214	103	103	2,808
Gross Revenue	505	505	505	505	505						505	505	505	505	4,546
Net Income	355	380	344	394	-64	-564	-111	-161	-111	-111	291	291	402	402	1,738
Add: Amortization	0	0	0	0	119	119	0	0	0	0	0	0	0	0	238
Cash From Operations	355	380	344	394	55	-446	-111	-161	-111	-111	291	291	402	402	1,976
Financing															
Opening balance		355	735	1,079	1,473	1,528	1,082	971	810	699	588	879	1,171	1,317	
Input Package		285	285	285	285	285					285	285	285	285	2,565

	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Other Packages (School Fees + Fuel)											0	0	0	0	0
Principal Repayment		-285	-285	-285	-285	-285					-285	-285	-285	-285	-2,565
Interest Charge													-257		-257
Net Financing	0	355	735	1,079	1,473	1,528	1,082	971	810	699	588	879	914	1,317	-257
Net Cash flow Before Re- Investment	355	735	1,079	1,473	1,528	1,082	971	810	699	588	879	1,171	1,317	1,719	1,719
Next Season Revenue and Capex Requements	-150	-125	-161	-111	-451	-446	-111	-161	-111	-111	-214	-214	-103	-103	-2,570
Net Free Cash Flows	205	459	642	926	530	-361	-583	-905	-1,127	-1,349	-1,272	-1,194	-1,151	-851	-851

Source: Research Results

The study observed that based on the cashflow before next growing season's revenue and capital expenditure requirements criteria, the small scale grower was able to payback the contractor and remain with a positive net cash position US\$1,719. The study concluded that small scale contract tobacco production and marketing is viable. However, after incorporating revenue and capital expenditure requirements for the next season, the study observed that small scale growers remained with negative free cash flows amounting to US\$851. This means that the growers are not able to finance next season's requirements and meet consumptive requirements by themselves. They have to go back to the contractor every growing season creating a cycle of dependence for inputs and consumptive requirements.

Noting that contract growers do not generate positive free cashflows, the study adopted the notion that contract growing does not allow significant savings by an economy to increase investment (I) and increase the stock of capital necessary to effect economic growth through the multiplier effect and H-D model. This notion made sense under the current circumstances where the Zimbabwean economy was stagnating against increasing contract tobacco output.

4.4.3 Sensitivity Analysis

The study generated a sensitivity analysis decision table based on a contractor's input package of US\$2,808 per ha, yield of 1,434 kg/ha and cashflows before revenue and capital expenditure requirements. The decision table give the yield that is necessary for different mixes of production and consumption support in order guide how debt accumulation a result of excess borrowing for consumption purposes which do not contribute to increased yields can be addressed.

Table 4.7: Sensitivity Analysis of Contract Tobacco Cashflow – Yield vs. Different Mixes of Production and Consumption Support Levels

		Current Yield (Kg/Ha) or Target to which Yield must be Increased to Justify Additional Production and Consumption Support Levels															
		800	1,000	1,200	1,434	1,600	1,800	2,000	2,200	2,300	2,400	2,500	2,600	2,700	2,800	2,900	3,000
Size of Borrowing for Consumption Purposes	0	-291	343	977	1,719	2,245	2,879	3,513	4,147	4,464	4,781	5,098	5,415	5,732	6,049	6,366	6,683
	1,000	-1,291	-657	-23	719	1,245	1,879	2,513	3,147	3,464	3,781	4,098	4,415	4,732	5,049	5,366	5,683
	2,000	-2,291	-1,657	-1,023	-281	245	879	1,513	2,147	2,464	2,781	3,098	3,415	3,732	4,049	4,366	4,683
	3,000	-3,291	-2,657	-2,023	-1,281	-755	-121	513	1,147	1,464	1,781	2,098	2,415	2,732	3,049	3,366	3,683
	4,000	-4,291	-3,657	-3,023	-2,281	-1,755	-1,121	-487	147	464	781	1,098	1,415	1,732	2,049	2,366	2,683
	5,000	-5,291	-4,657	-4,023	-3,281	-2,755	-2,121	-1,487	-853	-536	-219	98	415	732	1,049	1,366	1,683
	6,000	-6,291	-5,657	-5,023	-4,281	-3,755	-3,121	-2,487	-1,853	-1,536	-1,219	-902	-585	-268	49	366	683
	7,000	-7,291	-6,657	-6,023	-5,281	-4,755	-4,121	-3,487	-2,853	-2,536	-2,219	-1,902	-1,585	-1,268	-951	-634	-317
	8,000	-8,291	-7,657	-7,023	-6,281	-5,755	-5,121	-4,487	-3,853	-3,536	-3,219	-2,902	-2,585	-2,268	-1,951	-1,634	-1,317
	9,000	-9,291	-8,657	-8,023	-7,281	-6,755	-6,121	-5,487	-4,853	-4,536	-4,219	-3,902	-3,585	-3,268	-2,951	-2,634	-2,317
	10,000	-10,291	-9,657	-9,023	-8,281	-7,755	-7,121	-6,487	-5,853	-5,536	-5,219	-4,902	-4,585	-4,268	-3,951	-3,634	-3,317
	11,000	-11,291	-10,657	-10,023	-9,281	-8,755	-8,121	-7,487	-6,853	-6,536	-6,219	-5,902	-5,585	-5,268	-4,951	-4,634	-4,317
	12,000	-12,291	-11,657	-11,023	-10,281	-9,755	-9,121	-8,487	-7,853	-7,536	-7,219	-6,902	-6,585	-6,268	-5,951	-5,634	-5,317

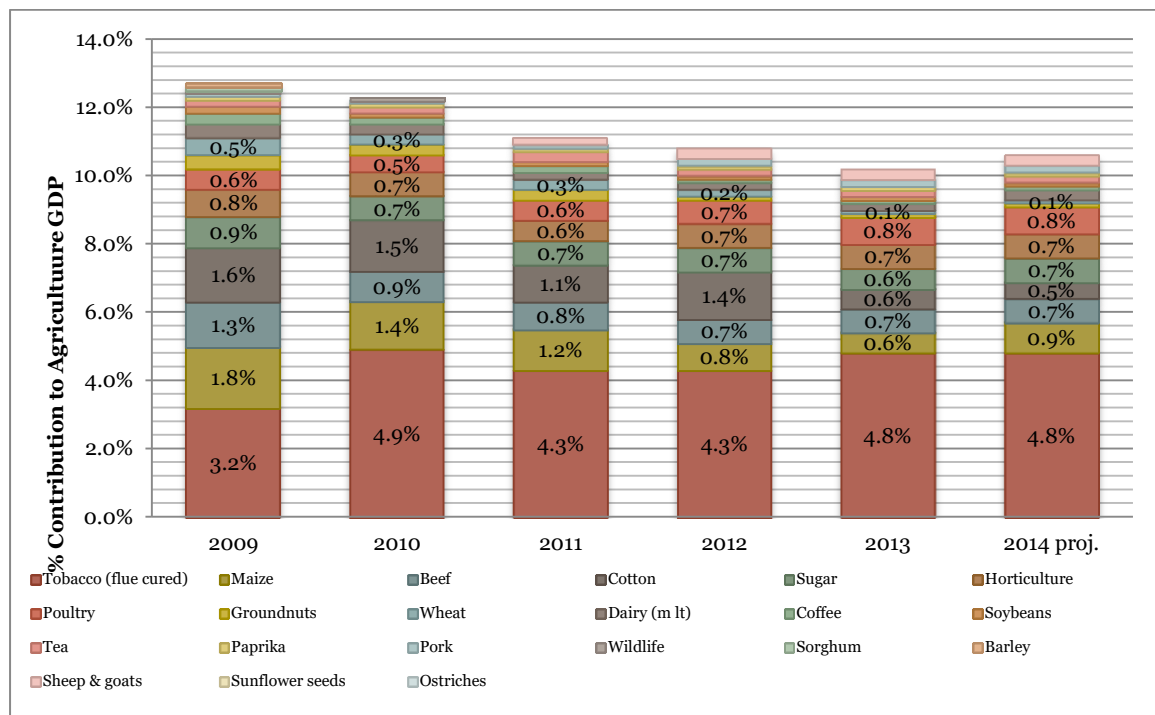
Source: Research Results

The decision table shows the maximum amount that a grower can borrow for consumption purposes without affecting viability, and the yield improvement required to contain an additional input packages or borrowing for consumption purposes. The results showed that at a production cost structure of US\$2,808 per ha and yield of 1,434 kg/ha, a small scale grower can borrow US\$1,000, while at 3,000 kg/ha s/he can borrow US\$6,000 for consumptive purposes without accumulating debt. On the other hand a grower who is achieving a yield of 3,000 kg/ha will accumulate a debt of US\$5,317 if s/he borrows US\$12,000. A grower wishing to borrow for working capital in order to increase yield from 1.434 kg/h to 2,000 kg/ha can borrow US\$2,000 (3,000 – 1,000) without impacting on negatively on viability. In other words to borrow US\$2,000, the grower should at least improve the yield to 2,000 kg/kg. If grower achieves a better yield of say 2,300 kg/ha, it means that the grower will actually improve viability by the value of 300 kg/ha.

The study concluded that contractors can actually control over-borrowing for working capital or consumptive purposes. What is critical is for them to understand the cost structures for their individual growers and use that to manage the level of borrowing for consumption purposes in order to avoid debt accumulation and to some extent side marketing.

4.4.4 Tobacco, Agriculture and The Economy

Fig 4.23: Contribution of Tobacco to Agriculture GDP



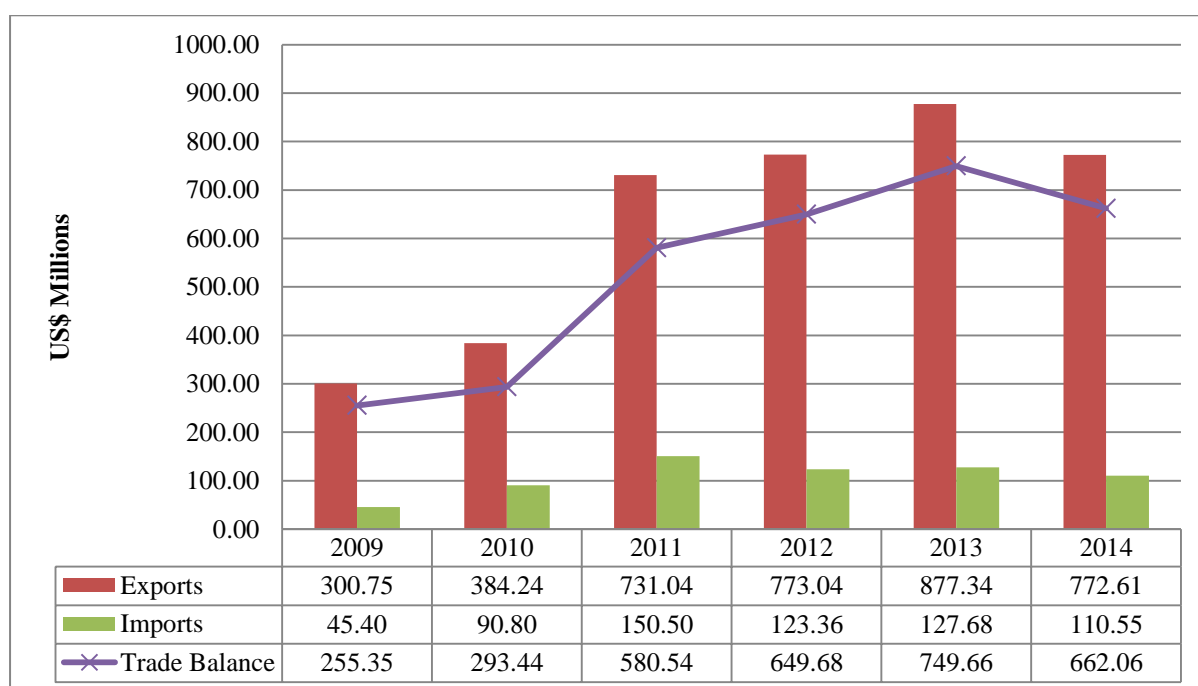
Source: ZimStats, 2014

The study established that tobacco contributed between 3.2% and 4.8% of the 10 – 12% agriculture’s contribution to the country’s Gross Domestic Product (GDP) in 2009 and 2014 respectively. This translates to a 45% contribution to the agriculture GDP. Thus a strategic commodity to the Zimbabwean economy with important backwards and forwards linkages with other sectors of the economy and higher multiplier effects to the development of the Zimbabwean economy which is agro-based through (1) earning foreign currency for the country; (2) providing a high return source of rural livelihoods and (3) through the two, ensuring food and nutrition security and reduction of poverty, hunger and malnutrition.

4.4.5 Tobacco Trade Balance

The tobacco trade balance compared imports and exports of tobacco and related products to assess the potential contribution of tobacco to the national balance of trade and growth through the multiplier effects as a result of the term $(X - M)$ in the national income equation.

Fig 4.24: Tobacco Balance of Trade 2009 - 2014



Source: RBZ

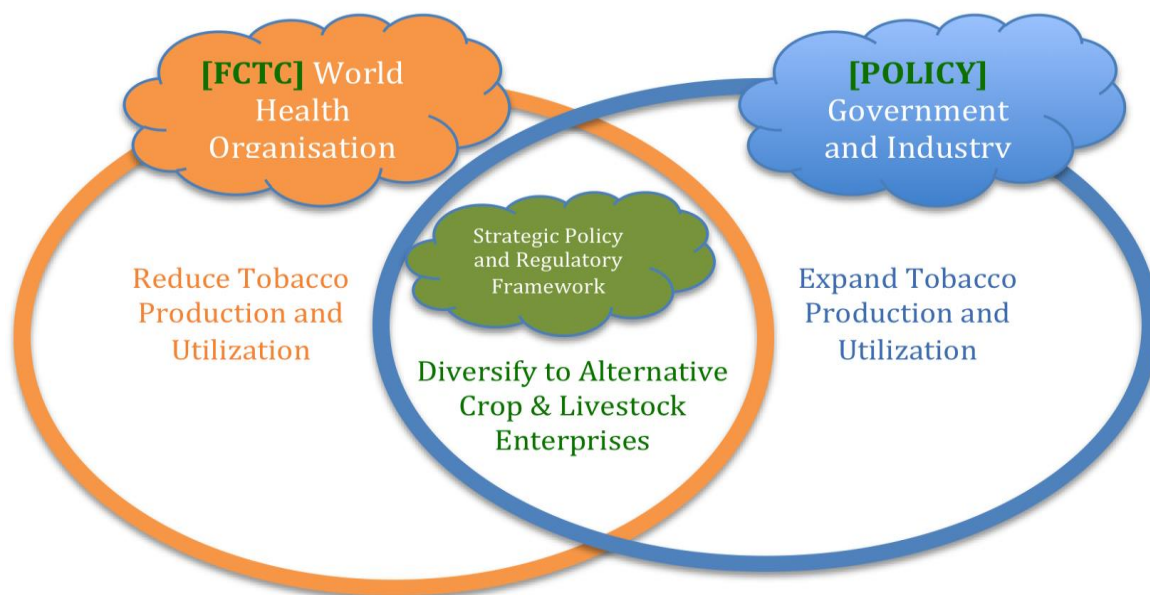
The study observed a positive balance of trade in spite of the major export product being semi-processed. The study concluded that tobacco contributes positively to the national trade balance position and that Zimbabwe stands to benefit more from increased value addition. The study concluded that tobacco increases GDP through multiplier effects of the term $(X - M)$ in the circular flow of income.

4.5 THE FCTC AND FUTURE OF TOBACCO PRODUCTION AND AMARKETING

4.5.1 Potential for an Emerging Consensus

The study made a closer analysis and interpretation of the government policy position on tobacco production and marketing and that of the WHO represented by the FCTC. The analysis revealed that there is a potential convergency on diversification from tobacco to alternative crop and livestock enterprises.

Diagram 4.2: The Emerging Convergence between Government Policy and FCTC



Source: Research Results

Within the context of the emerging tobacco production and marketing strategic policy and regulatory framework, Zimbabwe has an option for a two-pronged tobacco agrarian reform

policy strategy: (1) responsible promotion of tobacco production and marketing in line with the FCTC focusing limiting production to 160 million kg which the global market is able to absorb; and (2) institute deliberate policies, programmes and projects to extent the tobacco production and marketing model to alternative crop and livestock enterprises.

4.5.2 Realising The Convergency

This study adopted the notion that, this convergency would not just come by itself. Zimbabwe should explore joining hands with other like affected tobacco producing countries to fight the exclusion of tobacco in trade agreements and focus on expanding production and marketing in response to increasing global demand trends for tobacco and related products due to increasing populations, while anticipating the reversal of these global demand trends by also pursuing a policy of diversifying away from tobacco and making a smooth transmission to alternative crop and livestock enterprises based on transfer of the successful tobacco production and marketing models to these enterprise in line with the FCTC.

4.6 THE TOBACCO PRODUCTION INTENSIFICATION EXPERIENCE

The history of tobacco revealed that the intensification of tobacco production is built on a firm foundation of private sector investment, years of research, and policy and institutional reforms resulting in the establishment of the TRB in 1924, the establishment of the TIMB and instruments for compulsory selling of tobacco through the auction system in 1936, the increasing number of growers as a result of land redistribution introduced in 2000, and the

introduction of the contract system to operate alongside the auction system in 2004. The auction system provided farmers with a physical market place for the produced tobacco.

The institutional reforms had the positive effect of increasing private sector investment in the form of contract farming, auctioning, processing and manufacture of tobacco and related products. The number of contractors increased from 6 in 2004 to 15 in 2014. The sector has 3 auction floors, 3 processors and 2 manufacturers. The contractors assisted growers invest in production inputs, irrigation and mechanisation equipment, extension and other production support services, and provided a guaranteed market for the grower's produce. The contractors also provided information about markets, quality and prices to farmers. The order achieved in the industry as a result of the TIMB, attracted transnational investments in processing (ZLT), marketing of tobacco (Tribac and Tianze) and manufacture (BAT). This improved the industry's access to foreign credit for the production and marketing of tobacco.

The industry is very responsive to global developments including an increasing focus on sustainability. The study observed that contractors were now including an input pack for reforestation and that as an industry an afforestation levy had been put in place to ensure that the growing of tobacco is sustainable. The tobacco levy is shared 70:30 and used for value chain governance by the TIMB, and research and development through the TRB respectively.

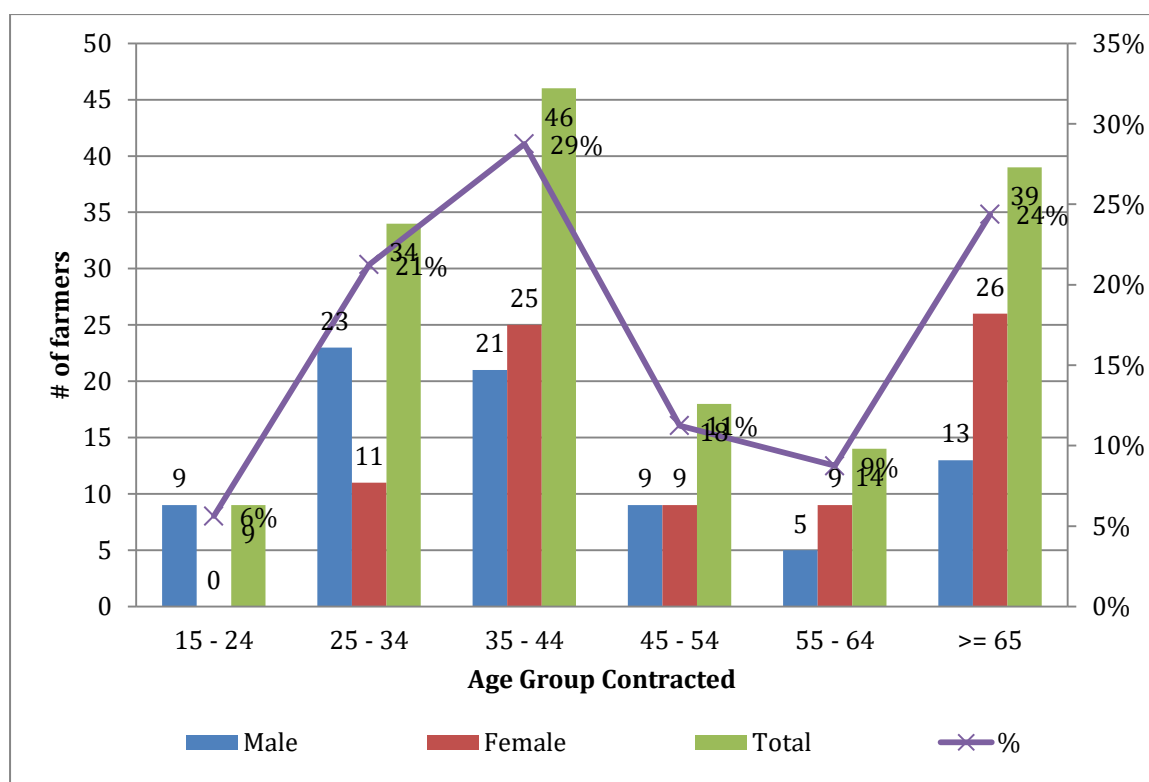
The study concluded that achieving sustainable agriculture intensification requires conducive policies and institutions, public and private sector investment and innovation targeted at sources of productivity and market access all grounded in global, continental, regional and national development frameworks.

4.7 FARM LEVEL DIMENSIONS: TOBACCO PRODUCTION AND MARKETING

4.7.1 Characterisation and Distribution of Sampled Growers

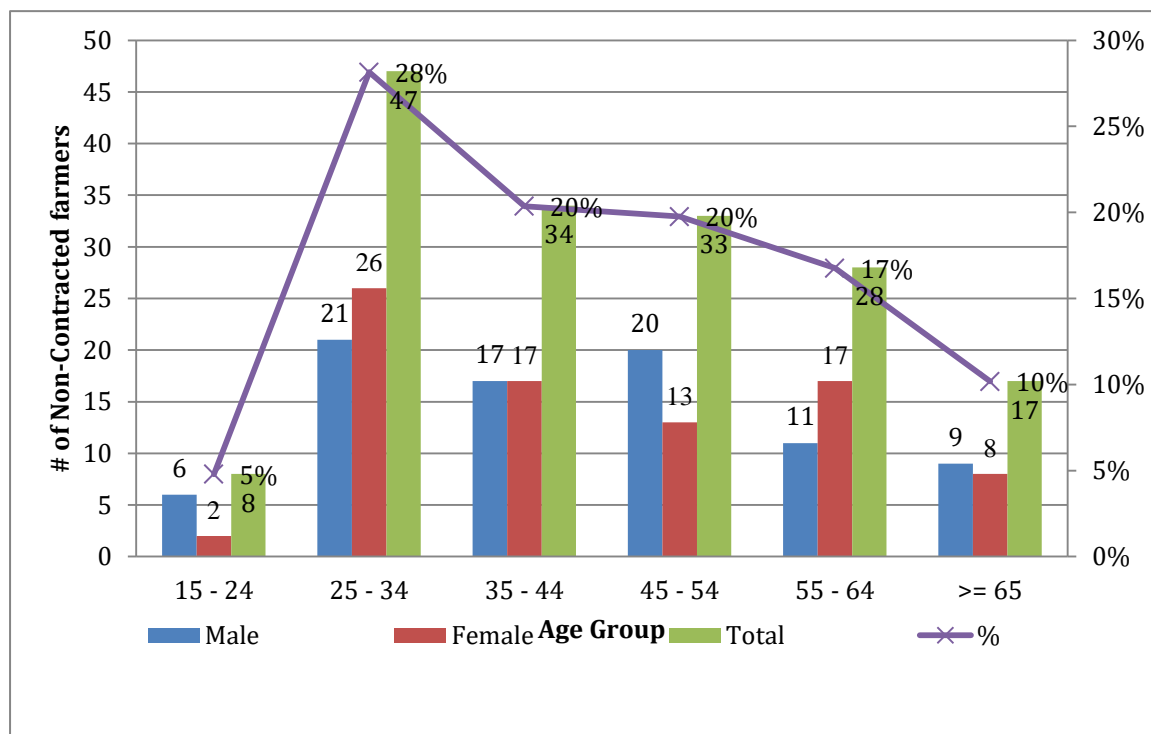
4.7.1.1 Age and Gender Profile

Fig 4.24: Growers' Age and Gender for Sampled Contracted Farmers



The results showed that contracted growers comprised 30% youths (aged 15 – 35 years), 54% adults (35 – 65 years) and 39% old age (above 65 years). The distribution approximates a normal distribution curve, which is an important condition for statistical data analysis in involving analysis of variance.

Fig 4.26: Growers' Age and Gender for Sampled Non-Contracted Farmers



The results showed that non-contracted growers comprised 33% youths (aged 15 – 35 years), 57% adults (35 – 65 years) and 10% above 65 years old. The distribution of non-contracted farmers approximates a normal distribution curve, which is an important condition for statistical data analysis in involving analysis of variance

4.7.1.2 Gender, Farming Model and Natural Region

The results of the study indicated that of the 320 tobacco growers sampled for data collection, contracted and non-contracted growers constituted 50% each while male and female growers also constituted 50% each under both contracted and non-contracted growers. This reflects a balance design, which Sawyer (2010) points out as being key to improving statistical power.

According to Sawyer, statistical power is a function of sample size, and the number of independent variables and levels. As a general rule in order to improve statistical power of detecting differences in groups, samples should be large enough to invoke the central limit theorem in statistical analysis and for there to be a balanced design (equal size in each group).

Table 4.8: Number of Growers Contracted and Non-Contracted by Natural Region

	Contracted			Non-Contracted			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
NR I					1	1		1	1
NR IIa	57	51	108	45	46	91	102	97	193
NR IIb	9	15	24	22	20	42	31	35	73
NR III	12	11	23	13	10	23	25	21	48
NR IV	2	3	5		3	3	2	6	5
NR V									
All	80	80	160	80	80	160	160	160	320

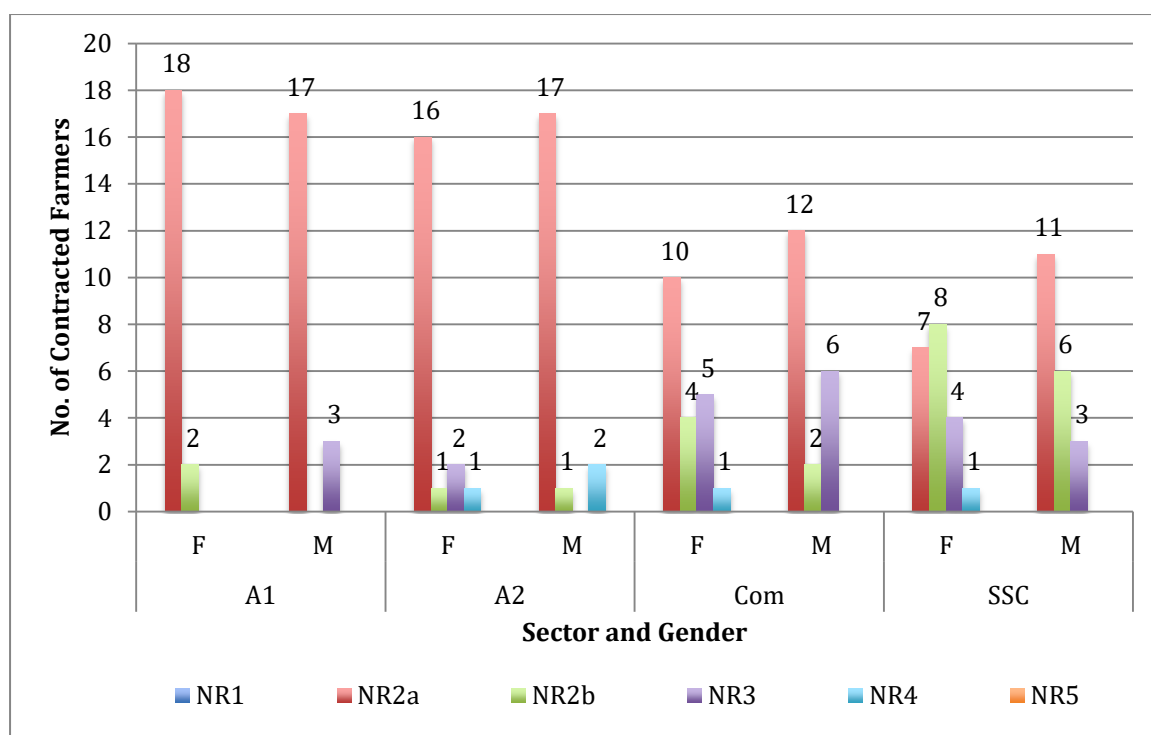
Table 4.9: Percentage of Growers Contracted and Non-Contracted by Natural Region

	Contracted			Non-Contracted			All		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
NR I	0%	0%	0%	0%	0%	0%	0%	0%	0%
NR IIa	18%	16%	34%	14%	14%	28%	32%	30%	60%
NR IIb	3%	5%	8%	7%	6%	13%	10%	11%	23%
NR III	4%	3%	7%	4%	3%	7%	8%	7%	15%
NR IV	1%	1%	2%	0%	1%	1%	1%	2%	2%
NR V	0%	0%	0%	0%	0%	0%	0%	0%	0%
All	25%	25%	50%	25%	25%	50%	50%	50%	100%

The results show that 83% growers are in natural region II being 60% in natural region IIa and 23% in IIb. The balance 15% is region III and 2% in region IV. The results showed no tobacco growers in natural region V.

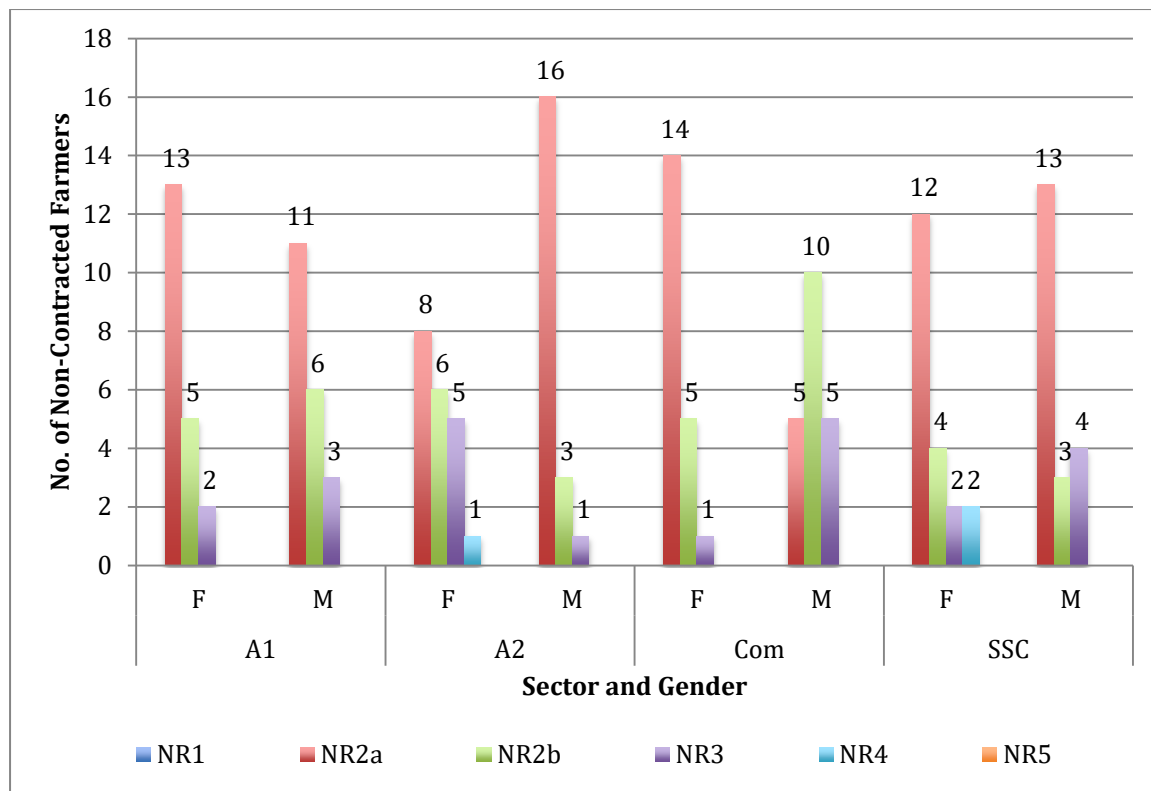
4.7.1.3 Gender, Sector and Natural Region

Fig 4.27: Distribution of Contracted farmers by Sector by Natural Region



The results showed that across the entire farming sectors – communal, small scale commercial, A1 and A2 – the highest number of contracted farmers is in natural region II. In A1 and A2 sectors, there are limited numbers of growers in regions IIb, III and IV compared to the communal and small-scale sectors. In these, there is distribution of growers across all the natural regions with region IV having the least. There are important differences in the number of male and female grows in each natural region.

Fig 4.28: Distribution of non-contracted farmers by sector by natural region



As for contracted growers, the results showed that across the entire farming sectors – communal, small scale commercial, A1 and A2 – the highest number of contracted farmers is in natural region II. But unlike the distribution of contracted growers all the sectors have are comparable numbers of growers all natural regions Again there are no important differences in the number of male and female grows in each natural region.

4.7.1.4 Production Structure Based on Area by Sector

Fig 4.29: Contracted and Non-Contracted Area Under Irrigation by Sector

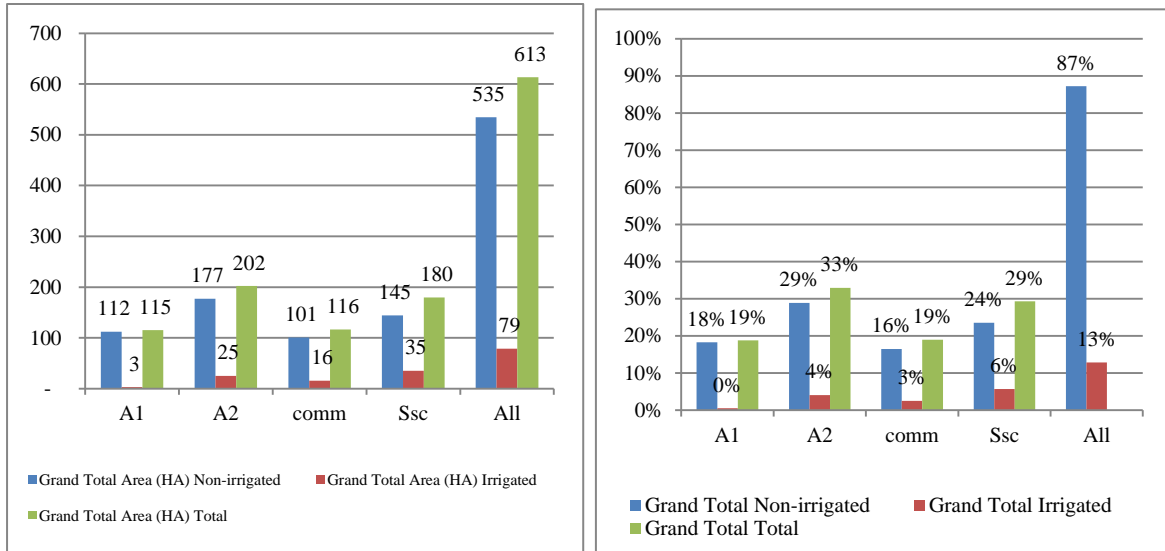


Fig 4.30: Contracted Area Under Irrigation by Sector

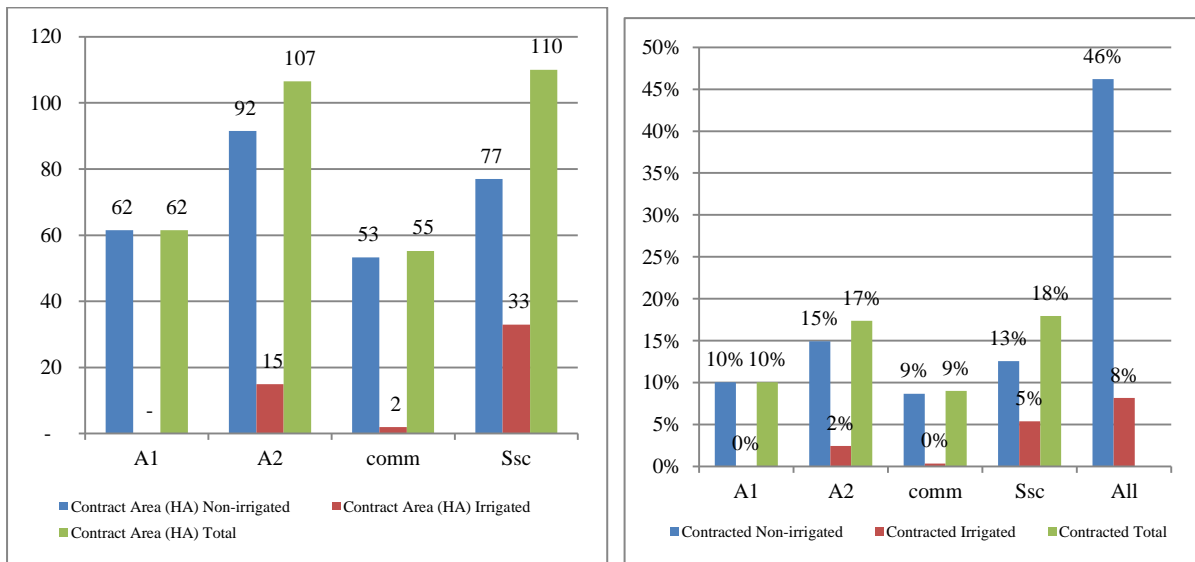
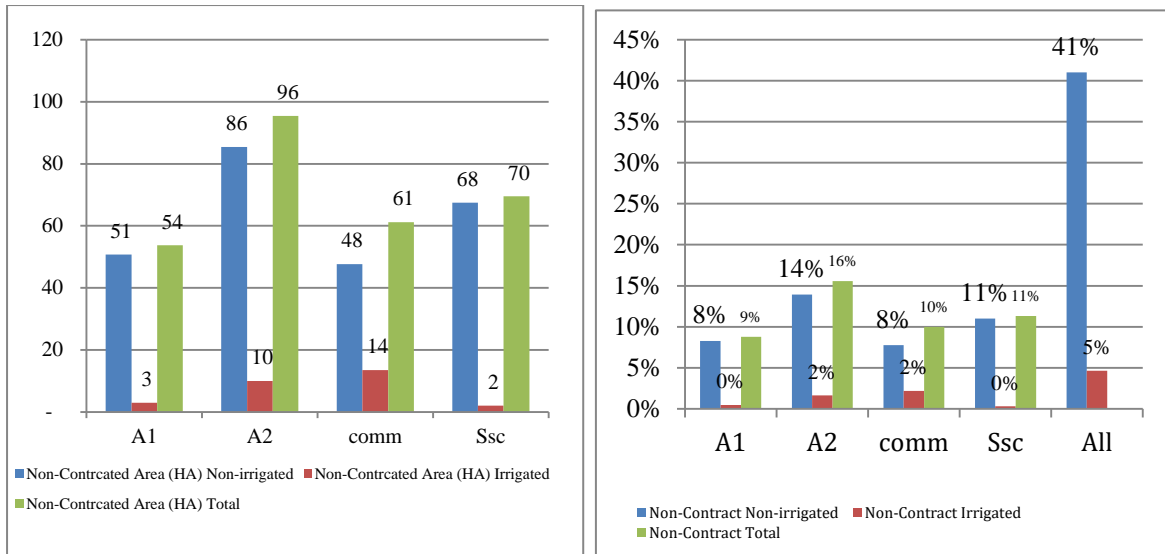
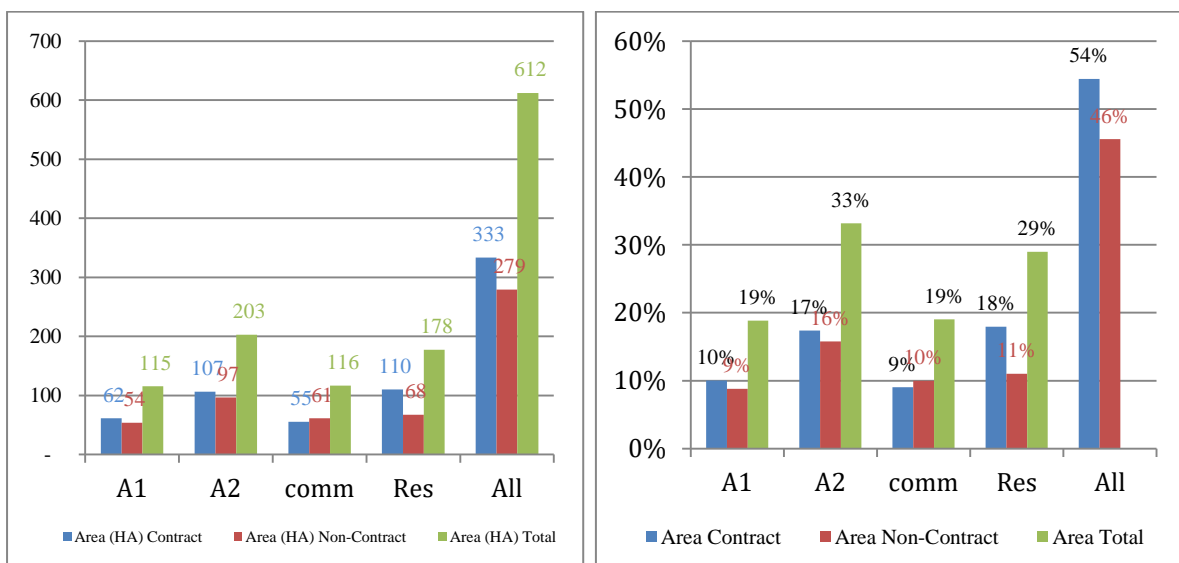


Fig 4.31: Non-Contracted Area Under Irrigation by Sector



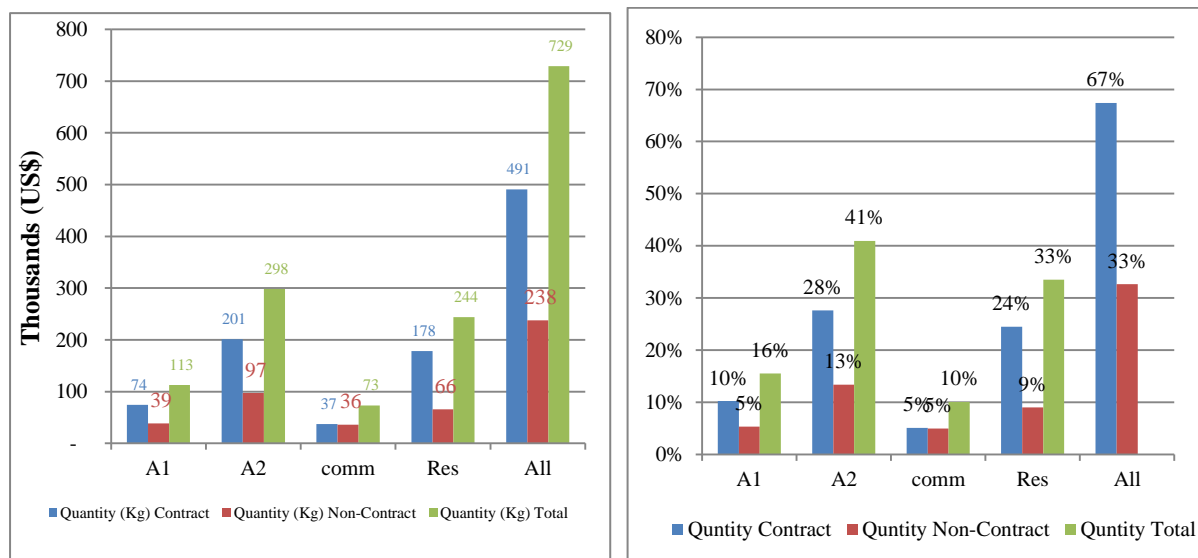
4.7.1.5 Production Structure by Sector

Figure 4.32: Contracted and Non-Contracted Tobacco Area and Percentage by Sector



The results showed that the total area under tobacco by growers under the study was 612 hectares, broken down into 19% (115 ha) from A1, 33% (203 ha) from A2, 19% (116 ha) in communal and 29% (178 ha) in resettlement areas. The study established that 54% (333 ha) of the total tobacco area under the study was contracted while 46% (279 ha) was non-contracted. The results showed that the contracted area of 333 ha comprised 10% (62 ha) from A1, 17% (102 ha) in A2, 9% (55 ha) from communal and 18% (110) from resettlement areas. The non-contracted of 279 ha comprised 9% (54) in A1, 16% (97 ha) in A2, 10% (61 ha) in communal and 11% (68 ha) in resettlement areas.

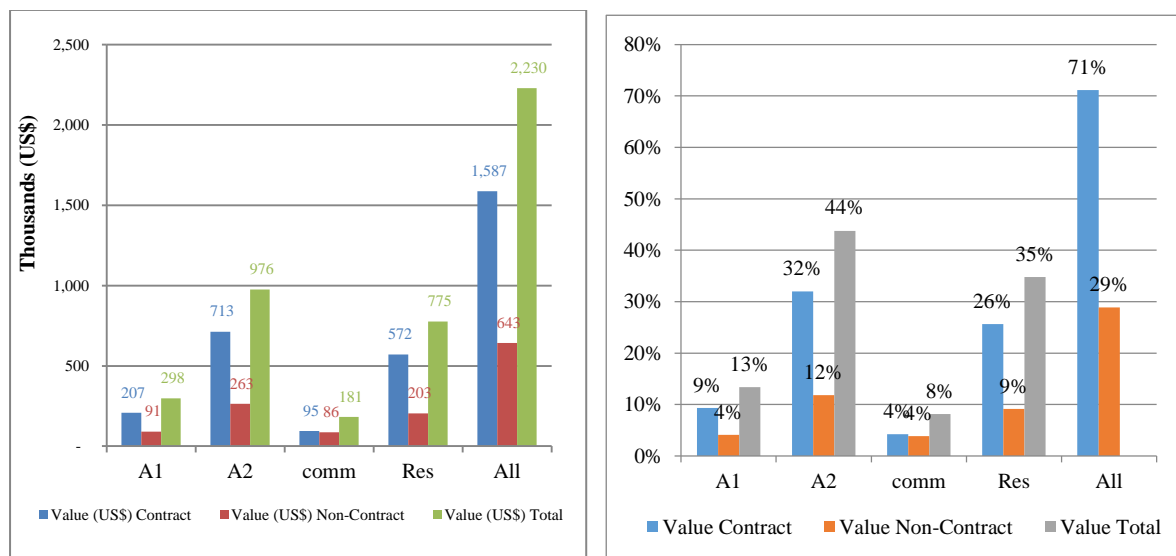
Fig 4.33: Contracted and Non-Contracted Tobacco Produced and Percentage by Sector



The results showed that the total quantity of tobacco produced by growers under the study was 729,000 kg, broken down into 16% (113,000 kg) of the total tobacco produced (729,000 kg) under study was from A1, 41% (298,000 kg) from A2, 10% (73,000 kg) from communal and 33% (244,000 kg) from resettlement areas. The study established that 63% (491,000 kg) of the total quantity of tobacco produced by growers under the study was from contracted

tobacco while 33% (238,000 kg) was from non-contracted tobacco growers. The contracted tobacco of 491,000 kg comprised 10% (74,000 kg) from A1, 28% (201,000 kg) in A2, 5% (37,000 kg) from communal and 24% (178,000 kg) in resettlement areas. The non-contracted tobacco of 238,000 kg comprised 6% (39,000 kg) from A1, 13% (97,000 kg) from A2, 5% (36,000 kg) from communal and 9% (66,000 kg) from resettlement areas.

Fig 4.34: Value of Contracted and Non-Contracted Tobacco and Percentage by Sector



The results showed that the total value of tobacco produced by growers under the study was US\$2,230,000, broken down into 13% (US\$298,000) from A1, 44% (US\$976,000) from A2, 8% (US\$181,000) from communal and 35% (US\$775,000) from resettlement areas. The study established that 71% (US\$1,587,000) of the total value of tobacco produced by growers under the study was from contracted tobacco while 29% (US\$643,000) was from non-contracted tobacco growers. The value of contracted tobacco of US\$1,587,000 was 9% (US\$207,000) from A1, 32% (US\$713,000) from A2, 4% (US\$95,000) from communal and 26% (US\$572,000) from resettlement areas.

26% (US\$572,000 kg) in resettlement areas. The value of non-contracted tobacco of US\$643,000 was 4% (US\$91,000) from A1, 12% (US\$263,000) from A2, 4% (US\$86,000) from communal and 9% (US\$203,000) from resettlement areas.

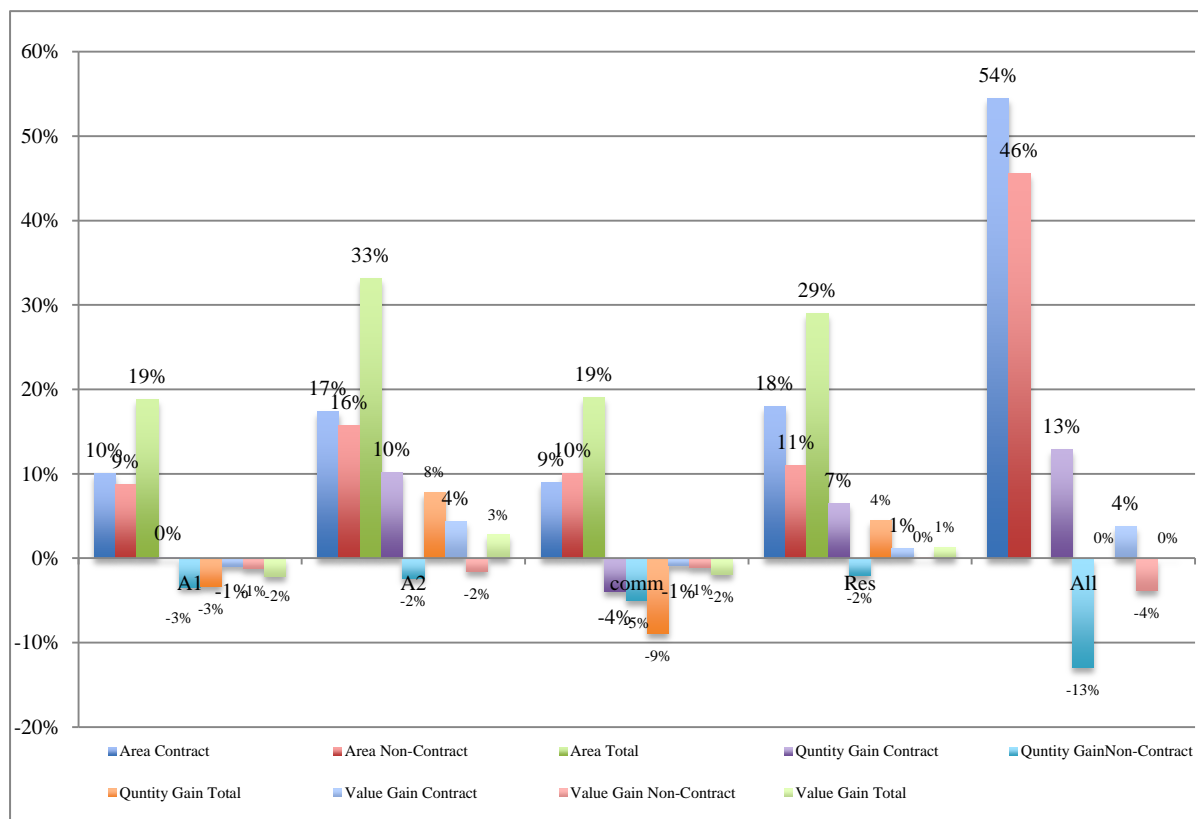
Table 4.10: Productivity Analysis of contract and non-contracted growers across sectors

	Area			Quantity			Value		
	Contract	Non-Contract	Total	Contract	Non-Contract	Total	Contract	Non-Contract	Total
A1	10%	9%	19%	10%	5%	16%	9%	4%	13%
A2	17%	16%	33%	28%	13%	41%	32%	12%	44%
Com	9%	10%	19%	5%	5%	10%	4%	4%	8%
Ress	18%	11%	29%	24%	9%	33%	26%	9%	35%
All	54%	46%		67%	33%		71%	29%	

The study showed that contracted growers are more productive than non-contracted growers. Fifty four percent (54%) of the contracted area produced 67% of the total tobacco output and 71% of the total value of tobacco produce. The non-contracted farmers on the other hand had 46% of the area, which translated to 33% of the tobacco output, and 29% of the total value.

Fig 4.34 shows the gain in market share for contracted and loss in market structure for the non-contracted farmers.

Fig 4.35: Loss and Gain in Market Structure as Indicators of Productivity and Quality



The 13% gain from area to quantity determined market structure by contracted growers is explained by a 13% loss by non-contracted growers. The most gain by contract growers was 10% for A2 growers followed by resettlement (7%), A1 (0%) and a loss of 4% by communal growers. The most loss by non-contracted growers was 5% for communal, followed by 3% for A1 and 2% each for resettlement and A2 growers. The gain of 4% from quantity to value by contracted growers is matched by a 4% loss by non-contracted. The most gain was 4% for A2 and 1% for resettlement growers while A1 and Communal growers actually lost 1% each.

The gain or loss in market structure from area to quantity indicates productivity. The most productive are A2 growers, which gained 10% followed by Res, which gained 7%, based on quantity. A1 did not gain or loose while communal lost 4%. The gain or loss in market

structure from quantity to value indicates better quality, which attracts a better price. A2 gained 4% while resettlement gained 1% while communal and A1 lost 1% each. This suggests that A2 produce the most quality followed by resettlement, while A1 and communal are seem to produce similar quality.

4.7.2 Descriptive Statistics

4.7.2.1 How Tobacco Production Models Condition Income Determinants

The study generated descriptive statistics – mean and standard deviation – for area, yield and price – which are the major determinants of productivity and net or benefits that accrue to farmers and the economy. The study sought to understand how these are impacted by or vary across the alternative tobacco production and marketing models.

Table 4.11: Descriptive Statistics of key Determinants of Productivity and Income

Statistics							
Fin_Model			Area			Yield	Ave. Price
			Dryland	Irrigated	Total		
Non	N	Valid	160	160	160	158	159
		Missing	0	0	0	2	1
Contracted		Mean	1.5778	.1781	1.7559	796.7921	1.8613

Statistics						
Fin_Model		Area			Yield	Ave. Price
		Dryland	Irrigated	Total		
Std. Deviation		1.58468	.74468	1.80760	740.59478	.74953
Contracted (Marketing)	N	129	129	129	128	128
	Missing	0	0	0	1	1
Mean		1.9089	.0000	1.9089	1293.9270	2.3405
Std. Deviation		2.21720	.00000	2.21720	1287.19158	.68532
Contracted (Prdn & Mkting)	N	31	31	31	30	30
	Missing	0	0	0	1	1
Mean		1.3548	.0000	1.3548	1157.2278	2.4080
Std. Deviation		.60819	.00000	.60819	1162.28871	.80710

Table 4.12: Influence of Tobacco Production Models on Area, Yield and Price

Net Income Determinants	Observation Influence of Production and Marketing Model
Area	The study observed that contract marketing had the highest mean area under tobacco (1.9 ha) followed by auction (1.7 ha) and lastly contract tobacco production and marketing (1.35 ha). This observation was consistent with the finding from the value chain analysis that contractors are reducing contracted area to less than 2 ha as a default risk management strategy.

Net Income Determinants	Observation Influence of Production and Marketing Model
Yield Effect	The study observed that contract marketing was the most productive of the three models with a yield of 1,293 kg / ha. Contract production and marketing was second with a yield of 1,157 kg / ha and lastly the auction system with a yield of 796.79 kg /ha. This means that contract farming increases productivity of the more resourced more than the resources constrained.
Price Effect	The study observed that growers under different forms of contract achieved better prices that growers under the auction system. Growers under contract production and marketing achieved the highest average price (\$2.41 / kg), followed by growers under contract marketing at \$2.34 / kg. Growers under the auction system achieved the least price at US\$1.9 / kg. This was not the expected result. Growers under contract marketing are more flexible and contract to the best buyer. The expectation was that growers under contract marketing would achieve a better price than growers under contract production and marketing.

4.7.2.2 Effect of farm level characteristics on net income across models

The study generated descriptive statistics to describe the effect of farm level characteristics on net income across the tobacco production and marketing models.

Table 4.13: How Does Sector Condition or Influence Growers' Net Income?

		Non-Contract				Contract Marketing				Production & Marketing			
		Comm	A1	SSC	A2	Comm	A1	SSC	A2	Comm	A1	SSC	A2
NetIncome_Ha		57.43	379.39	951.03	989.64	353.43	2,043.26	2,073.29	4,665.15	3,640.85	3,577.01	(146.33)	2,475.49
<i>Yield – Kg/Ha</i>		<i>640.92</i>	<i>751.57</i>	<i>807.96</i>	<i>971.16</i>	<i>694.78</i>	<i>1,242.40</i>	<i>1,307.49</i>	<i>2,025.91</i>	<i>1,575.50</i>	<i>1,397.50</i>	<i>830.23</i>	<i>1,373.37</i>
<i>AV_Price – US\$/kg</i>		<i>1.68</i>	<i>1.80</i>	<i>2.10</i>	<i>1.82</i>	<i>2.13</i>	<i>2.25</i>	<i>2.46</i>	<i>2.54</i>	<i>2.67</i>	<i>3.21</i>	<i>2.26</i>	<i>2.21</i>
<i>Total_Area – Ha</i>		<i>1.53</i>	<i>1.34</i>	<i>1.74</i>	<i>2.39</i>	<i>1.40</i>	<i>1.53</i>	<i>2.38</i>	<i>2.65</i>	<i>1.00</i>	<i>2.00</i>	<i>1.38</i>	<i>1.40</i>
Performance	Within Model	A2 growers had the highest mean net income per hectare followed by SSC Commercial, A1 and lastly Comm growers. This is explained by the yield and area effects. A2 had the highest yield and area followed by SSC, A1 and last Comm growers.				The performance ranking was the same as for the auction system. A2 growers had the highest mean net income per hectare followed by SSC, A1 and lastly Comm growers. The A2 growers had the highest yield, price and area followed by SSC, A 1 and last Comm growers.				The ranking was reversed. Comm growers had the highest mean net income per hectare followed by A1, A2 and lastly SSC which is actually negative. The productivity of comm growers was highest.			

		Non-Contract				Contract Marketing				Production & Marketing			
		Comm	A1	SSC	A2	Comm	A1	SSC	A2	Comm	A1	SSC	A2
	Across Model	<p>The mean net income per hectare increased for each sector as the model moves from auction to contract marketing and to production and marketing except for SSC growers. The productivity of all sectors increase with contract farming arrangements. Contract arrangements achieve better prices for the various sectors. The area for contract production and marketing is less than 2 ha, while that for auction and contract marketing is above 2 ha for A2 growers. This confirmed the value analysis results that contractors are limiting input support to small areas in order to reduce default risk.</p>											

Table 4.14: How Does Natural Region Condition Net Income?

	Non-Contract					Contract Marketing				Pr & Marketing			
	NR 1	NR2a	NR2b	NR 3	NR 4	NR2a	NR2b	NR 3	NR 4	NR2a	NR2b	NR 3	NR 4
NetIncome _Ha	(413.58)	1,147.73	(163.25)	(230.75)	1,078.04	2,596.86	744.74	1,583.72	1,732.06	1,164.42	546.11	758.18	6,609.67
Yield – Kg/Ha	451.50	997.89	483.66	568.79	745.33	1,418.00	801.67	1,150.06	957.17	1,106.94	558.17	1,543.80	1,862.00
AV_Price – US\$/kg	1.63	1.99	1.70	1.55	2.08	2.39	2.16	2.13	2.55	2.51	1.77	2.05	3.10
Total_Area – Ha	2.00	1.77	1.85	1.59	1.00	2.12	1.64	1.18	1.50	1.50	1.17	1.20	1.00
Within Models	The net benefits were positive for growers in regions IIa and IV, with those in region IIa benefiting more. Growers in natural regions I, III and IIb had negative net incomes.					Growers in region IIa had the highest mean net benefits followed by those in region IV, III and lastly those in region IIb.				Growers in natural region IV were now better than growers in region IIa which was followed by growers in region III and lastly growers in region IIb.			

	Non-Contract					Contract Marketing				Pr & Marketing			
	NR 1	NR2a	NR2b	NR 3	NR 4	NR2a	NR2b	NR 3	NR 4	NR2a	NR2b	NR 3	NR 4
Across Models	<p>The study observed that growers' benefits differ across natural regions under each model. Under the auction and contract marketing models, growers in region IIa had the highest benefits while region IV had the highest benefits under contract production and marketing. Growers in region IIb had the least benefits under all the tobacco production and marketing models. Growers in the respective natural regions except natural region IV enjoyed the highest net benefits under contract marketing followed by contract production and lastly the auction system where the net incomes were actually negative in natural regions I, II and IIb. Growers in natural region IV had the highest benefits under contract production followed by contract marketing and lastly auction.</p>												

Table 4.15: How Does Gender Condition Net Income?

		Non-Contract		Contract Marketing		Pr & Marketing	
		Male	Female	Male	Female	Male	Female
NetIncome_Ha		1,383.88	1,588.41	3,267.59	2,527.18	1,507.86	1,532.00
Yield – Kg/Ha		844.06	740.16	1,467.73	1,044.26	1,288.29	1,070.78
AV_Price – US\$/kg		1.82	1.88	2.36	2.28	2.81	2.19
Total_Area – Ha		1.58	1.92	1.98	1.82	1.29	1.38
Performance	Within Model	Male growers enjoyed better benefits from tobacco production and marketing under auction than female growers.		Male growers enjoyed better benefits from tobacco production and marketing under auction than female growers.		Male growers still enjoyed better benefits from tobacco production and marketing under auction than female growers.	
	Across Model	The benefits of tobacco production and marketing models differ across gender under the various production and marketing models. Male growers enjoy more benefits under each model than female growers but the difference in the benefits seemed to have closed under contract production and marketing.					

Table 4.16: How Does Farm Size Influence Net Income

		Non-Contract			Contract Marketing			Pr & Marketing		
		SSC (< 2 ha)	MSC (2-5 ha)	LSC (> 5)	SSC (< 2 ha)	MSC (2-5 ha)	LSC (> 5)	SSC (< 2 ha)	MSC (2-5 ha)	LSC (> 5)
NetIncome_Ha		328.38	1,059.97	1,533.03	1,943.80	1,772.90	6,121.34	1,719.91	509.14	
Yield – Kg/Ha		752.04	858.85	941.10	1,273.92	1,099.12	2,135.55	1,172.59	991.09	
AV_Price – US\$/kg		1.73	2.09	2.09	2.18	2.46	3.01	2.16	2.75	
Total_Area – Ha		0.97	2.41	8.50	0.98	2.32	8.78	1.00	2.22	
Performance	Within Model	Growers with area that was greater than 5 ha had the highest benefits followed by those with area between 2 – 5 ha and lastly those with area less than 2 ha.			The growers the area greater than 5 continue to have the highest benefits but the trend is reversed for those with 2 – 5 ha and less than 2 ha. The later now has greater benefits.			There was no growers with area greater than 5 ha. Growers with area of less than 2 ha enjoyed more benefits per hectare than those with area between 2 -5 ha.		
	Across Model	The benefits to growers differed across the size of the farm under the different models. The small scale benefits were highest under contract production and marketing and least under auction. The medium scale growers' benefits were highest under contract marketing and least under contract production and marketing.								

Table 4.17: How Does Experience Condition Net Income?

	Non-Contract					Contract Marketing						Production & Marketing				
	1	2	4	5	6	1	2	3	4	5	6	2	3	4	5	6
NetIncome_ Ha	188.40	667.36	2,255.26	365.39	1,509.54	1,695.18	2,343.15	1,727.31	5,425.42	4,844.09	856.72	4,003.06	(12,401.91)	178.26	(223.86)	1,573.53
Yield – Kg/Ha	690.51	815.55	1,028.87	794.20	656.02	1,011.73	1,387.19	839.00	1,902.80	1,958.50	1,178.08	1,526.13	1,116.00	626.33	363.50	1207.631 0
AV_Price – US\$/kg	1.83	1.82	2.42	1.69	0.75	2.34	2.30	3.03	3.14	2.89	1.79	2.77	3.02	2.23	1.87	2.1429
Total_Area – Ha	1.52	1.75	4.00	1.20	2.86	2.03	1.78	2.00	6.50	1.17	1.75	1.13	2.00	1.33	1.50	1.4286
Within Model	The model had growers of all categories of years of experience. There was no observed pattern in the manner net income varied with increasing experience. Growers with 4 years experience had the highest mean net income followed by 6 years, 2 years, 5 years and lastly 1 year experienced growers. The					The model had growers of all categories of years of experience reflecting that experience is not a key consideration for contract marketing. Similar to the auction system, there was no observed pattern in the manner in which net income varied with increasing experience. The mean area under tobacco was greater 2 ha						Unlike other models all growers have 2 and above years of experience. This reflect experience as a key consideration by contracting firms. There was no observed pattern in the manner mean net income varied with experience. Growers with 2 years of experience had the highest mean				

	Non-Contract					Contract Marketing						Production & Marketing				
	1	2	4	5	6	1	2	3	4	5	6	2	3	4	5	6
	expectation is that growers with more experience produce more per hectare and produce better quality which fetches better prices. Experience growers are also expected to have better negotiation skills.					growers with 1 and 4 years of experience.						net income followed by growers with 6 years and 4 years. Growers with 3 and 5 years had negative mean net incomes. The mean area under tobacco was below 2 ha for all the experience categories.				
Across Model	Growers in each respective category year of experience under contract marketing had higher mean net income than those growers with the same experience under auction and production and marketing models. However for non-contracted growers the mean net incomes were all positive. The mean net incomes for growers under production and marketing were lower than their counterpart growers under the auction system with negative mean net incomes for those with 3 and 5 years of experience. Based on experience groupings, growers under auction are better off than growers with the same experience under production and marketing. This could be explained possible by the the results of the value chain analysis. Farmers have a tendency to over borrow and contractors are said to provide expensive inputs. The cost-benefit analysis also established that the production and marketing model had the highest mean deductions.															

Table 4.18: How Does Age Condition Net Income?

		Non-Contracted			Contracted Marketing			Contracted Production and Marketing		
		Youth	Adult	Old Age	Youth	Adult	Old Age	Youth	Adult	Old Age
NetIncome_Ha		1,105.04	325.56	230.88	2,926.71	1,796.50	1,829.79	4,290.47	1,043.98	(2,292.13)
<i>Yield</i>		<i>1,010.26</i>	<i>687.66</i>	<i>605.82</i>	<i>1,515.70</i>	<i>1,227.10</i>	<i>881.74</i>	<i>1,739.14</i>	<i>993.75</i>	<i>915.38</i>
<i>AV_Price</i>		<i>1.85</i>	<i>1.86</i>	<i>1.91</i>	<i>2.43</i>	<i>2.30</i>	<i>2.30</i>	<i>2.68</i>	<i>2.32</i>	<i>2.37</i>
<i>Total_Area</i>		<i>1.81</i>	<i>1.78</i>	<i>1.37</i>	<i>1.57</i>	<i>1.86</i>	<i>3.33</i>	<i>1.29</i>	<i>1.35</i>	<i>1.50</i>
Performance	Within Models	<p>Youths growers had the highest mean net income while adult growers had the least. This was explained by the area and productivity effects. Area and yiled decreased with increasing age while price increased with age.</p>			<p>Youths growers had the highest mean net incomenwhile the adult growers got the least benefits. This was supported by higher productivity and better price. The old were better than the adult growers due to higher area effect.</p>			<p>Youths growers had the highest mean net income while the adult growers got the least benefits. This was supported by higher productivity and better price.</p>		
	Across	<p>The net benefits to growers differed across age group under the various models. Youth growers benefited the most under contract</p>								

		Non-Contracted			Contracted Marketing			Contracted Production and Marketing		
		Youth	Adult	Old Age	Youth	Adult	Old Age	Youth	Adult	Old Age
	Models	<p>production and marketing followed by contract marketing and lastly auction. This was not the case with adult and old growers. These enjoyed most benefits under contract marketing followed by contract production and marketing and lastly auction. The interaction between tobacco model and age produces the best results under contract production and marketing for the youths, contract marketing for the adult and old age groups.</p>								

Table 4.19: How Does Irrigation Status Condition Net Income?

	Non-Contract			Contract Marketing	Production & Marketing
	100% Irrigation	50% Irrigation	0% Irrigation	0% Irrigation	0% Irrigation
NetIncome_Ha	683.30	444.68	604.37	2,188.13	1,356.68
<i>Yield</i>	858.63	567.65	807.75	1,283.90	1,119.90
<i>AV_Price</i>	2.01	2.03	1.83	2.32	2.33
<i>Total_Area</i>	2.75	3.91	1.57	1.91	1.35
Within Models	Growers with 100% irrigated had the highest mean net income followed by those with 0% irrigated area and lastly those with 50% irrigation. Irrigation increases productivity. The expectation was that those without irrigation would have less benefits than those with.			There were no growers with irrigation.	There were no growers with irrigation.
Across Models	Growers with 0% irrigation under contract marketing had the highest mean net income, followed by those with 0% irrigation under contract production and lastly those with 50% irrigation under auction. The growers with 0% irrigation under contract enjoyed more benefits than those with 100% irrigation under auction.				

4.7.2.3 Cost-Benefits Analysis

The study generated descriptive statistics for sales revenue, cost and net income from the survey data and used this to do a partial tobacco net income budget to evaluate which tobacco production and marketing models is the most profitable. The study used this to complement the standard tobacco budgets based cost-benefit analysis. The standard-budget-based cost benefit analysis assumed the same price and quality across the production models. The survey data-based cost-benefit analysis on the other hand had the actual yields, quality and prices achieved and took into account the effects of other farm level characteristics including sector, natural region, experience and farm size.

Table 4.20: Cost Benefit Analysis for Tobacco Production and Marketing Models

	Auction (Non Contracted)	Contracted (Marketing)	Contracted (Prod & Marketing)
<i>Area ha</i>	1.7559	1.9089	1.3548
<i>Yield – Kg / ha</i>	796.79	1,293.93	1,157.23
<i>Price – US\$ / kg</i>	1.8613	2.3405	2.4080
Sales Revenue	1,886.25	3,488.13	3,286.07
Total Deductions	1,283.65	1300.00	1,929.39
Net Income	594.37	2,188.13	1,356.68
Return / US\$ invested	0.46	1.68	0.70

The results of the survey-data-based cost-benefit analysis confirmed the results of the standard-budgets-based cost-benefit analysis that contract farming is more profitable than auction system. The survey-data based cost benefit analysis also compared the profitability between the two contract farming variants. The study observed that contract marketing had the highest net income per hectare with US\$2,188, followed by contract production and marketing with US\$1,357 and lastly auction system with US\$594.

The area and productivity effects on sales revenue was dominant over the price effects. Though contract production and marketing had a higher price than contract marketing, this was not enough to match the higher area and productivity effects under contract marketing. Hence contract marketing had the highest sales revenue per ha of US\$3,488 followed by contract production and marketing with US\$3,286 and lastly auction with US\$1,886. Contract production and marketing model had the highest deductions effects per hectare (US\$1,929.39) followed by contract marketing US\$1,300.00 and lastly auction (US\$1283.65). This observation was consistent with the results of the value chain analysis that inputs provided by contractors are more costly than those aquaired directly due to administration costs and interest charges.

4.7.3 Chi-Square Results and Analysis

4.7.3.1 Association Between Farm Level Characteristics, Tobacco Models and Quality

The study used the Chi-Square analysis to test association between tobacco production and marketing models, and farm level characteristics. Also of interest was the association

between farm level characteristics and key determinants of productivity and income such as area, quality and price of tobacco. The Chi-square was also used to test association between farm level characteristics, and quality, and that between market channel and quality.

Table 4.21: Association Between Model and Farmer Level Characteristics

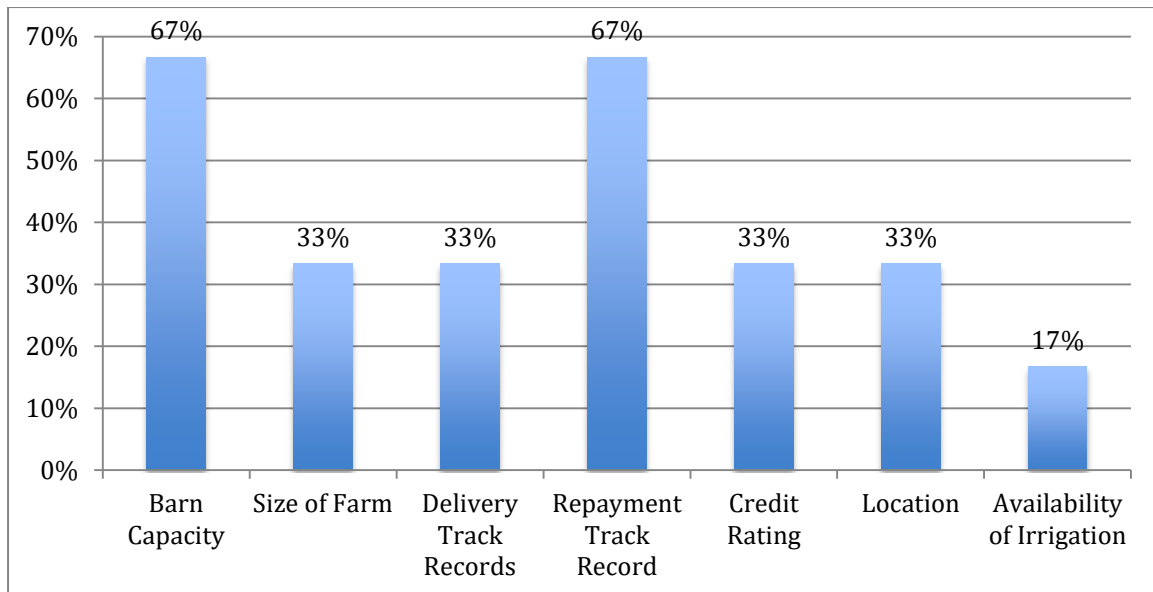
Crosstabulation of Fin_Model*Factor:	Are Farm Level Characteristics Associated with Tobacco Production and Marketing Models? (Auction, Contract Marketing, and Contract Production and Marketing Models)		
	Value	df	Significance
Fin_Model*Sector	21.245	6	0.002**
Fin_Model*Natural region	10.506	8	0.229
Fin_Model*Gender	11.563	2	0.003**
Fin_Model*Irrig_Status	13.550	4	0.009**
Fin_Model*Age	11.010	10	0.357
Fin_Model*Exp	95.564	10	0.00**
Fin_Model*Farm_Size	2.792	4	0.593

The chi-square results showed that tobacco production and marketing models had a statistically significant relationship with sector, gender, irrigation status and experience, while they had no statistically significant relationships with natural region, age and farm size

(area put to tobacco). This results mean that sector, gender, irrigation status and experience were more important considerations (or selection criteria for growers) in contract tobacco farming, relative to natural region, age and area under tobacco are not important considerations. The production models had a more preference for sector, gender and experience, while they are indifferent about the grower's natural region, age and area under tobacco. In other works there were differences in the number of growers among sector, gender, irrigation status and experience groups. While there are not differences in the number of growers among natural region, age and farm size groups. The implications are that the tobacco production and marketing model will develop (positively or negatively) the preferred group while leaving out the rest resulting in widening of income gaps between gender and sectors, and among growers with different experience and irrigation status.

The study rejected the null hypothesis for sector, gender, irrigation status and experience and accepted the alternative hypothesis that tobacco production and marketing models have an association with sector, gender, irrigation status and experience. The study accepted the null hypothesis for natural region, age and farm size and concluded that tobacco production and marketing models have no association with natural region, age and farm size. The Chi-square results confirmed the value chain analysis results shown in figure 4.32.

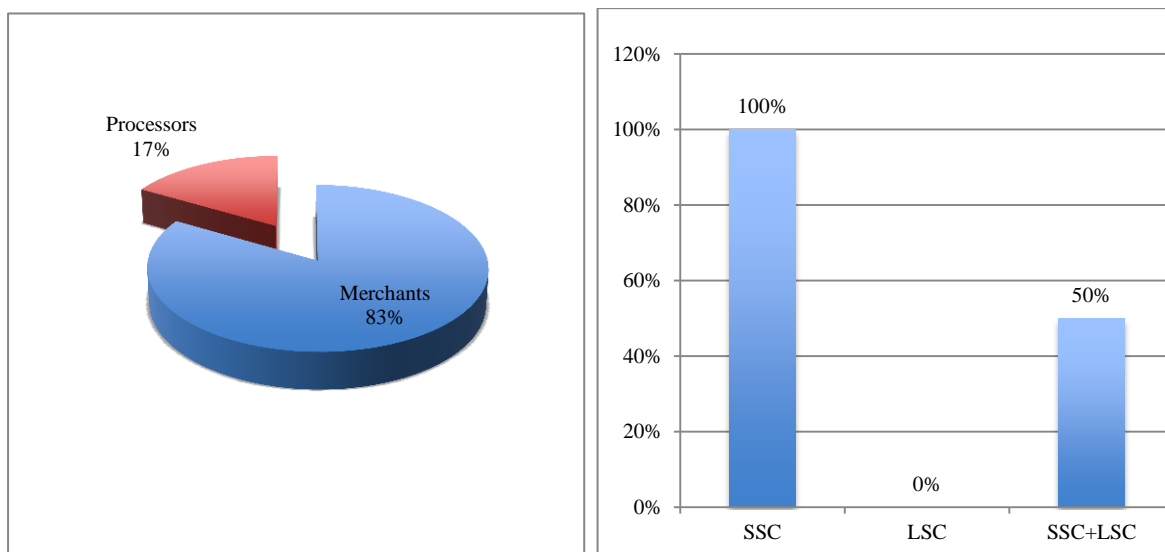
Fig 4.36: Selection Criteria for Farmers for Contract Tobacco and Marketing



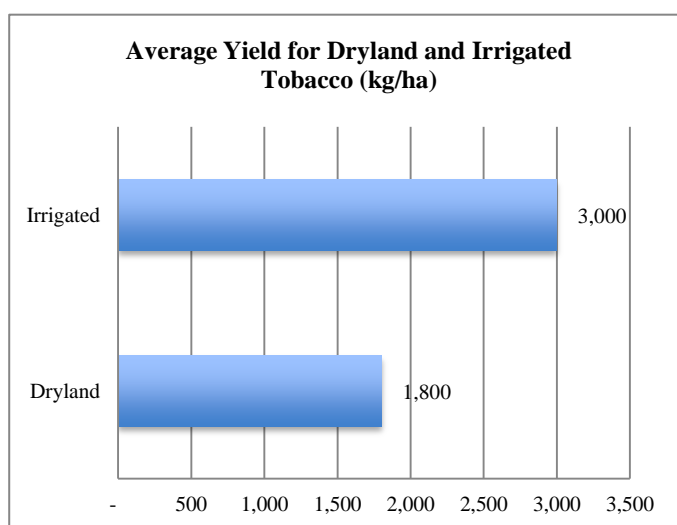
The value chain analysis results showed that barn capacity, history of production and payment obtained from TIMB or the credit bureau are the major selection criteria for growers under contract farming arrangements. Unlike the Chi-square results, the value chain analysis results also considered location (natural region) as one of the selection criteria for growers. This was said to be key in determining the quality of tobacco. There were three flavours that were named after the target market: the Chinese, British and Japanese.

The value chain analysis results showed that contractors, as a result of the experiences of default that they have had with large scale contracting, were actually reducing the contracted area as a default risk management strategy. This result was confirmed by the results of the analysis of semi-structure interviews with contractors. The study interviewed a total of 6 contractors comprising 5 merchants and 1 processor.

Fig 4.37: Contract Tobacco Production and Marketing and Sector of Contracted Farm



The study showed that 100% of the contractors targeted smallholder farmers – small-scale and communal and A1 and contracted areas of less than 2 ha with 50% only targeting smallholder growers. Fifty percent (50%) targets both small and large scale areas, with the highest reported area being 150 ha by a processor. The highest for a merchant contractor was 60 ha. All (100%) interviewed contractors confirmed that they were now reducing on large scale contracting because smallholder growers have improved their yields and quality to the same levels as the large scale commercial farmers.



The study established that yields for smallholder tobacco growers were averaging 1,800 kg and 3,000 kg per hectare for dryland and irrigated tobacco respectively.

Table 4.22: Implications of Chi-square Results for Agriculture Intensification Initiatives

Characteristics	Relationship	Implications for Development Policies, Plans, Projects and Programmes: Tobacco and Other Enterprises
Sector	Significant	<p>There exists some form of dualism among tobacco growers in terms of resources and skills constraints. The communal and A1 growers are resource constrained sectors while small-scale and A2 growers are considered resource rich sectors. The former thus prefer to go under contract production and marketing for finance, inputs and markets, while the later prefers the auction system where there is market flexibility for profitability. Hence the sector becomes so much associated with production model and thus determines the benefits that accrue to grower and the economy. Based on the dualism theory of development, contract farming can result in the widening of the resources gap between sectors if not regulated effectively. <i>Regulate contract farming while empowering the resources constrained to enhance freedom. Empowerment should be based closer analysis of the challenges facing each sector.</i></p>
Gender		<p>The finding that gender has an association with the production and marketing model shows that current tobacco production and marketing models have specific gender preferences. This reflects a limited level of gender mainstreaming. There is need to <i>put in place incentives for tobacco production and marketing models to mainstream gender, ensure equitable access and close the gap between male and female growers.</i></p>
Irrigation Status		<p>Irrigation is an important source of productivity and guarantee against devastating effects of drought. It is thus an important default measure of low default risk. The availability of irrigation on a grower’s farm should attracts contract investments. As shown by the valuechain analysis, availability of barn capacity also attracts contract investment. There is</p>

Characteristics	Relationship	Implications for Development Policies, Plans, Projects and Programmes: Tobacco and Other Enterprises	
		need to promote investment in irrigation rehabilitation, and new irrigation development, and build barn capacity across sector, gender and experience groups up to a level where the number of growers in each defined groups has no association with the production model.	
Experience		The farmer's experience is a measure or indicator of high productivity which in turn indicates a reduced risk of default by the contracted grower. This means the more experienced growers are, the more preferred under the contract model, while the auction system prefers the less experienced by default. There is therefore a relationship between the model and the level of experience. <i>Enhanced extension and technical services support and farmer training for new entrants to improve productivity and hence the risk of default. Put in place market information system to benefit new entrants.</i>	
Natural Region		There is no preference for a particular agro-ecological zone by any of the tobacco production and marketing model. This gives a view that tobacco is being grown in appropriate zones.	Tobacco intensification initiatives have equally mainstreamed natural region, growers' age and farm size. <i>Copy strategies to other groups factors and crop and livestock enterprises.</i>
Farmer Age	Not significant	Tobacco production and marketing models have no preference for age: youths (< 35 years), adults (between 35 and 65 years) and old age (> 65 years).	
Farm Size		There is no specific tobacco production and marketing model that prefers a certain size of area under tobacco. All models target both small and large sizes equally depending on assessed risk based on productivity and experience – size does not matter.	

The chi-square results where there is no statistically significant association point to areas where the models prefer and benefit all the groups equally. Hence the study adopted that natural region, farm size and age based groups were preferred and benefited equally from the tobacco production and marketing models. These farm level factors have little policy implications other than coping the respective policies to other groups in tobacco or other enterprises to even out the difference.

Factors with important policy implications are those where the chi-square results showed statistically significant association between farm level characteristics, and the production and marketing models. The study concluded that gender, sector, experience and irrigation status based groups were preferred and benefited differently from the production and marketing models. There is need for intervention in the following manner to ensure that tobacco production models promote inclusive sustainable development:

- i. Investment and promotion of the same (investment) in sources of productivity of public nature such as irrigation to prepare farmers for private funding
- ii. Development and implementation of institutions that will ensure private funding decisions mainstream gender and achieve gender equity;
- iii. Intensified extension and technical support services and farmer training for the new entrants into tobacco production and marketing.
- iv. Empower the less privileged sectors through identified locally contextualised intervention to close all nature of gaps among sectors.

4.7.3.2 Association Between Farmer Level Characteristics and Quality

Table 4.23: Chi-square Results- Quality vs. Farmer Level Characteristics

CrossTabulation: Quality*Factor	Are Farm Level Characteristics Associated with Quality Under Different Production and Marketing Models?								
	Non-Contracted			Contract Marketing			Contract Production and Marketing		
	Value	df	Sig	Value	df	Sig	Value	df	Sig
Quality* Sector	7.021	12	0.856	16.821	12	0.156	11.428	12	0.493
Quality*Natural region	30.099	16	0.017**	8.291	12	0.792	7.873	12	0.795
Quality* Gender	2.522	4	0.641	3.226	4	0.521	9.572	4	0.048**
Quality*Irrig_Status	10.585	8	0.226						
Quality*Age	20.974	20	0.399	36.098	20	0.015**	22.179	20	0.331
Quality* Exp	15.291	16	0.503	20.379	20	0.434	16.676	16	0.407
Quality* Farm_Size	8.435	8	0.392	18.742	8	0.016**	6.088	4	0.193

Under the **auction system**, the study indicated that only agro-ecological zone had a statistically significant association with quality while that of sector, gender, irrigation status, age of farmer and experience was not statistically significant. This result suggests that under auction tobacco production and marketing only the agro-ecological zone – rainfall patterns and soil types – influence the quality of tobacco produced by growers.

Under the **contract marketing system**, the results indicated that growers' age and size of the farm had statistically significant relationships with quality. This is explained by the fact that contract marketing provides extension support for quality enhancement in order to access the targeted markets. Hence under contract marketing, management skills and agronomic practices are improved and influence quality equally across agro-ecological zones, sector, gender and experience levels. However, as farm size increases management and agronomy becomes difficult over large plots resulting in poor quality. The results showing a statistically significant association of quality with farmer's age under contract marketing suggests this model prefers a certain age group at the expense of the other.

The policy implications are that in order to draw maximum benefits under contract marketing by improving quality across agro-ecological zones, sectors, gender and irrigation status, there is need to reduce the farm size or government should complement the production support services provided by contractor to ensure that management practices do not become limiting as the farm size increases. Such interventions should be tailored for different age groups in order to mainstreams quality management skills in all age groups for inclusive growth.

Under the **production and marketing** model, only gender had a statistically significant relationship with quality. This result means that male and female growers produce different qualities and suggests that contract production and marketing model is not gender insensitive. Such insensitivities can manifest as limited access to extension and technical services support by growers of a certain gender class. Many studies by different researchers including FAO (2007) argue that females generally have limited access to resources and services. They have limited capacity to negotiate adequate inputs at affordably priced inputs. The issue of gender has prominence in Zimbabwe's development Agenda. The study thus concluded that there is a need to mainstream gender in all production support services that has anything to do with quality to achieve an all gender inclusive sustainable development.

The across model analysis of the chi-square results showed that there are two major determinants of quality: agro-ecological zone and field agronomic management practices. In the absence of conscious support services on agronomy and management practices, under auction system, the agro-ecological zone is an important determinant of the tobacco flavour. Hence the agro-ecological zone has a significant association with quality under the auction system. The support provided by contractors with respect to agronomic practices ensures that any grade can be achieved under various agro-ecological regions by any sector and gender. Hence the location of the farmer has no significant association under contract. However, the management of the tobacco crop for high quality becomes more and more difficult as the farm size – area under the crop – increases. Hence farm size had a significant association under marketing contract model. The commitment in the provision of support services to the grower for quality is high under production and marketing than it is under contract marketing. Unlike the latter, the former provides inputs, and in addition as established by the value chain analysis, production and marketing limits input support to less than 2 hectares. Hence it is expected that farm size does not matter under contract production and marketing.

4.7.3.3 Association Between Quality, Financial Model and Marketing Channel

Table 4.24: Chi-Square Results Quality vs. Financial Model and Marketing Channel

Model/Channels		Is there an Association Between Tobacco Production Models, and Tobacco Marketing Channels with Quality?		
		Quality Levels		
		Value	df	Significance
Production and Marketing Model	Auction, Contract Marketing, and Contract Production and Marketing	37.895	8	0.00**
Marketing Channel	Auction, Processor and Merchant	38.388	8	0.00**

The results show a statistically significant relationship between the tobacco production and marketing models and quality (value of 37.895, $p = 0.00$), as well as a statistically significant relationship between marketing channel and quality (value = 38.388, $p = 0.00$). This result means that a specific model will achieve a specific quality which is different from the other model. This result is indicative of the fact that different models employ different levels of inputs and agronomic management regimes. The study adopted that the auction system with

low input levels will achieve the least quality while contract production with the highest inputs and management regimes will have the best quality. Contract marketing will achieve quality that is in the middle.

The study also investigated the association between quality and marketing channels under the various tobacco and marketing models. The study identified three marketing channels: (1) auction; (2) processor; and (3) merchant. These were cross-tabulated these with quality under the three tobacco production and marketing models.

Table 4.25: Chi-Square Results: Quality Vs. Marketing Channels

Is There an Association between Quality and Marketing Channel Under the various Tobacco Production and Marketing Models?				
Production and Marketing Model		Alternative Market Channels (Auction, Processor and Merchant)		
		Value	df	Significance
Auction – Non-Contracted		15.094	4	0.005**
Contracted	Marketing	4.536	8	0.806
	Production and Marketing	0.583	4	0.965

The results showed a statistically significant association between quality and marketing channel under the auction system (chi-square value = 15.904, $p = 0.005$). There was no statistically significant association between quality and marketing channels under contract marketing, and contract production and marketing (chi-square values = 4.536 and 0.583 and $p = 0.86$ and 0.965 respectively). This results suggests that the auction system is competitive with more buyers competing for the same tobacco. There are also three auctions and each auction have a different level of competitiveness which depends on the extent to which is able to attract, not only more but profitable buyers. Farmers have to do their homework before delivering to any auction and while at the auction, farmers still have to ensure that they get the best quality bidder. This is not the case with the contract system where growers are legally bound to sell only to the contractors who uses own floor and staff to grade and price the tobacco based on the TIMB price-grade matrix. The results from interviews of value chain players lamented that contractors do not pay commensurate grade prices, but only price to beat the TIMB price-grade matrix.

The study adopted price as a proxy for quality. The result that there is no association between contract buyers – who are either processor and merchant – and quality means that there is no difference in the assessed quality for deliveries to processor or merchant. The grower gets the same quality grade assessment for the same product whether s/he delivers to a merchant or a processor. This finding refuted allegations of market failure in terms of standards and grading by confirmed adherence to international standard and grades across the contract markets.

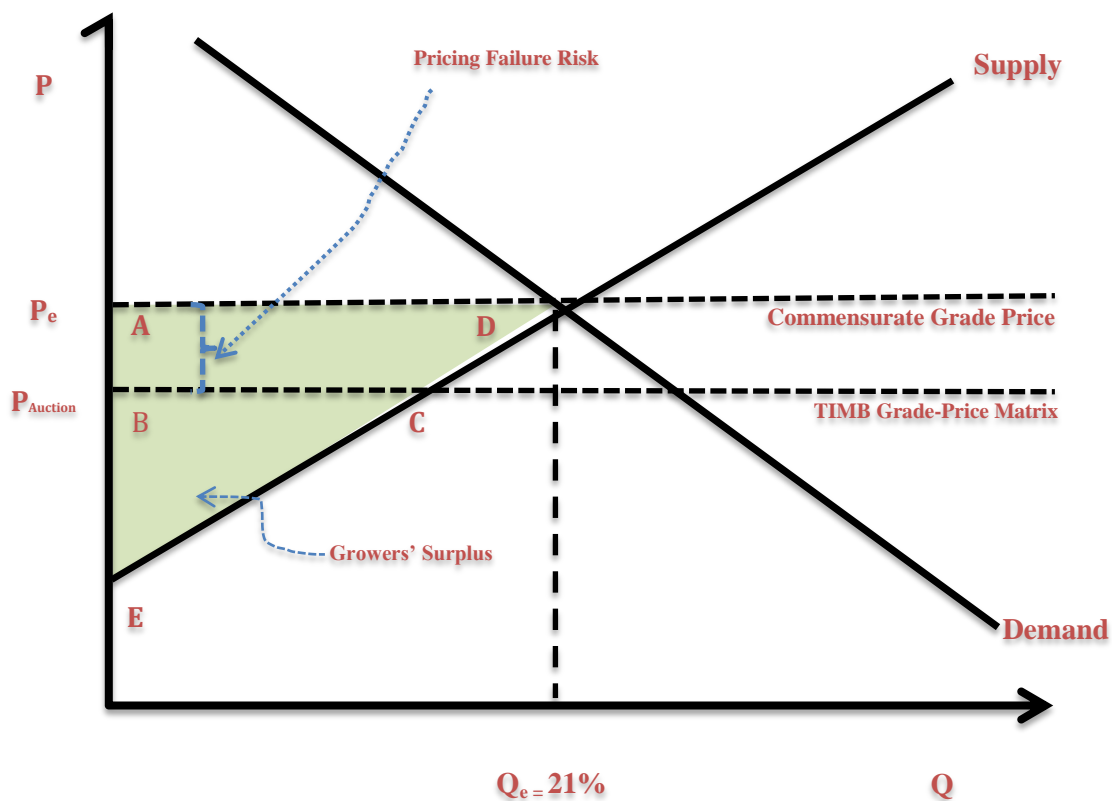
With the same grade however, the final price paid may not necessarily be the same because depending on the buyer, and as already indicated, some buyers would just pay to beat the TIMB price-grade matrix, while others would pay a commensurate price. This behaviour

explains the worries about the emergence of middlemen. These were reported to get better price than what the grower would have gotten had s/he delivered on his/her own.

The study noted that same behaviour of paying prices below that commensurate to the grade is possible even on the competitive auction markets where the buyer just pays enough to beat the last highest bidder even if the price is not the one that is commensurate with the grade of the tobacco under the hammer. The behaviour of paying below the commensurate price results from the high risk of market failure in respect of setting the TIMB grade-price matrix.

The study noted that the determination of the TIMB grade-price matrix is based only on 21% of the total tobacco produced and that 100% of contractors in addition to buying their contracted crop also participate on the auction to buy un-contracted crop. The study observed a high risk of market failure where the contractors manipulate the market price discovery system with a view to unfairly dig into and share with the growers the growers' surplus.

Diagram 4.3: Ilustartive Analysis of the Tobacco Pricing Failure Risk



The total growers' surplus is defined by ADE when the price settles at P_e , which is the supposed market price commensurate with grade. The risk of market failure comes from a combination of the small quantity of tobacco (21%) coming to the auction system and potential manipulation by dual market players (100% of the contractors also participate on the auction) resulting in the loss by growers of part of the growers' surplus defined ABCD as the price to determine prices on the contract market settles at P_{TIMB} . The contractors are able to exploit growers by paying just above the TIMB price grade matrix within the growers' surplus defined by ABCD. The study concluded that the problem of middlemen and contract markets paying differently is a result of the TIMB price grade matrix set below the commensurate or equilibrium price hence taking away some share of the growers' surplus to contractors and middlemen.

The study recommends that for the future of tobacco production and marketing, there is need to explore policies and institutions that minimise power of contractors to dig into the growers' surplus. There is need to support production for the auction system in order to increase amount of product on the auction out of the financial influence of big buyers. This will go against the FCTC to which Zimbabwe is a signatory. Consideration could also be given to the proposal to move to negotiated price grade matrix. The study recommends a mixture of auction determined and then negotiated price-grade matrix only when the quantity on the auction is considered too low to determine the market price for the whole produce. The TIMB should announce a position on such quantity every season.

4.7.4 Inferential Statistics

4.7.4.1 One-Way Anova: How Tobacco Model Influence Key Determinants of Income

The study run a one-way anova to test the significance of the difference in the observed means of area, yield and price across the tobacco production and marketing models.

Table 4.26: One-Way Anova Results for key Determinant of Productivity and Income

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Dryland_Area Between Groups	11.678	2	5.839	1.780	.170

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
	Within Groups	1039.623	317	3.280		
	Total	1051.301	319			
Irrigland_Area	Between Groups	2.538	2	1.269	4.563	.011**
	Within Groups	88.173	317	.278		
	Total	90.712	319			
Total_Area	Between Groups	7.840	2	3.920	1.071	.344
	Within Groups	1159.861	317	3.659		
	Total	1167.701	319			
Yield	Between Groups	17992941.724	2	8996470.862	8.388	.000**
	Within Groups	335709492.064	313	1072554.288		
	Total	353702433.788	315			
AV_Price	Between Groups	19.292	2	9.646	18.104	.000**
	Within Groups	167.301	314	.533		
	Total	186.593	316			

The Influence of Area

The one-way anova results showed that there was no statistically significant difference in the mean dryland area ($F = 1.780$, $p = 0.170$) and total area ($F = 1.071$, $p = 0.344$) under tobacco across the models. The study concluded that there is no difference in the mean area across the

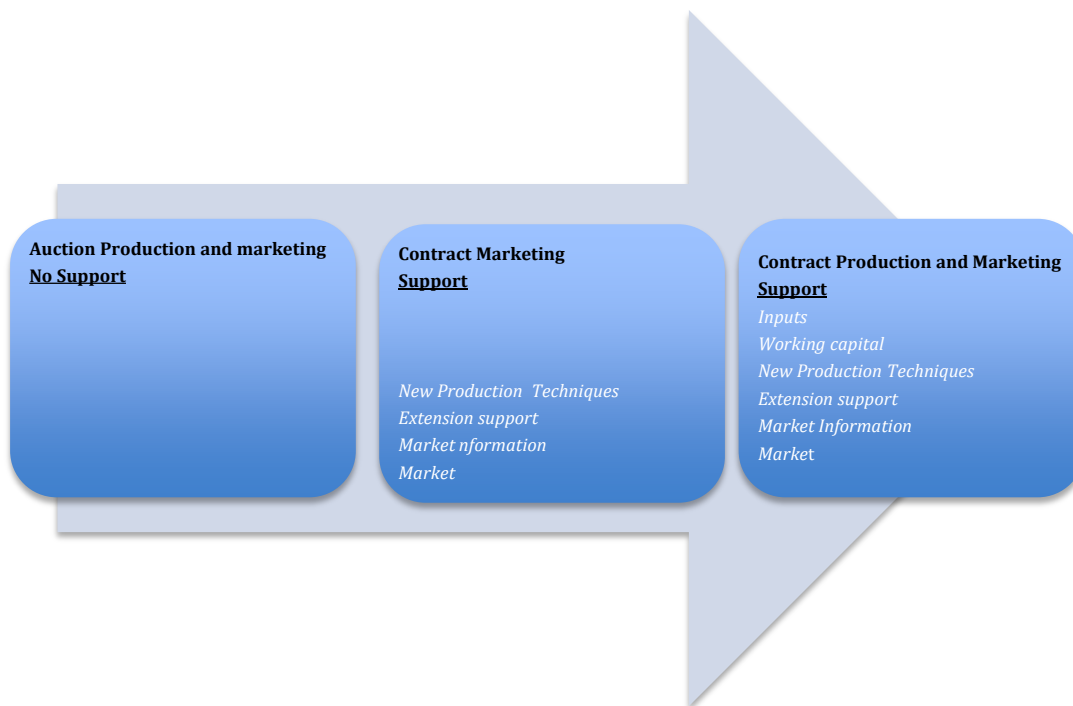
various tobacco production and marketing models. The mean area under tobacco for auction, contract marketing, and contract production and marketing are equal.

The study indicated that there was a statistically significant difference in the mean irrigated area under tobacco across the tobacco production and marketing models ($F = 1.269$, $p = 0.011$). The study however, could not make a conclusion as there were no growers with irrigated area under all the tobacco contract farming models.

The Influence on Yield

The anova results showed that the difference in the mean yield across the tobacco production and marketing models was statistically significant ($F = 8.388$, $p = 0.000$). The study concluded that contract tobacco production and marketing is more productive than the auction system, and that under contract arrangements, contract marketing is more productive than contract production and marketing. This result is explained by and is evidence of the existence of dualism in the tobacco production structure. There are more resourceful growers co-existing with the resources constrained growers. The study adopted that resourced growers are more likely to contract for the market under contract marketing, while the poorly resourced growers are more likely to contract for both inputs and market under contract production and marketing.

Diagram 4.4: Progression of Production Support Under Alternative Models



Growers under auction system do not have input and production services support. Growers under contract production and marketing get input and production support services, while those under contract marketing only get production support service. Growers under production and marketing are resources constrained compared to those that are under marketing contract. The study noted that increased access to production support services under contracting marketing enhances productivity more than access to inputs and production support services under contract production and marketing. Productivity improvements as a result of contract farming are more for the resourceful than the resource constrained.

The Influence on Price

The study observed that contract production and marketing had the highest average price (\$2.41 / kg), followed by contract marketing at \$2.34 / kg. The auction system achieved the least price at US\$1.9 / kg. The anova showed a statistically significant difference in the mean

price across the different tobacco production and marketing models ($F=18.104$, $p = 0.000$). The study concluded that contract tobacco production and marketing pays more than the auction system. Under contract arrangements, the study established that the production and marketing model pays more than contract marketing. This was not the expected result. However the expectation was that growers under contract marketing are more resourcefull, flexible and get contract the best buyer. The only explaiantion for this could be that the tobacco market is currently a buyers' market. Their negotiating power is higher when negotiating with some one who has invested in tobacco production without a market that negotiating with a grower who has not yet made a committiment.

4.7.4.2 One-Way Anova: Most Beneficial Tobacco Production and Marketing Model

The study ran a one anova to test the significance of differences in the mean net income observed by the cost benefit analysis and test the null hypothesis that farmers and the economy do not benefit under the contract farming arrangement.

Table 4.27: One-Way Anova Results for The Net Income

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
NetIncome_Ha	Between Groups	180706216.383	2	90353108.19	8.428	.000
	Within Groups	3376815040.93	315	10720047.75		

ANOVA						
	Sum of Squares	df	Mean Square	F	Sig.	
Total	3557521257.31	317				
SalesRevenue_Ha	Between Groups	195329348.167	2	97664674.08	9.784	.000
	Within Groups	3144234879.18	315	9981698.029		
	Total	3339564227.35	317			
TotalDeductions_Ha	Between Groups	11090249.520	2	5545124.760	7.550	.001
	Within Groups	230632907.257	314	734499.705		
	Total	241723156.777	316			

The one-way anova results showed that there was a statistically significant difference in the mean net income (8.428, $p = 0.000$) across the tobacco production and marketing models – auction, contract marketing, and contract marketing and production. This was supported by statistically significant difference in the means of the key determinants of income – costs ($F = 7.55$, $p = 0.001$), sales revenue ($F = 9.784$, $p = 0.000$). The study concluded that the mean net incomes of at least two tobacco production and marketing models are different. From the descriptive statistics, contract marketing had the highest mean net income per hectare of US\$2,88, followed by contract production and marketing with a mean net income of US\$1,357 and lastly auction system with a mean net income of US\$594.

The study rejected the null hypothesis that farmers and the economy do not benefit more under contract arrangements and accepted the alternative hypothesis that farmers and the economy benefit more under contract farming arrangements than auction. This conclusion collaborates studies by IFAD (2003) which found out that contract farmers have a higher average income than independent farmers of the same products.

4.7.4.3 Factorial Anova: Significance of Effect of Farm Level Factors on Net Income

The farm level factors or characteristics individually and in combination divide growers into groups under each tobacco production and marketing model. A factorial anova was run to test the null hypothesis that farm level characteristics do not influence net income.

Table 4.28: Anova Results Under Various Tobacco Production and Marketing Models

How do farm level characteristics condition Net Income? Is there a significant difference in the mean net income of Tobacco Production and Marketing Models broken down by farm level characteristics?						
Dependent Variable: Net_Income						
Fin_Model		Type IV Sum of Squares	df	Mean Square	F	Sig.
Non Contracted	Corrected Model	6615152468.193a	63	105002420.130	3.409	.000
	Intercept	705624740.336	1	705624740.336	22.908	.000
	Sector	220025847.123 ^b	3	73341949.041	2.381	.074
	Gender	12295222.835 ^b	1	12295222.835	.399	.529
	Experience	624133452.620 ^b	4	156033363.155	5.066	.001**
	Farm_Size	338616795.110 ^b	2	169308397.555	5.497	.005**

How do farm level characteristics condition Net Income? Is there a significant difference in the mean net income of Tobacco Production and Marketing Models broken down by farm level characteristics?

Dependent Variable: Net_Income

Fin_Model		Type IV Sum of Squares	df	Mean Square	F	Sig.
	Nat_Reg	5877279.301 ^b	2	2938639.650	.095	.909
	Irrig_Propfinal	36307000.950 ^b	2	18153500.475	.589	.557
	Sector * Gender	502911650.997 ^b	3	167637216.999	5.442	.002**
	Sector * Experience	547062152.614 ^b	4	136765538.153	4.440	.002**
	Sector * Farm_Size	460418724.224 ^b	3	153472908.075	4.983	.003**
	Sector * Nat_Reg	332991.873 ^b	3	110997.291	.004	1.000
	Sector * Irrig_Propfinal	57590401.597 ^b	1	57590401.597	1.870	.175
	Gender * Experience	143022119.621 ^b	1	143022119.621	4.643	.034**
	Gender * Farm_Size	899488655.313 ^b	2	449744327.657	14.601	.000**
	Gender * Nat_Reg	162120.647 ^b	1	162120.647	.005	.942
	Experience * Farm_Size	529813965.771 ^b	2	264906982.885	8.600	.000**
	Experience * Nat_Reg	19665104.791 ^b	2	9832552.396	.319	.727
	Farm_Size * Nat_Reg	35605.855 ^b	1	35605.855	.001	.973
	Sector * Gender * Experience	328441497.109 ^b	2	164220748.554	5.331	.006**
	Sector * Gender * Farm_Size	454268508.015 ^b	2	227134254.007	7.374	.001**
	Sector * Gender * Nat_Reg	376447.788 ^b	1	376447.788	.012	.912
	Sector * Experience * Farm_Size	510551796.694 ^b	3	170183932.231	5.525	.002**
	Gender * Experience * Farm_Size	264895447.452 ^b	1	264895447.452	8.600	.004**
	Sector * Gender * Experience * Farm_Size	246230617.439 ^b	1	246230617.439	7.994	.006**
	Error	2957011341.984	96	30802201.479		
	Total	10059887539.910	160			
	Corrected Total	9572163810.177	159			

How do farm level characteristics condition Net Income? Is there a significant difference in the mean net income of Tobacco Production and Marketing Models broken down by farm level characteristics?

Dependent Variable: Net_Income

Fin_Model		Type IV Sum of Squares	df	Mean Square	F	Sig.
Contracted(Marketing)	Corrected Model	73681466971.748 ^c	51	1444734646.505	44.060	.000
	Intercept	12268296479.426	1	12268296479.426	374.147	.000
	Sector	259034531.810 ^b	3	86344843.937	2.633	.056
	Gender	131971290.954 ^b	1	131971290.954	4.025	.048**
	Experience	1108850455.092 ^b	5	221770091.018	6.763	.000**
	Farm_Size	26497385167.713 ^b	2	13248692583.857	404.046	.000**
	Nat_Reg	6792640.006 ^b	2	3396320.003	.104	.902
	Irrig_Propfinal	0.000	0			
	Sector * Gender	251198921.062 ^b	3	83732973.687	2.554	.062
	Sector * Experience	38362134.069 ^b	4	9590533.517	.292	.882
	Sector * Farm_Size	161228700.273 ^b	5	32245740.055	.983	.434
	Sector * Nat_Reg	66679713.271 ^b	2	33339856.635	1.017	.367
	Gender * Experience	14471912.910 ^b	2	7235956.455	.221	.802
	Gender * Farm_Size	53812624.936 ^b	2	26906312.468	.821	.444
	Gender * Nat_Reg	6208428.314 ^b	1	6208428.314	.189	.665
	Experience * Farm_Size	15267863353.80 ^b	2	7633931676.903	232.813	.000**
	Experience * Nat_Reg	23145232.409 ^b	1	23145232.409	.706	.403
	Farm_Size * Nat_Reg	2214338.919 ^b	1	2214338.919	.068	.796
	Sector * Gender * Experience	335029.804 ^b	1	335029.804	.010	.920
	Sector * Gender * Farm_Size	32612181.434 ^b	2	16306090.717	.497	.610
	Sector * Experience * Farm_Size	21208330.774 ^b	2	10604165.387	.323	.725
	Error	2492042793.408	76	32790036.755		
	Total	82274106072.173	128			

How do farm level characteristics condition Net Income? Is there a significant difference in the mean net income of Tobacco Production and Marketing Models broken down by farm level characteristics?

Dependent Variable: Net_Income

Fin_Model		Type IV Sum of Squares	df	Mean Square	F	Sig.
	Corrected Total	76173509765.156	127			
Contracted (Prdn & Mktng)	Corrected Model	1402915620.256 ^d	19	73837664.224	4.853	.007
	Intercept	93383550.018	1	93383550.018	6.138	.033
	Sector	36859950.785 ^b	3	12286650.262	.808	.518
	Gender	6608061.478 ^b	1	6608061.478	.434	.525
	Experience	455279391.264 ^b	3	151759797.088	9.975	.002**
	Farm_Size	75353697.690 ^b	1	75353697.690	4.953	.050**
	Nat_Reg	18776955.821 ^b	1	18776955.821	1.234	.293
	Irrig_Propfinal	0.000	0			
	Sector * Farm_Size	152768446.402 ^b	1	152768446.402	10.042	.010**
	Sector * Nat_Reg	13565323.826 ^b	1	13565323.826	.892	.367
	Error	152135978.600	10	15213597.860		
	Total	1656179139.817	30			
	Corrected Total	1555051598.856	29			

a. R Squared = .691 (Adjusted R Squared = .688)

b. The Type IV testable hypothesis is not unique.

c. R Squared = .967 (Adjusted R Squared = .945)

d. R Squared = .902 (Adjusted R Squared = .716)

The observed R Squared were 0.691, 0.967 and 0.902 for auction, contract marketing, and contract production and marketing models respectively. R Squared measures the goodness of fit of the model to the data. The value of R Squared ranges from 0 to 1. R Squared closer to 1

shows the best fit between the model and data. In general an R Square greater than 0.5 indicates a good fit.

The study's observed R squared values are above 0.5 and thus indicate a good fit between the model and the data. The results indicated that the overall factorial anova model was statistically significant for the auction system ($F=3.885$, $p = 0.00$), contract marketing ($F = 35.41$, $p = 0.00$) and contract production and marketing ($F = 142.087$, $p = 0.00$). The model showed that growers' sector, natural region or irrigation status had no statistically significant main effects on group mean net incomes or benefits that accrue to farmers and the economy under all the three models. This means that when the population of growers under auction, contract marketing or contract production and marketing are broken down by sector, natural region or irrigation status separately, the mean net incomes across the resultant groups are equal within the models. The study thus accepted the null hypothesis that farm level characteristics do not condition the net benefits that accrue to farmers and the economy for sector, natural region and irrigation status. Different growers in different sectors or natural regions using the same production and marketing model will achieve the same net farm benefits.

Table 14.29 shows the statistically significant main (single) and interactions (2-factor, 3-factor and 4-factor) effects that influence the net mean net income that accrue to farmers and the national economy under the three tobacco production and marketing models.

Table 4.29: Summary of Statistically Significant Main and Interaction Effects

Source of Variance		Are the Differences in Group Mean Net Tobacco Income Significant?		
		Auction (Non-Contracted)	Contract Marketing	Contract Production and Marketing
Main Effects	Gender		F=4.025, p=0.048	
	Experience	F=5.066, p=0.001	F=6.763, p=0.00	F=9.975, p=0.002
	Farm Size	F=5.497, p=0.005	F=4.04, p=0.00	F=4.953, p=0.05
Interactions Effects	Sector * Gender	F=5.442, p=0.002		
	Sector * Exp	F=4.44, p=0.002		
	Sector * Farm_Size	F=4.983, p=0.003		F=10.04, p=0.010
	Gender * Exp	F=4.643, p=0.034		
	Gender * Farm_Size	F=14.601, p=0.00		
	Exp * Farm_Size	F=8.600, p=0.00	F=232.8, p=0.00	
	Sector * Gender * Exp	F=5.331, p=0.006		
	Sector * Gender * Farm_Size	F=7.374, p=0.001		
	Sector * Exp * Farm_Size	F=5.525, p=0.002		
	Gender * Exp * Farm_Size	F=8.600, p=0.004		
	Sector * Gender * Exp * Farm_Size	F=7.994, p=0.006		

Main Effects

Experience and farm size had statistically significant main effects under auction, contract marketing, and contract production and marketing, while gender only had statistically significant main effects under contract marketing as show by the F and p values in the **Table**

4.29. This means that the mean net incomes of groups of growers under auction, contract marketing or contract production and marketing, broken down by experience, farm size categories are not equal. Growers with different experience will achieve different mean net incomes under the same model. The same applies for farm size. Growers with different farm sizes under the same models will achieve different mean net incomes. For gender, it means that the mean net income of male and female groups under contract marketing are not the same, while they are the same under auction and contract production and marketing models.

The study thus rejected the null hypothesis for experience and farm size that experience and farm size do no condition net income, and adopted the alternative hypothesis that experience and farm size condition the net benefits that accrue to farmers and the economy under the three tobacco production and marketing models.

The study rejected the null hypothesis for gender under contract marketing while accepting the same under auction and contract production and marketing models. The study concluded that gender conditions influence net benefits to farmers and the economy under contract marketing, but does not condition net benefits to farmers and the economy under auction and production and marketing models.

Interaction Effects

Under the auction tobacco production and marketing system, the factorial anova model showed eleven (11) statistically significant interaction effects between gender, experience farm size and sector. These were broken down into 6 x 2-factor, 4 x 3-factor and 1 x 4-factor

interactions. These interactions reflected the influence on group mean net income beyond the influence of the individual factors.

The study established that while sector and gender had no statistically significant main effects under the auction system, their interplay with gender, experience, and farm size produced statistically significant conditioning impacts on group mean net incomes under auction.

Compared to the auction system with 11 interactions, contract marketing, and contract production and marketing models had only one each statistically significant interactions. Under contract marketing the interplay of the combination of farm size and experience produced statistically significant impacts on net income that accrue to farmers and the economy. This was an expected statistically significant result. Both farm size and experience had main effects, their interplay is also expected to be statistically significant.

Under the contract production and marketing, it was the combination of sector and farm size that produced a statistically significant difference in the respective group mean net income. While farm size had main effects, sector did not. However, the two variables are close. Reference to sector has an indication of the farm size (area put under tobacco). Reference to sector also has pointers to the level of resources endowments, which support the farm size in terms of inputs and working capital. Hence their combined effect can be expected to be statistically significant.

The existence of statistically significantly mean net incomes of groups defined by experience, farm size and gender, and combination of factors (sector, gender, experience and farm size)

suggests income inequalities among groups. These groups under auction are defined by 2 main effects (farm size and experience) across the models, and 11 interactions (between sector, gender, farm size and experience). Under contract marketing they are defined by 3 main effects (gender, experience and farm size) and one interaction (farm size and experience). Under contract production and marketing, they are defined by 2 main effects (farm size and experience) and one interaction (experience and farm size). According to Todaro (1998), such income gaps among groups will not close on their own over time. The respective production and marketing model will actually tend to perpetuate such income gaps. The implications for this result is that interventions to regulate, promote or complement the respective tobacco production and marketing models should understand these farm level characteristics, their interaction and how they impact on net income, and strive to close the income gaps.

The study observed a reduction of interaction effects from 11 under auction to one under the two contracted systems. This suggests that contract farming arrangements have done away with income gaps among groups defined by 10 interactions effects. This confirms the benefits that contract farming arrangements can bring to farmers and the economy through bridging the income gaps between poor and better resourced growers hence reducing dualism in the tobacco and marketing value chain. The implications of the results shown in **Table 4.29** are that contract farming can be promoted to correct income gaps that occur under auctions system caused by 10 interactions whose influence on net mean income under auction and contract were found to be statistically significant and insignificant respectively.

While noting this important impact contract that farming arrangements could have, the study also noted from **Table 4.29** that contract farming will not be able to address income gaps among groups under contract marketing defined by such farm level characteristics as gender,

farm size and experience plus the interaction of experience and farm size; and under contract production and marketing those defined by farm size and experience plus the interaction of sector and farm size. This means that even after correcting the income gaps that were there under contract, if left unchecked contract farming arrangements will actually perpetuate the income gaps among groups created defined by these farm level characteristics. There is need for intervention remove those preferences.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 ECONOMIC CONTRIBUTION OF TOBACCO PRODUCTION MODELS

5.1.1 Importance of the Respective Production and Marketing Models

The tobacco production and marketing models can be broadly classified into two: (1) auction and (2) contract systems. Farmers and the economy benefit more under contract farming than auction arrangements. There are two variants of contract farming: (1) contract marketing; (2) contract production and marketing. The two differ in the level of support to growers. Contract production and marketing provides growers with inputs, production support services and guarantee a market for their produce. Contract marketing on the other hand only guarantees a market for their produce and sometimes provides production support services. Both the partial and full budget cost benefit analyses showed that contract marketing is more profitable than contract production and marketing. The study concluded that farmers and the economy benefit the most net income from contract marketing followed by contract production and marketing. The auction system provides the least net income benefits.

Tobacco growers under contract production and marketing are able to payback input loans advanced by contractors and remain with a positive cash position. However, after considering revenue and capital expenditure for the following season, growers remain with negative free cashflows. The study concludes that contract production and marketing lures growers into cycles of debt and dependence on contractors for input support. The failure by both growers and contractors to understand the cost structures of growers to manage the level of

borrowings results in growers over-borrowing and accumulation of debt when they fail to produce enough or side market to avoid stop order payments which would wipe out all their sales revenue. The study through a sensitivity analysis recommends that both growers and contractors should understand the grower's cost structure and use that to determine viable levels of lending, being a combination of input support, production support services and consumptive support.

The auction system is the least beneficial of the three tobacco production and marketing models and is fast being replaced by the two variants of contract farming. The study noted a high risk of market pricing failure of the auction system as a result of a combination of: (1) small quantities of tobacco (21% for 2014) delivered to the auction system; and (2) potential manipulation by dual market players – contractors. The participation of these players on the auction is not neutral resulting in prices on the auction settling below what is commensurate to the grade. This in effect sets the TIMB price-grade matrix that should prevail on the contract market. The problem of middlemen buying from growers and selling to auction and contract markets is cashing in on this market failure.

The study maintains that the auction will continue to be a relevant market instrument if contract farming is to develop growers and help them to stand on their own in terms of input supply, while only depending on contractors for produce market. This will be especially so when liquidity on the money market improves and direct lending to growers starts to compete with contract farming. The auction provides the industry with a transparent price discovery system and protects growers from the self-enriching tendencies of powerful contractors. The study recommends that measures be put in place to address market failure risk and maintain the auction as an important tool for the regulatory authority to intervene and ensure the

viability of tobacco production and marketing. The study contends that without the auction system there will be even more pronounced market failure which will expose growers to down grading of produce, low purchase prices and reduction in quantities to be purchased again with a view to manipulate purchase prices.

The Chi-square results noted that tobacco models have a association with gender, sector, experience and irrigation status. Hence in order to promote inclusive economic growth, there is need for gender mainstreaming, evening out of grower's experience, equal empowerment of sectors and irrigation development, hence prepare everyone equally to benefit from each model. The Anova results however noted that only income differences among groups defined by farm size and experience for contract farming, and farm size, gender and experience for contract farming are statistically significant. Hence the study concluded that contract farming as a developmental tool has a risk of resulting in imbalanced growth and widening of income gaps across small and large scale growers, experienced and inexperienced, and gender as a result of its preferences of specific farm level characteristics and causing statistically significant income differences. The study recommends policy measures to level the playing field for growers in terms of their access to contract farming or preferences by the same. The study further recommends that promotion of both variants of contract farming should be sensitive to resources endowments of growers. Growers who can finance themselves should be encouraged to do contract marketing as they would get more benefits than they would under contract production and marketing. This should be promoted only for the resources constrained as a developmental tool that provides growers with finance, inputs and a guaranteed produce market. Contract production and marketing should develop growers to stand on their own in terms of financing and input supply and graduate to contract marketing. Growers should be encouraged to enter into marketing contracts which they can use to borrow from the banks.

5.1.2 Tobacco Economy's Development Prospects: Multiplier and H-D Model

The study showed that tobacco has a positive balance of trade (X-M). This is so even though the country is exporting 98% of tobacco as unmanufactured tobacco. Zimbabwe thus stands to benefit more from further value addition and export of value added tobacco and related products. The country should promote, and lure capital investment into processing and manufacture of tobacco and related products. The increase in net exports (X – M) will generate series of downstream consumption and savings which will increase national income (Y) through the multiplier effect and increase the growth rate ($\Delta Y/Y = s/k$) based on the H-D development model. The study concluded that the tobacco economy grows through the impact of net exports (X – M) being transmitted through the economy.

The study established that while tobacco contract marketing benefited growers and the nation the most, contract production and marketing produces negatives Free Cash Flows (FCF) and put growers in debt. The study concluded that this variant of contract farming requires careful management by growers, contractors and the regulator in close collaboration. If the level of input and consumption support given to growers is not managed carefully at the contracting levels, the going-concern of the tobacco production and marketing business is threatened. The over borrowing will generate free negative cashflows for the grower and s/he has to depend on the contractor for inputs every year causing debt accumulation. Under circumstances of negative FCFs there are very negative implications for development through the multiplier and the H-D development model. With negative FCFs, there are insignificant savings (s) to invest and increase the capital stock (k) for tobacco production and marketing. The debt accumulation will be transmitted throughout the economy by a multiplier effect causing a reduction in aggregate demand by a factor (the multiplier) and thus economic decline against

a background of increasing tobacco output. The study thus concluded that the growth of the tobacco economy is retarded by the impact of negative FCFs transmitted into the economy.

In light of the opposing impacts of net exports and FCFs on the tobacco economy, the study concluded contract farming can either have positive or negative impacts on economic growth ($\Delta Y/Y = s/k$) depending on the net effect of the transmissions through the economy of the positive net exports $(X - M)$ and negative FCF. Hence stagnating development can be expected in the face of increasing contract tobacco production and marketing.

The study thus recommends that growers, contractors and the regulator should manage contract production and marketing to achieve positive cashflows which will increase savings, investment and aggregate demand. In addition, growers need to take advantage of the many competing contractors. Growers should partner contractors with the best offer in terms of the following aspects: input administration fees, interest charges and the price offered for the produce. The study noted that it matters whether a grower partners with a merchant or a processor in contract farming. Merchants tend to want to make money from input distribution and such intentions may be disguised by charging a relatively low interest rate while the input prices are loaded with administration charges and mark-ups.

5.2 SCOPE FOR TRANSFER OF TOBACCO CONTRACT FARMING TO ALTERNATIVE CROPS AND LIVESTOCK ENTERPRISES

5.2.1 Transfer Circumstances Under Which Contract Farming Is Working

The successful transfer of tobacco contract farming models to alternative crop and livestock requires government commitment to market and institutional reforms beyond just the policy to promote contract farming in alternative crop and livestock enterprises to tobacco. The performance of contract tobacco farming cannot be taken without its complementing environment of a host of other market instruments that it is co-existing with. Some of such instruments may not exist in markets of alternative commodities for contract farming to achieve the same impact.

First contract tobacco farming is co-existing with auction tobacco production. There are three auction floors and fifteen contractors. The auction floors and contractors both provide physical market places to which growers bring their contracted tobacco for grading and pricing based on international standards. The auction provides a mechanism for transparent price discovery. Contract tobacco farming thus co-exists with a floor price that is determined through market forces of supply and demand on the auction. The auction floor opens a day before the contract market. The price-grade matrix that obtain at the auction floors become the pre-determined minimum price on contract floors.

These circumstances already exist to some extent in cotton, horticulture and livestock and can be useful in the marketing of grains and cereals. Of particular importance are maize, wheat and small grains. Serious consideration should be given to a commodity exchange to

provide a physical market place for farmers or a virtual market place by linking the exchange if with warehouse receipts and ICTs. The price from the exchange will be used to determine the contract price.

The tobacco industry uses internationally agreed standards and the operations of contract and auction floors are closely supervised by the TIMB ensuring that there is orderly production, marketing and trade of tobacco. The auction floors, the contractors and growers are all registered with the TIMB. The contracts are registered and TIMB operates a stop-order facility to guarantee that contractors are repaid. Every delivery to auction floors is registered with the respective floor, and contractors register deliveries for their growers with TIMB. The contractor's information systems are linked to the TIMB for the administration of deliveries and stop order facilities. The regulator, TIMB, has near full control of the value chain including issuance of import and export permits.

In the other sub-sectors of agriculture, the Agriculture and Marketing Authority (AMA) occupies a similar role as TIMB. There is need to consider empowering AMA in the same manner as the TIMB, especially in cotton, horticulture and cattle sales where physical market places are already in existence to some extent. There is need to adopt internationally accepted standards to promote international market access in these sub-sectors.

Contract tobacco farming has also benefited significantly from the participations of transnational companies. These have easy access to foreign funding and are major sources of technology and production techniques. . Consideration should be given to the promotion of participation of transnational companies in the production and marketing of other agriculture

commodities in order to inject liquidity as they can access foreign funding. The selection of contract growers is made easier through use of the TIMB database on growers deliveries and payment records. The industry also has a Credit Bureau that has credit ratings for individual growers. Hence in promoting contract farming, information stems facilitate private sector investment decisions. Tobacco contract farming has also benefited from it being high value, unlike many other commodities that are high volume and low value.

5.2.2 Policy Options for Contract Farming Based Inclusive Sustainable Development

The Chi-square results showed that contract farming prefers specific gender, sector, experience and irrigation status based groups. The factorial anova showed that the benefits that accrue to growers and the economy differ significantly across groups broken down by farm size and experience under both variants of contract farming, and also gender for contract marketing. The income also differs across groups defined by interactions between two or more farm level characteristics. The study established that such interactions are between and among farm size, experience, sector and gender. This preference for groups and the significance of the income reveals that contract farming has a high risk of causing imbalanced growth and development. Without informed policy and regulations, contract marketing can cause gender inequality, while contract production and marketing can result in further dualisation of the tobacco economy characterised by increasing income gaps between small and large scale growers, and between the skilled and less skilled growers.

In order to ensure that contract tobacco farming models promote inclusive sustainable development there is need for interventions to remove any criteria of preferences and equally prepare all growers of different groups for private investment in the form of contract farming. Such policy options include:

- i. Investment and promotion of the same (investment) in sources of productivity of public nature such as irrigation to prepare farmers for private funding
- ii. Development and implementation of institutions that will ensure private funding decisions mainstream gender and achieve gender equity;
- iii. Intensified extension and technical support services, and farmer training for new entrants into tobacco production and marketing.
- iv. Empower the less privileged groups through identified locally contextualised intervention to close all nature of gaps among them which may serve as a form or source of preference.

The benefits of contract farming should be monitored across these groups and interventions. To regulate, promote or complement the respective tobacco production and marketing models should understand which farm level characteristics or their interactions influence net income accruing to growers and the economy, and strive to put in place policies that will level the contract farming playing field for all potential growers and hence close the income gaps.

Contract production and marketing is viable and profitable. However, with weak farmer organisation and poor regulation, contract farming can drive growers into cycles of debt and dependence, and reduce them to what IFAD (2003) calls captive markets, leaving them prone to powerful contractors: over-charging of inputs, down grading of quality, low purchase prices or reductions produce to be produced without farmer's knowledge. Some awareness campaigns are required to help farmers and contractors understand their cost structures and productivity capabilities in order to determine the viable combinations of input support, production services support and consumptive support levels. Because of this risk, contract

production and marketing should be promoted as a developmental tool that should graduate growers to a more flexible contract marketing. The world trends are that growers get into market contracts which they use to access loans from banks to finance their own inputs.

The auction tobacco production and marketing system however remains a critical instrument for the regulatory authority to come up with a more acceptable price-grade matrix for intervention on the contract market. Without the auction, contractors can become very powerful and the regulator has no way of influencing pricing and prices on the market.

Overall, the study concurs with IFAD (2003) that contract farming is a double-edged development tool, which will benefit smallscale farmers provided it complies with principles of economic and social equity, which depends on the authorities regulating and controlling the system; transparent and balanced contractual arrangements; the balance of power between contractors and farmers, for which strong producer organisations are vital; and the degree of agricultural development and producers' ability to utilise competition between buyers.

5.2.3 Successful Aspects for Duplication and Improvement in Alternative Enterprises

5.2.3.1 Complete and Integrated Value chain

There is need to promote the development of complete domestic value chains that are intergrated into international value chains to exploit increasing global demand and changing tastes and preferences. This should include the adoption of international quality standards and

grading system and promotion of value addition investment including manufacture. Intergrated value chains allow product, finance and information to flow while all value chain players contribute to local production. The import and export permit systems can be used to ensure that all players contribute to local production.

5.2.3.2 Good Governance of the Value Chain

- i. There is a need to promote a shared view on the importance of market regulation. Learning from tobacco, both TIMB ad TRB were a result of farmers' shared vision for an orderly industry.
- ii. All players should be registered including deliveries to the market and all markets require close monitoring to ensure fair grading and pricing.
- iii. There are merits in allowing the regulatory authorities to have total control of the whole value chain up to imports and exports to ensure orderly marketing. Total control should be given to the regulating Acts. The TIMB ACT has total control of the value chain including issuance of import and export permits.
- iv. The parent must maintain a good fit with its parastatal `by ensuring that all regulating authorities have active Boards and senior management in place limiting itself to resources allocation say through levies which should be used to strengthen regulation, and develop the sector through training, research and and sustainable programme support. Such governance style can be applied to GMB and AMA.

5.2.3.3 Market Informations Systems

- i. Lessons from tobacco contract farming era are that sustainable agriculture intensification will benefit from both 1st and 2nd generation information systems provided by government and private sector respectively.
- ii. TIMB provides contractors with information on growers' history in terms of production and deliveries to auction floors and contractors.
- iii. The contractors provide growers with information relating to market prices, quality and agronomic practises for achieving the required quality.
- iv. The Credit Bureau provides information on credit ratings for growers. This has had the effect of improving growers' access to inputs, finance and markets.

5.2.3.4 Auctions or Agriculture Commodity Exchanges

- i. Physical market places are an essential component of agriculture commodity market reforms that will benefit smallholder farmers.
- ii. With the right regulations and institutions they provide transparent price discovery systems that can protect smallholder farmers from the powerful self-interests of buyers.
- iii. Physical market places are already in existence in cotton, livestock sales and horticulture.
- iv. Improvements in how these are regulated has merits as part of agriculture intensification strategy.
- v. Drawing from the tobacco industry, the regulating authorities must be allowed total reign across the value chain including issuance of import and export permits.

5.2.3.5 Risk Management Systems

- vi. The registration of all value chain players provides a sense of risk mitigation for contractors.
- vii. This is aided by a functional stop order system to manage risk under contract farming.
- viii. This can be replicated to other enterprises easily.
- ix. There remains greater scope to explore new insurance tools other than hail insurance.

5.2.3.6 Linkages Between Instruments of Market Access

There are potential benefits to agriculture intensification through linking market access tools. The tobacco industry provides a thriving example of linkages between market access instruments. The industry links the auction (physical market place) + market forces + contract farming + minimum pricing:

- i. The auction and contract floors provide physical market places which are accessible to smallholder farmers
- ii. The auction floors (market forces) can co-exist with contract farming through the price-grade matrix which act as a floor price of the contract system.
- iii. The auction provides a competitive and transparent price discovery mechanism which is used as the floor price on the contract markets.
- iv. This can be applied in maize, cotton and wheat soybeans in combination with a warehouse receipt especially for the bulky, low value commodities.

5.2.3.7 Farmer Organisation

The high level of farmer organisation helps to balance of power between contractors and growers. There is relatively a high level of farmer organisation in the tobacco industry. However this has not achieved much in terms of improving ability of the grower to ride on competition among the many contractors in the tobacco sector.

5.2.3.8 Promotion of Private Sector Investment

Private sector investment participation is central to any enterprise value chain development efforts with government only playing a facilitatory role of regulation. Private sector investment is key in the following areas: financing, contract farming, warehousing, insurance, investment in auction floors, buying of produce, processing, and manufacturing. Lessons from tobacco are that this will promote delivery of inputs on time and flow of market information including prices and quality all players. However, the need to deliver affordable inputs in the right quantities for smallholder farmers remains a challenge.

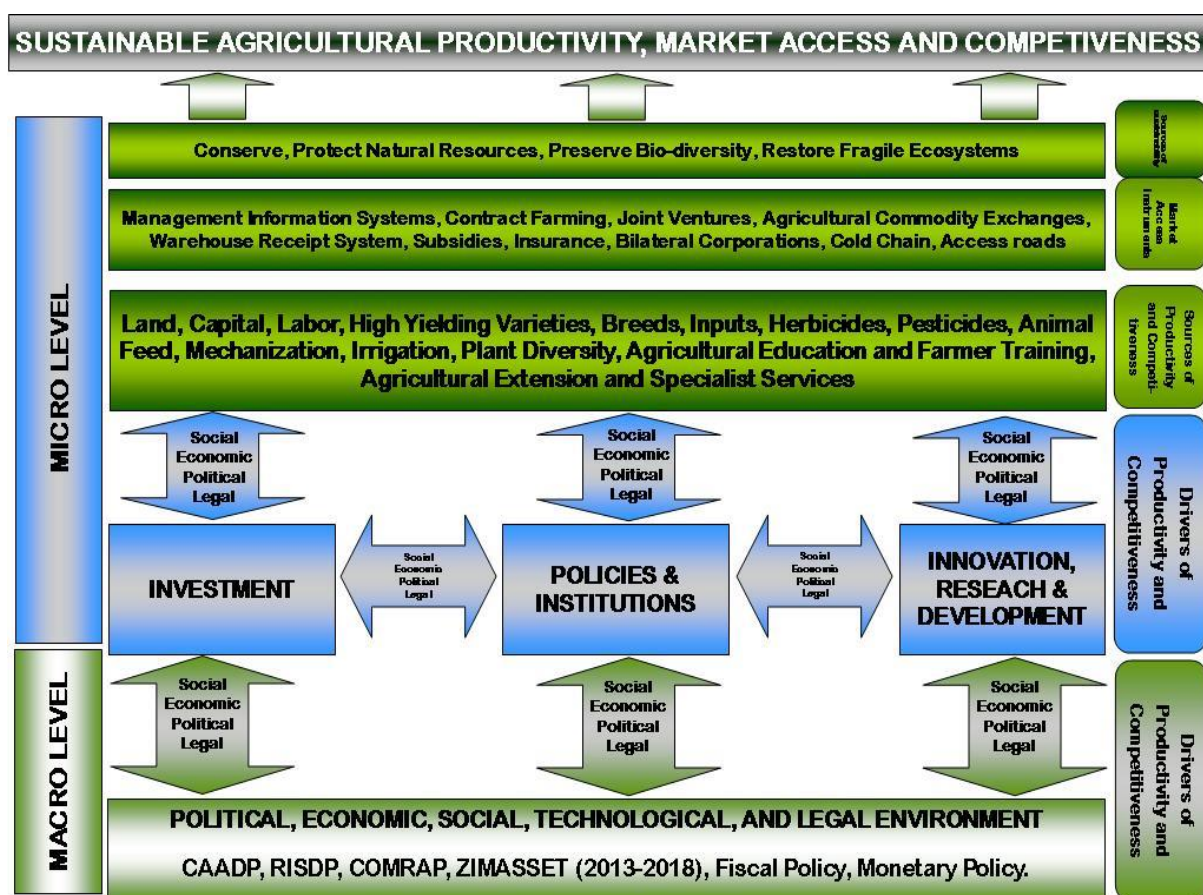
5.2.3.9 Participation of Transnational Corporations

The tobacco value chain is prospering from investment by transnational corporations. These increases access to inputs, finance, markets and services as well as processing and manufacturing. There is need to explore how these can also be drawn into tobacco processing and manufacture and enticed into other strategic enterprises such as grains for food security.

5.2.4 Sustainable Agriculture Intensification Framework Informed by Tobacco Experience

The tobacco intensification history and experience suggest that any agriculture intensification programme should seek to establish a conducive policy and institutional framework, and promote investment and innovation in sources of productivity and market access all anchored on global, continental, regional and national development frameworks.

Diagram 5.1: Framework for Achieving of Sustainable Agriculture Intensification



Source: Research Results

The quest for inclusive sustainable agriculture and economic development should focus on comparative advantage through investment investment in productive resources, as well as

competitiveness through policies and institutions that define market access now and shape the long-term comparative advantage. The increase in sources of productivity such as land, irrigation and mechanisation, varieties improvement and so forth will certainly improve comparative advantage through improved productivity, but will have a limited impact on improving competitiveness or terms of trade. A balanced approach is recommended.

5.3 THE FUTURE OF TOBACCO PRODUCTION AND MARKETING

5.3.1 The FCTC Threat

The policy positions of governments of tobacco producing countries and WHO represented by the FCTC are converging on diversification out of tobacco to alternative crop and livestock enterprises. Meanwhile there is an increasing demand for tobacco due to increasing population and the global market is ready to absorb 160 million of Zimbabwe's tobacco.

Zimbabwe thus has an option for a two-pronged tobacco agrarian reform policy strategy: (1) responsible promotion of tobacco production and marketing in line with the FCTC limiting production to 160 million kg which the global market is able to absorb; and (2) institute deliberate policies, programmes and projects to extent the tobacco production and marketing model to alternative crop and livestock enterprises in anticipation of the reversal in global demand trends as a result of the FCTC taking root. The second option will not come by itself, Zimbabwe should join hands with other like affected tobacco countries to fight the exclusion of tobacco in trade agreements.

5.3.2 The Side Marketing Threat

The challenge of side marketing is real in the tobacco production and marketing industry. Side marketing actually presents the second most important challenge to tobacco production and marketing after the FCTC. The future for tobacco especially under the current liquidity challenges that Zimbabwe is facing rests with the extent to which side marketing is addressed and a cap put to the increasing growers' debt to contractors. The study concluded that the major causes of accumulating debt are side marketing, over-borrowing and divergence of inputs which results in low productivity.

There is need to explore ways of tightening the grower registration process. The TIMB need to consider a census of growers to rid its database of ghost growers which are facilitating side marketing. There is need to invest in electronic tagging of bales for traceability and monitoring that growers do not deliver beyond the potential for which they are registered for.

5.3.3 The Threat of Market Failure

The study concluded that the tobacco market has uniform grading standards across the auction and contract system due to the close supervision of the TIMB. The study however concluded a high risk of market failure concern on the pricing system. The quantity of tobacco coming to the auction floors used to determine the floor price for the contract system has become too small to allow transparent price discovery through competitive market forces of supply and demand. This is exacerbated by the fact that contractors are dual players. In addition to buying the contracted crop, they also participate on the auction floor to determine the floor price. The study concluded that this participation is not neutral as supported by

complains by farmers that contracts are paying below commensurate prices. The study concludes that the future of tobacco production and marketing will be underpinned by auction system and deliberate policies and institutions that makes it impossible for contractors to continue exploiting and digging into the growers' surplus. Such policy options could include: (1) provision of incentives for auction production in order to increase amount of product on the auction beyond the financial influence of big buyers; (2) moving to an all stakeholder negotiated price-grade matrix which may actually be difficult as a result of the so many grades that Zimbabwe tobacco has. The study recommends a combination of the two options. The auction determines the price to be negotiated on only when the quantity on the auction is considered too low to determine an efficient price for the whole produce market. The TIMB would announce a position on such quantity every season.

5.3.4 The Financing Challenge and Accumulating Debt

Financing of tobacco and alternative crop and livestock enterprises will remain a challenge and farmers will continue to depend on contractors and without proper organisation, knowledge and skills to lobby and manage borrowings they will continue to accumulate debt. Farmers need to take advantage of the many competing contractors to select only those that offer the best terms in respect of interest rates, administration charges and mark-up terms. Input suppliers need to explore efficiency improvements to supply affordable inputs. Contractors should not seek to make money out of input distribution. They should seek to provide affordable inputs in the right quantities and expect to make money from from tobacco exports. The regulatory authority should consider standard input packs and government should also consider legislating for minimum percentage lending to agriculture out of every bank's lending portfolio. There is merit in promoting corporate farming partnerships between growers and owed contractors as strategy for debt recovery.

5.4 CONCLUSION

There are three tobacco production and marketing models – auction system and two contract systems – contract marketing, and contract production and marketing. All the models are viable and profitable, and thus beneficial to growers and the economy. The most beneficial is contract marketing followed contract production and marketing and lastly auction.

Contract farming have specific preferences for groups of growers defined by farm level characteristics. Hence, as a development tool to further the agriculture intensification agenda, contract farming is a double-edged knife whose potential depends on how it is regulated and what policies have been put in place to ensure that it complies with the principles of economic and social equity across groups defined by farm level characteristics. This is especially so for contract production and marketing which, although it provides the much needed working capital, inputs and guaranteed produce market, have a tendency of driving growers into cycles of debt and dependence. This model should be promoted as a developmental tool aimed at bringing growers out of dependence on inputs and deliver them to more flexible marketing contracts, which growers can use to access funding from banks.

The study concludes that with appropriate regulation and policies, tobacco models present unique agriculture intensification strategies with high scope and feasibility for successful duplication in other sub-sectors of agriculture. The tobacco industry is a thriving example of an industry where minimum (floor) price, co-exists with market forces of supply and demand under the auction system and how the market forces are used to protect growers from powerful buyers under the contract systems. The challenges to do with side marketing, debt accumulation, risk of market pricing failure are not insurmountable. In light of the strategic

role of tobacco in Zimbabwe's trade and the opportunity presented by increasing global demand for tobacco and tobacco related products and the threat from FCTC, the study concludes that Zimbabwe should team up with like minded countries to contest the exclusion of tobacco from international trade agreements and protocols, and pursue (1) intensification of tobacco production, marketing and trade to cash-in on increasing global demand; and (2) diversification to alternative enterprises and intensification through policies, plans, projects and programmes informed by the experience and circumstances of contract tobacco models, paying special attention to linkages between market access tools, in anticipation of reversal in global trends as the FCTC takes root.

The study concluded that such strategic agriculture intensification and diversification effort should be based on three pillars – policies and institutions; investment; and research and innovation. The pillars give equal importance to comparative advantage and competitiveness gains by targeting sources of productivity, market access and sustainability while they anchor on international, continental, regional and national development frameworks.

5.5 AREAS OF FURTHER RESEARCH

- i. Conduct a complete tobacco value chain margin analysis
- ii. Determine the tobacco capital account and complete picture of the tobacco balance of payments
- iii. Model the tobacco economy development prospects based on actual income multiplier and capital output ratio

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ANNEX 1: QUESTIONNAIRES

A. TOBACCO GROWERS

1. QUESTIONNAIRE IDENTIFICATION

Respondent's Name		Household Number	
Enumerator's Name			
Date of Interview (DD/MM/YY) e.g. 09/05/15			

2. GROWER AND FARM LEVEL CHARACTERISTICS (Please circle the appropriate code or write in the appropriate number)

2.1	Grower ID		2.2 Grower sex	1 = Male 2 = Female
2.3	Agro ecological region			1=NR1 2=NR 2a 3=NR 3 4=NR 4 5=NR 5 22=NR 2b

2.4	Farming sector		1 = communal 2 = A1 3 = SSC 4 = A2
2.5	Age		2.6 Age category 1= youth 2=Adult 3=Old
2.7	Farming Experience		

3. TOBACCO PRODUCTION (Please circle the appropriate code or write in the appropriate number)

3.1	Production and Marketing model	0=Non contracted (Auction) 1=Contracted (marketing) 2=Contracted (Production and Marketing)
3.2	Total land under tobacco (HA)	

3.3	Dry land Area	
3.4	Irrigated Area	
3.5	Yield (KG)/HA	

4. CONTRACT INPUT PACKAGE (Please circle the appropriate code or write in the appropriate number)

	Input	Quantity (KG)	Total Value (US\$)
1.			
2.			
3.			
4.			

5. MARKETING (Please circle the appropriate code or write in the appropriate number)

Deliveries	Quantity	Buyer (1=Auction, 2=Processor, 3=Merchant)	Quality	Price	Deductions
1.					
2.					
3.					
4.					
5.					

B. REGULATORY AUTHORITY

1. Provide Zimbabwe Tobacco Production Map

2. Provide information on the Tobacco Production Structure
 - a. Gender
 - b. Agro-ecological zone
 - c. Sector
 - d. Dryland and irrigated area

3. Provide information on Tobacco Production, Export and Export Trends

4. Provide details of the Tobacco Production and Marketing models
 - a. Auction?
 - b. Variations of contract model?
 - i. Packages
 - ii. Pricing policy
 - c. Standard budgets for the various models?

5. Financing of tobacco production and marketing

6. What is the organisation's perspective on auction vs. contract?

- a. Only Zimbabwe and Malawi still have the auction system
- b. Does Zimbabwe require the auction system
- c. Or follow world trends to move to 100% contract
- d. Future of auction system

7. What is the legal and regulatory framework for the tobacco industry?

8. What are the tobacco industry challenges and possible solutions?

- a. Side marketing – causes (over borrowing, better price) and possible solutions
- b. Farmers defaulting and industry debt accumulating – level of debt over time?
- c. Accumulating debt but industry continues to exist – exports subsidizing contract farming?

9. Is there a Tobacco Market information System? How is it organized and implemented?

10. How are tobacco farmers organized to effectively participate in the industry?

11. What risk management tools exist in the industry?

- a. Price risk
- b. Hail
- c. Weather / Drought
- d. Default

12. Tobacco value chain margins?

- a. Farmers?
- b. Merchant / contractor?
- c. Processing costs to lamina?
- d. Manufacturer to Cigarette?

13. What is the scope for successful transfer of tobacco production model to other crop and livestock enterprises?

14. How is the tobacco industry organized better than other cash crop (tea, coffee, cotton) food crops (maize, small grains, soya) and horticulture?

15. Can the auction system extended to these other crops? What needs to be done?

16. Current Tobacco Levies? Collection? Utilisation?

C. CONTRACTORS (MERCHANTS AND PROCESSORS)

1. Time in tobacco contract farming

2. Number and breakdown of contracted farmers for 2014/15 season
 - i. Agro-ecology
 - ii. Irrigations
 - iii. Sector
 - iv. Farmer education
 - v. Gender

3. Changes in the number, gender and distribution of contracted farmers since beginning of operations

4. Contracting models

5. Contract package components and variations for different farmers

6. Value of contract package variants per hectare

7. Pricing policy for contract input support

8. Sources of inputs for contract farming

9. Financing mechanisms

10. Criteria for contracting

- i. Performance History
- ii. Agro-ecology
- iii. Irrigations
- iv. Size of farm
- v. Famer education
- vi. Gender

11. Distribution of contracted farmers

12. Prices for various grades achieved in 2015

13. Challenges and options

14. Perspective of future of tobacco in light of the FCTC

15. Scope for going into other crop and livestock enterprises

D. AUCTION FLOORS

1. Auction Floor
2. Engagement in contract farming? If yes also ask contractor questions
3. Funding sources
4. Auction process?
5. Pricing policy
6. Payment mechanism?
7. Stop order system?
8. Challenges
9. Perspectives on future of tobacco?
10. Scope for auctioning other crop and livestock enterprises?

E. FARMERS' REPRESENTIVE ORGANISATION

1. Provide details of Tobacco Production and Marketing?
 - a. Auction?
 - b. Variations of contract model?
 - i. Packages
 - ii. Pricing policy
 - c. Standard budgets for the various models?

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