

**ANALYSIS OF THE POLITICAL ECONOMY OF AGRICULTURAL
POLICIES IN MALAWI: A CASE STUDY OF MAIZE POLICIES**

Ph.D. (AGRICULTURE AND RESOURCE ECONOMICS) THESIS

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UNIVERSITY OF MALAWI

BUNDA COLLEGE OF AGRICULTURE

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BSc., MSc. (Agricultural Economics) Malawi

**A THESIS SUBMITTED TO THE FACULTY OF DEVELOPMENT STUDIES
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ECONOMICS**

**UNIVERSITY OF MALAWI
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SEPTEMBER 2013

DECLARATION BY CANDIDATE

I, Horace Happy Phiri, declare that this thesis is a result of my own original effort and work, and that to the best of my knowledge, the findings have never been previously presented to the University of Malawi or elsewhere for the award of any academic qualification. Where assistance was sought, it has been accordingly acknowledged.

Horace Happy Phiri

Signature: _____

Date: _____

CERTIFICATE OF APPROVAL

We, the undersigned, certify that this thesis is a result of the authors own work, and that to the best of our knowledge, it has not been submitted for any other academic qualification within the University of Malawi or elsewhere. The thesis is acceptable in form and content, and that satisfactory knowledge of the field covered by the thesis was demonstrated by the candidate through an oral examination held on 25th July 2013.

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DEDICATION

This thesis is dedicated to God; let it be a testimony of your grace

To my parents and siblings for the encouragement and support

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I am very thankful to a number of people and institutions that have rendered a hand in production of this thesis. I am very grateful to my supervisors, ProfessorAbdi-KhalilEdriss, Dr. Klaus. Droppelmann and Dr. Michael Johnson for their untiring support and guidance during my research.

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ABSTRACT

Producer Support Estimate (PSE) for the staple food crop maize were calculated in this study to add to knowledge on the incentives and disincentives that created by public policy in agriculture. All the PSE were negative implying that producers are implicitly taxed through policies that transfer income from producers to consumers. Using a Newey –West regression analysis political economy explanations to agricultural protection were tested. It was observed that; PSE increased with increasing levels of social accountability, international donor pressure and declining production. Neopatrimonialism was also found to negatively affect producer support. Autoregressive Distributed Lag model results show that the PSE granger causes production and that one percent change in PSE results in a 0.24% change in national maize output.

Evidence from the ARIMA model showed that the political power varies with changes in maize prices and income. In general, the results obtained in this study show that the policy making process in Malawi is not driven by efficiency motives alone but rather a political economy framework with its own demands that have to be understood. The following recommendations are therefore put forward; policy stakeholders should have an understanding of political preferences and incorporate them in their policy options if their advice is to be relevant in the policy processes; interest groups have shown to have strong influence on policy outcomes therefore policy reforms should be designed in a way that ensures that affected groups accept reform to avoid political pressure induced reversals.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey Fuller
ALDSAP	Agriculture and Livestock Development Strategy and Action Plan
ADMARC	Agricultural Marketing and Development Corporation
ASAC	Agriculture Sector Assistance Credit
CABS	Common Approach to Budget Support
CC	Control of Corruption Index
CISANET	Civil Society Agriculture Network
COMESA	Common Market of Eastern and Southern Africa
CTE	Consumer Tax Equivalent
DFID	Department for International Development
DPP	Democratic Progressive Party
EC	European Commission
EFW	Economic Freedom of the World Index
EPA	Extension Planning Area
ETIP	Extended Target Input Program
FEWS	Famine Early Warning System

FMB	Farmers Marketing Board
FPE	Final Prediction Error
FSRP	Fertilizer Subsidy Removal Program
GDP	Gross Domestic Product
GoM	Government of Malawi
IFDC	International Fertilizer Development Center
IMF	International Monetary Fund
MCP	Malawi Congress Party
MoAFS	Ministry of Agriculture and Food Security
MoF	Ministry of Finance
MPTF	Maize Productivity Task Force
MPS	Market Price Support
MVAC	Malawi Vulnerability Assessment Committee
NPC	Nominal Protection Coefficient
NSO	National Statistical Office
NRP	Nominal Rate of Protection
NSCM	National Seed Company of Malawi
ODA	British Overseas Development Administration

OVOP	One Village One Product
OVP	Open Pollinated Varieties
PCANR	Parliamentary Committee on Agriculture and Natural Resources
PPF	Political Preference Function
PSE	Producer Subsidy Equivalent
SAL	Structural Adjustment Loan
SAP	Structural Adjustment Program
SBIC	Schwarz Bayesian Information Criterion
SFFRFM	Smallholder Farmer Fertilizer Revolving Fund of Malawi
SGR	Strategic Grain Reserve
SIP	Supplementary Input Program
SP	Starter Pack Program
VAR	Vector Autoregressive Model
VECM	Vector Error Correction Model
UDF	United Democratic Front

CHAPTER ONE

INTRODUCTION

1.1 Statement of the problem

The agricultural policy landscape in Malawi has for more than half a century been affected by the dual goals of promoting export-led agricultural growth and achieving self-sufficiency in white maize production, the preferred food staple in Malawi and a primary source of income among millions of smallholder farmers (Johnson and Birner, 2011). However, the country has been unable to register substantial progress in attaining either of the two goals due to factors such as high population growth of over 2% per annum (National Statistical Office [NSO], 2009) that increased the demand for food, declining soil fertility, unfavorable weather conditions, and high transactional costs.

Agricultural output grew at an average rate of 4.35 per cent per annum between 1970 and 2005 (GoM, 2011). Despite these positive growth figures, there is little evidence suggesting that those in the smallholder sub-sector benefited. In fact, output in the smallholder sub sector declined by 1.8 per cent per annum between 2000 and 2005. From 2006 – 2009, Malawi has experienced positive agricultural growth (9.23%) largely due to the successful implementation of the Farm Input Subsidy Program (FISP) and favorable weather patterns in the period (Government of Malawi [GoM], 2011). However, the heavy cost burden of the FISP, taking up to over 70% of the agricultural budget in 2009/10 (Dorward *et al.*, 2010), has crowded out provision of

research, extension and other agricultural development activities. Unless policies change and resources are used more effectively, it is projected that the prevalence of poverty and the number of undernourished people will continue to rise (United Nations Food and Agriculture Organization [FAO], 2011).

1.2 Research justification

In this context, there is a need for increased investment in the food and agricultural sector, along with supportive government policies. For those elements to be put in place there is a clear need to understand the true nature of incentives that producers in the agricultural sector get as a prerequisite to identifying the role that improved policies and investment can play. Government intervention in the agricultural markets usually involves transferring of resources to small-scale farmers through distribution of free or subsidized inputs. However, creating incentives to boost production is more complex than mere provision of inputs. It is reasonable to expect that trade and exchange rate policies even if specifically directed to other sectors of the economy can exert an important influence on agricultural incentives and performance.

In addition, there is need to understand factors that have influenced agricultural policies reform overtime. The nature of policy decisions taken over the years suggest that apart from economic motives, government has other agenda that it seeks to achieve through policy reforms. Government has exploited the Farm Input Subsidy Program (FISP) through populist pricing to shore up its popularity and legitimacy (Chinsinga, 2011). In the lead up to 2009 presidential and parliamentary elections the redeemed price of fertilizer was slashed from K800 to K500 per 50kg bag. If non-

economic pressures are identified they can be tackled to pave way for more significant policies. This study was designed to add to knowledge on these issues.

1.3 Objectives

The maize sector has been at the center of government policy due to its prominence in the economy as a source of income, employment and food. As such, politics has helped shape policies over time as social, economic changes take place. The overall objective of this dissertation is to examine the extent to which policies have affected incentives and disincentives in the maize sector over time and in so doing, explain why this has occurred using a political economy framework.

The specific objectives to accomplish this are as follows:

- I. To measure the aggregate impact of government policies on producers and consumers in Malawi
- II. To analyze the political economy of producer support in the maize sector in Malawi
- III. To determine the political weights of consumers and producers in influencing policy outcomes
- IV. To establish how changes in economic variables affect the political weight of producers and consumers

1.4 Structure of the thesis

This thesis is organized as follows; Chapter II presents a detailed description of the maize sector performance in Malawi from 1970 - 2010. This includes production, consumption, self-sufficiency and international trade trends. Chapter III reviews literature on the actors in the agricultural policy processes, a narrative of policies implemented, and theoretical explanation of policy choices. Chapter IV presents the analytical framework used in the study. It discusses data sources, study conceptualization and the mathematical and econometric modeling adopted in the study. The aggregate impact of policies on the maize sector and how it affects production is discussed in Chapter V; this involved the calculation of the Producer Support Estimates (PSE) and estimation of short run and long run supply elasticities using the Autoregressive Distributed Lag (ARDL) model. Chapter VI applies econometric methods to test the effects of neopatrimonialism, neoliberalism and other political economy hypotheses on producer support (PSE). Chapter VII presents a political macro-economy model of maize policies in Malawi that includes a Political Preference Function (PPF) that estimates the government willingness to redistribute income towards a specific interest group and how this willingness adjusts to changes in economic variables. Finally, Chapter VIII presents a general summary, conclusion and recommendations based on results obtained in this study.

CHAPTER TWO

MAIZE SECTOR PERFORMANCE IN MALAWI

2.1 Introduction

Maize is a strategic crop in Malawi. Its availability is often linked to legitimacy of the incumbent government (Mwakasungula, 1986). Consequently, failure to achieve sustained high levels of production is matched by swift policy reforms. The purpose of this chapter is to analyze the performance of the sector over time. It includes narratives on the production, consumption and international trade levels.

2.2 Trends in production

Maize is the most important food crop in Malawi. It is a staple food for over 90% of the population and food security, and household welfare is often linked to the harvest of this crop (Ragnar, *et al.*, 2003). Out of the two agriculture sub sectors –smallholder and estate – maize is predominantly a smallholder crop. It accounts for almost 60% of land cultivated by the smallholder sub-sector (Chemonics, 2009). The Central Region of Malawi is the main production area. In 2007/8, it represented 59% of total production. The Southern Region counts with 45% of the country's population but only 17% of total maize production in 2007/8. As indicated by MVAC reports, it is also the main deficit area. Almost all maize production is rain-fed and produced by small farmers, occupying 54% of small producers' cultivated land. The average farm

size of smallholder producers in Malawi amounts to 0.5 – 0.8 hectare. The smallest farms are located in the Southern region, where population density is higher.

Maize production has steadily grown from an estimated 1.1 million tons in 1970 to about 3.4 million tons in 2010. For most part of the last four decades, production increases have emanated from expansion in cultivated area. Maize cultivated area has grown at an average annual rate of 1.5% from 1970 to 2010. In spite of high yielding varieties being developed and promoted amongst farmers, sluggish growth in yields have been recorded. In fact, the yield in 2005 was lower than that reported in 1970 (Figure 3.5). A number of factors can be identified as key constraints to increased production levels, including (1) the continual cultivation of maize on the same land without addition of fertilizers leading to low yields, which on their turn lead to inability to afford the purchase of inputs, (2) high input prices and access costs due to low volumes of demand and poor infrastructure, (3) reduced investment in production as a result of low traded volumes and thin markets (as between 85-90% of maize is consumed within households and villages) and (4) high price variability for maize sellers, buyers and traders due to ad-hoc government intervention (Dorward and Chirwa, 2011).

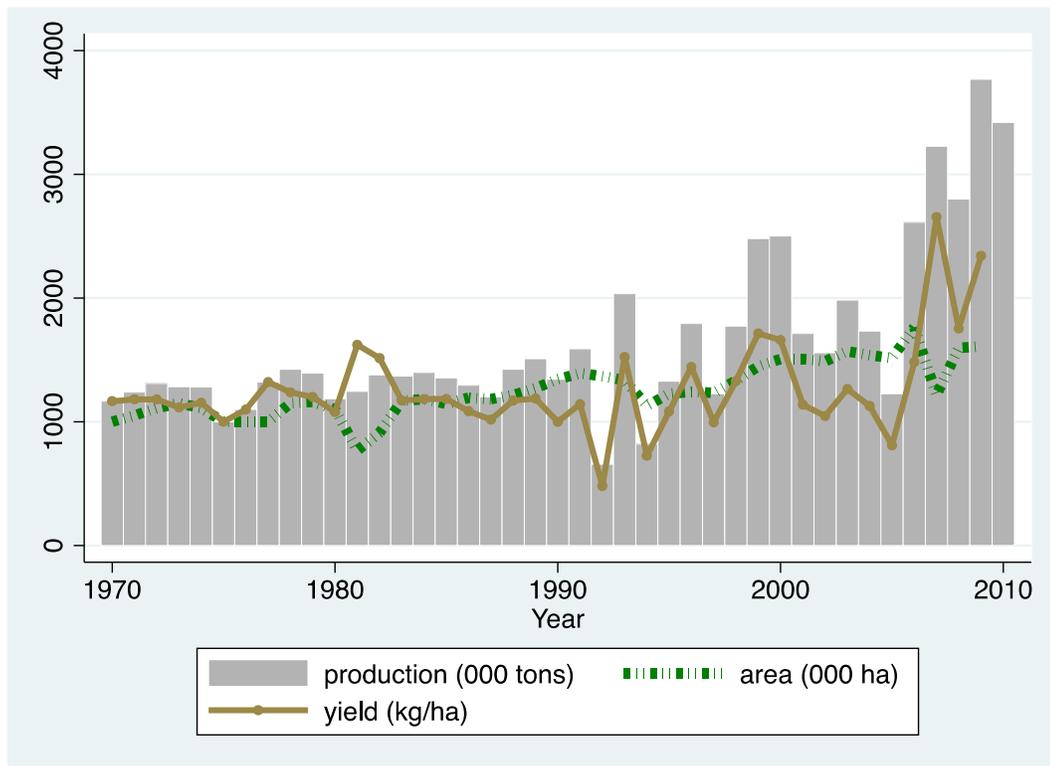


Figure 2.1 Area, production, yield of maize in Malawi

Source: MoAFS, APES (2012)

2.3 Trends in maize prices

Maize policies in Malawi have maintained a two-tier price system. As in any marketing arrangement, farmers get a proportion of the retail price with the remainder going to marketing costs and profits of the middlemen. ADMARC had monopsony powers over maize purchases until 1987 when private traders were allowed entry into the market. Despite liberalization being aimed at improving the producer price, the gap between producer and retail prices widened between 1990 and 2000. This is most likely due to exploitative behavior of traders who usually take advantage of the

fragmented production system that leaves farmers with little bargaining power to influence prices. Phiri *et al.*, (2011) observed that smallholder farmers did not have a clear strategy for pricing their commodities. They appeared to be price takers who wait for the buyers to determine the price and decide whether to sell or wait for a better offer.

A comparison of the world market to the domestic market price reaffirms the argument that it is cheaper for Malawi to produce its own maize than to import. Except in 2002 and 2009 when the retail price of maize exceeded the world market price. However, in both cases it wasn't due to rising cost of production but a poorly managed strategic grain reserve that affected market supply. Devereux (2002) reports that the famine in 2002 was a consequence of both poor management and low production. The Strategic Grain Reserve (SGR) had been sold, thereby paralyzing the government's emergency response mechanism: it was unable to distribute food at the necessary time. Information asymmetries also marked the process, as the size of the SGR was never definitely known due to a lack of transparency.



Figure 2.2 Producer, Consumer, and World maize prices

Source: ADMARC, MoAFS and other reports; and own calculations

In general trend observed in Figure 2-2 shows that the prices increased during the 2000-2010 period. However, with the high levels of inflation in Malawi such increases might be illusionary deceptive.

2.4 Trends in maize consumption

Chimangandimoyo (maize is life) is a famous Malawian saying, and underlines the importance of maize as the main staple food for Malawians. According to FAOSTAT (Food Balance Sheets), the annual maize consumption per head in Malawi in 2007 amounted to 129.3 kilograms. As such, it makes up almost 90% of the total intake of

cereals and 54% of the total caloric intake per capita. Total maize consumption has grown primarily as a result of population growth.

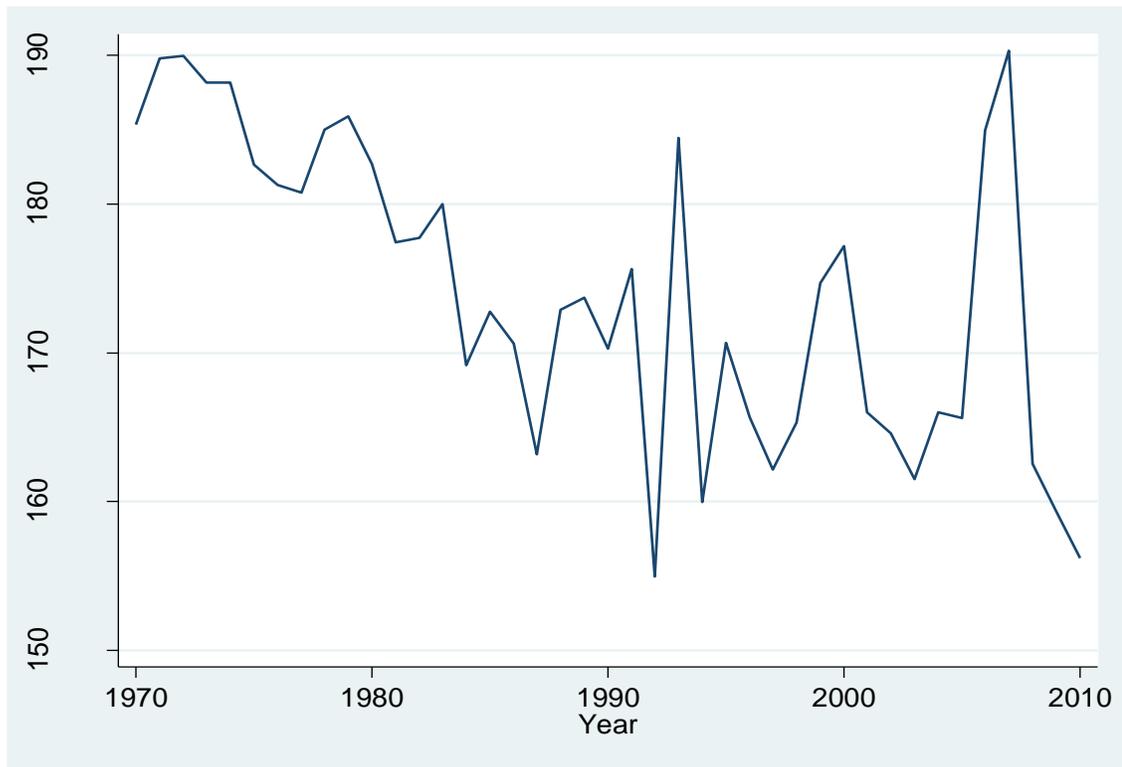


Figure 2.3 Maize consumption per capita

Source: FAOSTAT 2013

2.5 Self Sufficiency Ratio (SSR)

The Self Sufficiency Ratio was calculated as the ratio of domestic production to consumption. A ratio of greater than 1 means that the country is self-sufficient and if less it means otherwise. The average ratio for the period between 1970 and 2010 was 1.09 means that in an average year domestic production in Malawi meets the maize

consumption needs. However, in drought years' production usually falls critically below demand. For instance, the lowest SSR was in 1992 when a major drought reduced maize production by half such that production could only cover 48% of the domestic production.

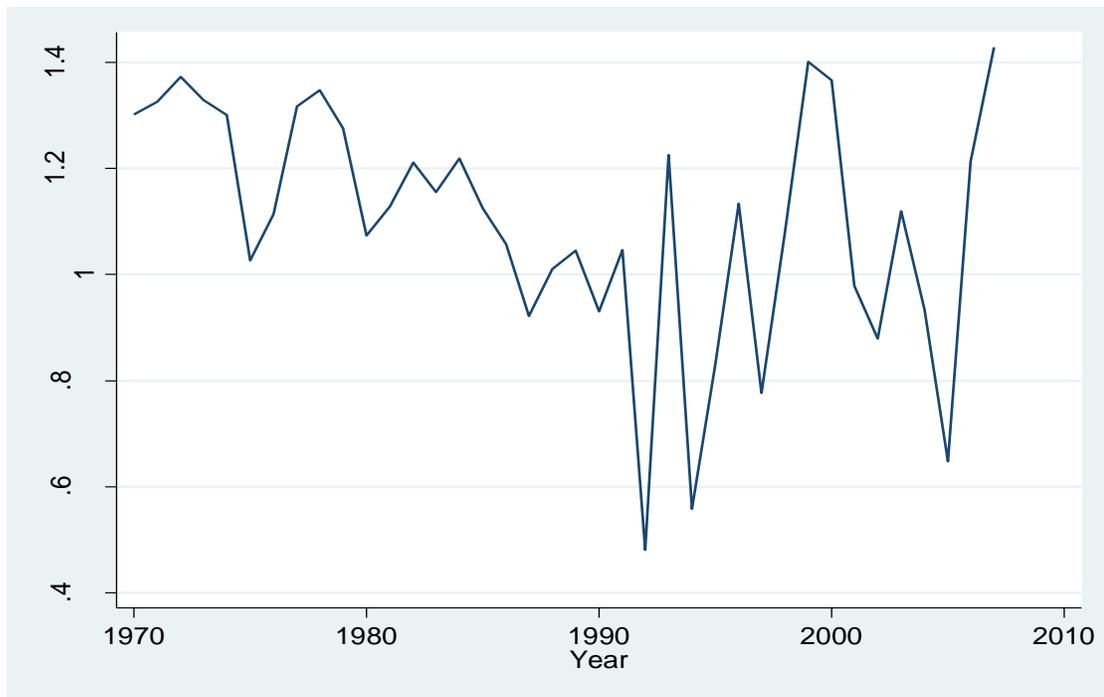


Figure 2.4 Maize self-sufficiency ratio in Malawi 1970-2010

Source: Own calculation using data from National Statistical Office, and World Bank

2.6 Concluding remarks

The primary focus for maize policies has been to ensure that the country is self sufficient in the commodity and to a certain extent increase incomes of smallholder farmers. In the late 1970s the self-sufficiency ratio started declining due to droughts and in efficient policies. Government upon advice from The World Bank set low

maize prices to encourage smallholder farmers to diversify into production of other crops. This had negative consequences and by 1987 the country faced food shortage. Similarly, the removal of subsidies, inflation due to currency devaluation and collapse of smallholder credit in the 1990s negatively affected production, as inorganic fertilizer and hybrid seed were unaffordable to most farmers. Due to these shortcomings government responded by policy reforms that often were characterized by reversals. Among them the re introduction of subsidies on inputs in 2005/06 season. In the initial seasons, FISP resulted in massive gains in national output with production exceeding domestic demand but the output remains vulnerable to weather shocks.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter presents a review of literature on the policy-making processes in Malawi and the theoretical explanations to policy outcomes. The main aim is to identify who was responsible for making policies, the policies adopted overtime, and draw potential explanation from theory as to why they opted for the observed policies. In the first section of this chapter, the actors, network links and influence of various actors in the maize policy making processes is discussed. A historical perspective of maize and related policies implemented in Malawi follows, and then a theoretical perspective of what shapes public policies is reviewed. The third section is devoted to approaches to building political economy models and the potential role that governments play in the policy-making processes. The chapter concludes by assessing the research gaps still existing in this research area. This is important in order to describe the specific contribution of this study to this broad research area.

3.2 Agricultural Policy making actors and networks

Abermann, *et al.*, (2012) used the Net-Map tool to gather information on actors, links and networks on the agricultural policy scene using the fertilizer subsidy program as a case study. The Net Map is a qualitative tool that uncovers the various power and influence relationships that exist among stakeholders in the policy process. The

approach combines the mapping of social political networks through in-depth qualitative discussions and additional information about actor goals and influence.

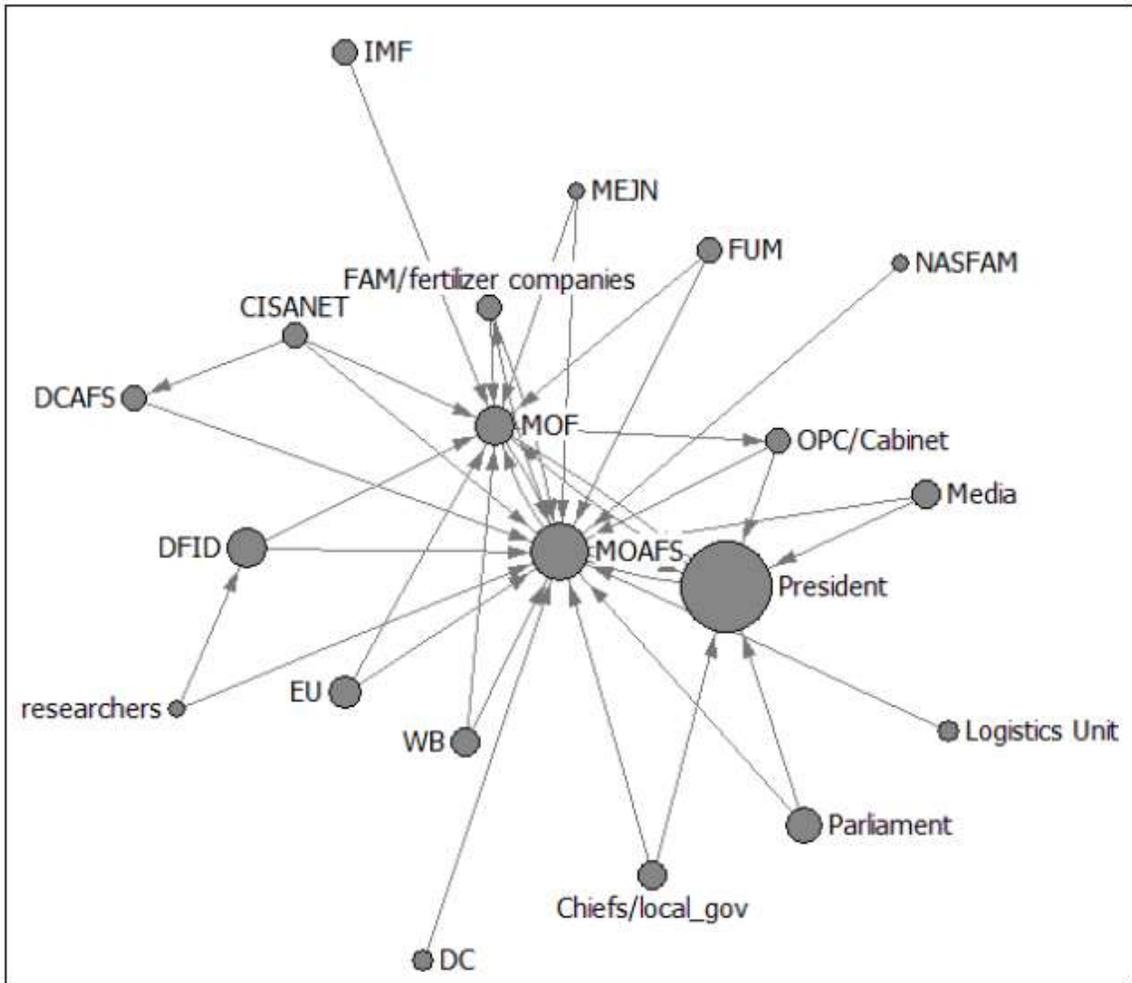


Figure 3.1 Fertilizer Subsidy Program Network

Source: Abermann, *et al.* (2012)

Results from that study presented in Figure 3-1, show that the fertilizer policy network has three hubs (Ministry of Agriculture and Food Security – MOAFS, Ministry of Finance – MOF, and the President) with all other actors arranged around them, trying

to influence them with regards to their policy decision. Prominence of actors in the network was measured by betweenness centrality of actors. Betweenness is a measure of how often an actor is on the shortest path between other actors, thus controlling their interaction (Borgatti, *et al.*, 2002). Out of the three hubs MoAFS has an outstanding role in this network.

The MOAFS has the extremely high-normalized betweenness centrality of 70.468 %, followed by the MOF (20.760%) and the President (3.509%). However, both the network data and the qualitative information gathered show that while the MOAFS has the highest centrality on all counts (also highest closeness and degree centrality) it is not the most influential actor when it comes to determining the level and shape of the fertilizer policy. The President is by far the most influential actor in this respect. Figure 3-2 shows the President with the largest node, representing his influence. This high power and low accessibility is reflected in the network maps. If possible, actors who want to advocate for their cause, would access the most influential actor in the field with their policy propositions. However, the President can only be accessed by very few selected number of actors whose pathway to the president is granted because of their role in the political system (Cabinet, Ministries, Traditional Authorities, Media). The majority of actors are left to going through a gatekeeper, either the MOAFS or (to a lesser extent) the MOF to make their policy concerns heard.

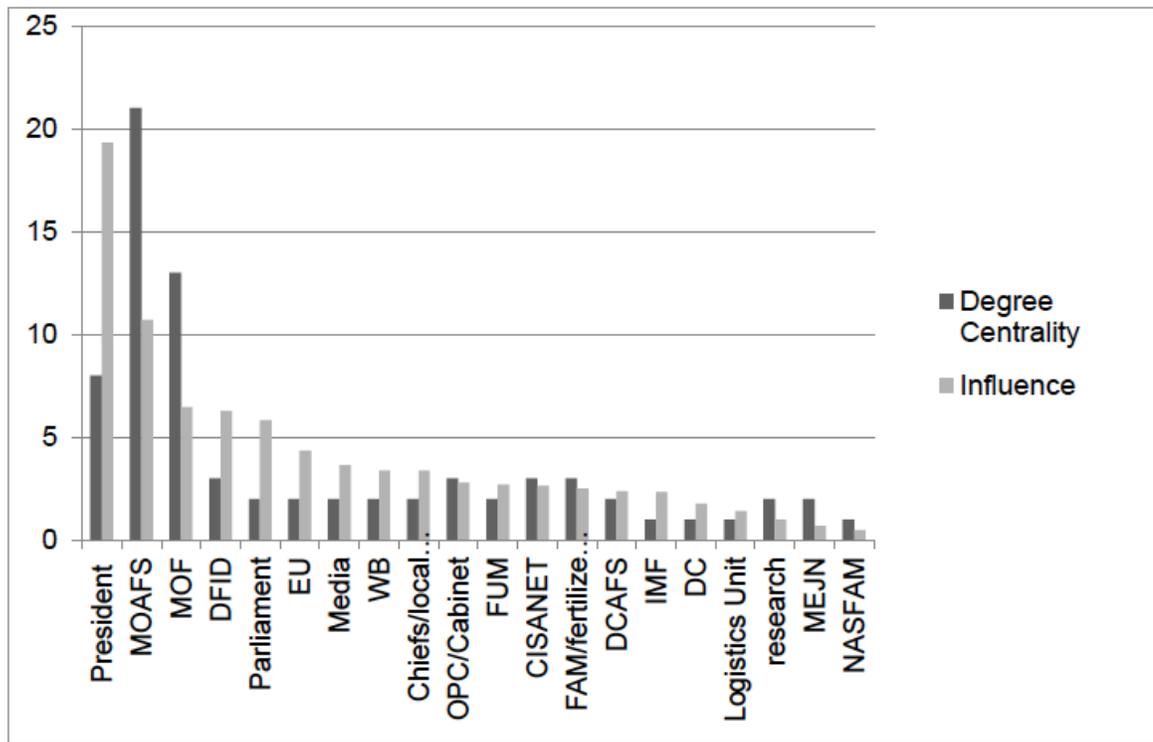


Figure 3.2 Comparison of influence scores and degree of centrality values

Source: Abermann, *et al.* (2012)

3.3 Government role in policy making

Abermann, *et al.*, (2012) government is the most influential player in the policy processes. Understanding government behavior is imperative to understanding public choice in Malawi. However, research on the subject has been limited and there is generally a lack of understanding of the role of government. Nevertheless, theorists identify two explicit roles that the government can play: Self-willed Government (SWG) and Clearing House Government (CHG). The SWG approach assumes that the government has its own objective function and the power to determine policies with the rest of the economic system simply acting as a playground for government to

maximize its welfare. The government is fully autonomous; it neither echoes nor is it responsive to the forces of pluralistic politics. On the other hand, a contrary approach (CHG) makes government lose control not to the economist but to the wider economic system whose agents within a pluralistic political regime play the policy influencing game that determine policy outcome. The lobby groups compete for policy outcomes while government is a de facto playground where competition or conflicts results in some sort of outcome (Bhagwati, 1989).

The common approach in modeling SWG is to the Political Preference Functions (PPF). PPFs assume that policymakers maximize a political preference function in which different interest groups in society have different weights in the function. The fundamental assumption of the PPF approach is that current policies reflect a political economic equilibrium summarizing all the relevant political power among interest groups. Empirical work began in this area with Rausser and Freebairn (1974) who estimated political preference weights under the U.S. beef import quota. Similar studies are Lianos and Rizopoulos (1988) for the Greek cotton sector, and Oehmke and Yao (1990) for the U.S. wheat sector. Multi-country and single-commodity political preference function studies are Sarris and Freebairn (1983) and Paarlberg and Abbott (1986) for the world wheat market. Tyers (1990) applied estimated political weights to the welfare incidence of EC agricultural policy reforms and evaluates their political feasibility.

Theoretical assessments of the political preference function approach have been discussed in the literature (von Cramon, 1992; Bullock, 1994). Bullock provides a

theoretical explanation of the PPF methodology and assumptions. He argues that one can estimate political power with a PPF only if observed policies are Pareto efficient, which may depend on the assumed number of interest groups and policy instruments. To ensure that observed policies are efficient, he shows that PPF studies must choose the number of policy instruments to be exactly one less than the number of interest groups.

3.4 Maize policy reforms in Malawi

3.4.1 Pre independence Period 1910 - 1964

Government intervention in maize marketing and pricing started as early as 1912. Following the wide spread famine, the colonial administration passed The Native Foodstuffs Ordinance Number 12 to empower government to restrict trading in maize. The ordinance was passed ostensibly to protect Africans by preventing peasants from selling their food. In reality, such action compounded the problem as it affected the movement of maize from the unaffected areas (Vaughan, 1982). In 1926 a marketing and price intervention board was instituted but it wasn't involved in marketing until 1938 when the board functions changed and it began to buy produce directly from smallholder farmers (Phiri, 1993).

After the Second World War a Maize Control Board (MCB) was put in place and once again it became illegal to sell, destroy or move maize without the board's approval. Uncertainty over supply was the apparent motive for such legislation (Kettlewell, 1965). The cost of maintaining a countrywide distribution network was so high that the

board fixed a very low buying price while the selling price to domestic consumers was double the market price of the previous year. Growers reacted by withholding maize and consumers became hostile when the quantities of maize available for internal market dropped significantly by 1948 (Phiri, 1993). The operation problems of the board and failure of the rains culminated in the infamous Nyasaland famine of 1949. Government critics such as the Anglican Bishops called for the dissolution of the marketing board. The administration conceded and reopened domestic maize marketing to private enterprises but maintained the board's monopoly over international trade.

The functions of the MCB were transferred to the Produce Marketing Board (PMB) in 1952 to extend state control to other crops such as groundnuts, rice and pulses whose importance in the export market was increasing. Government imposed a ceiling on the quantity of maize; an individual trader could legally deal in (Kandoole *et al.*, 1988). In addition to commodity marketing the PMB was given the mandate to administer the first maize fertilizer subsidy program. The subsidies were put in place to encourage adoption and boost product of maize. In 1956, the PMB merged with the Cotton Marketing Board and African Marketing Board for Agricultural Production (APMB). This coincided with a slump in the commodity prices on the international market. The government reacted by liberalizing the maize market. By 1958, the APMB was confined to purchasing only requirements of the small emergency reserve of about 5000 tons (Kettlewell, 1965). Nevertheless, the board retained the export monopoly.

By 1960, the political push towards independence had gained ground. The Africans gained majority seats in parliament and their leader Kamuzu Banda was appointed the Minister of Agriculture in 1962. The marketing and pricing policies during the transitional period (1961-64) were essentially African controlled because of their majority in government. Nationalistic sentiments called for the liberalization of the agricultural marketing but what followed was africanization of European institutions (Mwakasungula, 1986). In 1962, the APMB was renamed Farmers Marketing Board (FMB). The African leadership called for closer association between the board and farmers. The ordinance allowed cooperatives societies to market crops as agent of the board. In addition, African businessmen with trucks were offered transportation contracts by the board (Ng'on'gola, 1986). Further legislation was passed in 1963 that re-imposed state monopoly on virtual marketing of every smallholder crop, reversing the trend of progressive liberalization initiated by the colonial administration in 1957. The FMB maintained subsidy on fertilizers. By 1962 the subsidy level had increased from K46 to K294/ton in 1960 (Phiri, 1993).

The Minister of Agriculture was empowered to improve regulations affecting every food crop produced and significant quantities for sale and/or consumption by Africans in any district of the country (Ng'ong'ola, 1986). The FMB was given internal marketing monopoly of specific crops. However, the general understanding was that it was the sole buyer of all peasant crops especially since politicians exhorted farmers to sell only to the board (Scarborough, 1990). This confusion was not cleared up by government and farmers remained fearful of the consequences of possible

contravention of the regulations. As such the FMB became de facto monopoly even for those crops that it had not attained legal powers (Phiri, 1993).

3.4.2 Post independence period 1964 -1980

Post-independence Malawi was characterized by an export led growth strategy that promoted production of cash crops in the estate sub sector (Chirwa, 2004). Nevertheless, subsidies and marketing monopoly was maintained in the smallholder sector. Between 1964 and 1970 FMB sold fertilizer at half or less its market value (Phiri, 1993). In 1971 FMB was reconstituted into Agricultural Marketing and Development Corporation (ADMARC). In accordance with the act ADMARC was given responsibility for a) stimulating the production of marketable smallholder produce; b) maintaining an efficient system for supplying agricultural inputs to smallholder farmers; and c) developing the produce marketing system so as to generate increased consumption both locally and abroad.

The corporation in consultation with the Ministry of Agriculture set minimum smallholder producer prices. The prices were pan seasonal and pan territorial implying that they were the same across the country and seasons. ADMARC was not allowed to sell below its purchase price but in principle any losses it realized were to be offset by outlays from the Department of Treasury. In reality no losses were ever covered by government. As a result ADMARC maintained low consumer prices and yet prevented losses by keeping the producer prices low (Kirchner, 1988).

ADMARC was not explicitly mandated to subsidize fertilizer but it continued the subsidies without budget support (Phiri, 1993). Prior to the oil shock in 1973, fertilizer prices in ADMARC outlets were between 80-100% of the actual market price. In 1974 the price doubled and led to a drop in fertilizer usage. This raised concern and the subsidy level was increased to an average of 50 percent in 1975. Up until the 1980s, what the fertilizer subsidies reflected led the government and donors thinking that subsidies encouraged rapid growth of fertilizer use and consequently farm output.

3.4.3 Structural reform Period (1980 – 1994)

In 1980's ADMARC started experiencing financial problems and could not finance the subsidies through tax on smallholder exports alone. As a result from 1981, the treasury met part of the subsidy cost. This changed the donors view on subsidy (Kumwenda and Phiri, 2010). Consequently, the removal of subsidies was part of loan conditions set by the World Bank under the Structural Adjustment Programs (SAP). The removal of fertilizer subsidies was deemed necessary to reduce the budget deficit. The other reform focused on increasing the production of smallholder export crops by increasing producer prices offered by ADMARC while at the same time maize prices were to be held down to reduce the relative price of food crops so as to encourage export crop production (Harrigan, 2003).

Despite removal of fertilizer subsidies being part of The World Bank's thinking in the first Structural Adjustment Loan (SAL I), the issue of fertilizer subsidies was not tackled. It was argued that subsidies were necessary to improve the balance of

payment by encouraging export crop production (Hewitt and Kydd, 1986). In the SAL II government agreed to reduce subsidies in University Education, Housing, Health, and Agricultural Services. A schedule for eliminating fertilizer subsidies was also agreed. In 1982/83 the level was to be reduced by 50%, then 60%, 80% and 100% in the subsequent years entailing a complete removal by 1985/86 season (World Bank, 1983). However, the increasing insurgency in Mozambique disrupted rail transport from Beira Port. Fertilizer shipments to Malawi had to be re-routed to Durban Port in South Africa. This quadrupled the cost of transport from the port to Malawi and additional ad valorem tariffs. These increases in costs were transferred to farmers and the subsidy level was halved from 29% of the total value in 1981 to about 15% in 1982 in keeping with the Fertilizer Subsidy Removal Program (FSRP). By 1984, the government had abandoned the FSRP citing the surging fertilizer prices as a justification for maintaining high subsidy levels.

Under the SAL III in 1985, the issues of subsidies resurfaced, a 22.6% rate was allowed in 1985. It was then reduced to 17% and 12% in 1986 and 1987 respectively. However, the World Bank strategy of increasing production of exportable crops by displacing the main food crop maize proved to be disastrous. By 1987 Malawi faced a food crisis. This took two forms; a decline in maize production per capita particularly improved maize (Sahn *et al.*, 1990) and a collapse in ADMARC's ability to purchase maize. The food crisis put pressure on government and the Life President Hastings Kamuzu Banda as he identified his populist legitimacy with domestic maize availability. A complete reversal of policies followed. Government increased maize

producer prices by 36% (Harrigan, 2003), and announced a 24% subsidy on fertilizer and the indefinite suspension of the FSRP II (Phiri, 1993). At the same time the reforms in the agricultural markets that had gathered pace through the Agriculture (General Purpose) Act monopsony power of ADMARC in smallholder marketing were eliminated. It also specified regulations governing the activities of private firms and these included; market specific annual trader licenses, restrictions on nationality of traders, pan seasonal and pan territorial minimum prices, export licensing system and traders monthly submission of statement of trading (Chirwa, 2001). This was followed by the liberalization of prices for agricultural produce with the exception of maize, cotton and tobacco. In 1990, the marketing of agricultural inputs that was previously by ADMARC was also deregulated.

Following the commitments under the Agricultural Sector Assistance Credit (ASAC), government yet again adopted a process of phasing out the subsidies. The commitments under the ASAC were that the overall subsidy rate on fertilizers was not to exceed 30% in 1990/91, 25% in 1991/92, and 20% in 1992/93, while total subvention as a proportion of total government expenditure was not to exceed 2%, 1.6%, and 1.3% in 1990/91, 1991/92, and 1992/93 seasons respectively (Tchale et al., 2001).

3.4.4 Post reform period 1995 - 2010

In 1994 a new democratic government was elected into office with BakiliMuluzi as president. The new government remained reliant on donors for foreign exchange and

was therefore obliged to continue with the former regime's liberalization reform program, including that in agriculture. In its first few years in office the UDF Government accelerated the agricultural liberalization process. The ban on the export of food crops was lifted and the system of the pan territorial and pan seasonal pricing was abandoned in favor of a price band with a view to maintaining some degree of price stability in the market. A price band is essentially a form of price support program characterized by a floor price and a ceiling price in favor of consumers and producers respectively. In order to implement this program, ADMARC was constrained to operate within the band while other traders were free to use market-determined prices making the former a buyer of last resort. The price band resulted in a dramatic increase in the number of small-scale traders with rapid turnover of stock. The band progressively widened, eventually approaching import/export parity prices. However, Government required ADMARC to continue to provide producer price support at government determined prices; but ADMARC was unable to successfully defend the ceiling price with its available resources. As a result the price band was eliminated in December 2000 (Mataya and Kamchacha, 2005). The government then resorted to fixing maize prices and later minimum farm gate prices. In minimum farm gate prices have declined from K40/kg in 2009 to K25/kg in 2011. The prices are set by the MoAFS after review of the annual costs of production. However, the set prices are rarely followed and the speculative behavior of traders has caused upward shift in maize prices.

On the fertilizer scene, donors insisted that the government push ahead with the removal of the fertilizer subsidies. Although Government's involvement in the input markets was critical to attaining its central policy objective of sustainable food self-sufficiency, donors argued that fertilizer subsidies were not sustainable and did not create a conducive environment for private sector led growth. Amongst the several policy changes in input marketing was the repeal of the "Fertilizer Farm Feeds and Remedies Act" to allow for private sector easy participation in importation and distribution of the farm inputs especially fertilizers; and the complete removal of fertilizer subsidies in 1995. The removal of subsidies coincided with the collapse of Smallholder Credit Administration (SACA) and devaluation of the Kwacha. Consequently, fertilizer prices skyrocketed and input use declined.

The only form of government intervention towards fertilizer usage among farmers at this time was in form of safety net programs. The Drought Recovery Inputs Programs in the 1994/95 season. The program was financed by the Government of Malawi and the donor community. The principle donors were the European Union and British Overseas Development Administration (ODA). ODA channeled their assistance through a British Non-Governmental Organization, Action Aid that had experience in distributing seed after the 1992 drought. Actionaid was a full member of the Drought Recovery Task Force and played a significant role in field level monitoring of program implementation.

The Task Force was convened in September 1994 carrying program designing, monitoring and evaluation. The Task Force was responsible for determining the

beneficiaries of the program. The targeting was based on Famine Early Warning System (FEWS) analysis of the Ministry of Agriculture production statistics at Extension Planning Area (EPA) Level. Within the EPAs, the households selected were those, which had already been targeted by the District Commissioners as worst affected by the drought in 1994. The identified households received ration cards for inputs, which they presented to ADMARC in exchange for hybrid seed and fertilizer. The principle objective of the Drought Recovery Input Program was to contribute to restoring national maize production in 1994/95. Maize production fell to 818, 000 metric tons in 1993/94 due to severe drought which affected the whole of Southern Africa. It was recognized that restoring national maize production would be critically dependent on the increased use of hybrid seed and fertilizer. A total of 783, 000 households received 5kgs of hybrid seed and 50kg of fertilizer under the program (GoM, 1995b).

The Supplementary Input Program (SIP) funded by the ODA and World Bank was jointly implemented by the Government of Malawi, ActionAid, National Seed Company of Malawi (NSCM) and ADMARC. The SIP was aimed at closing the food deficit foreseen for 1996. It involved distributing to all smallholders in 31 drought-affected Extension Planning Areas (EPA) a high productivity input package suitable for 0.2ha. For each, smallholder, this consisted of 5kg of hybrid maize seed and 50kgs of basal dressing fertilizer. In 20 other high potential maize growing EPAs, as an encouragement to use hybrid seed, all smallholders received 5 kg of hybrid seed and were encouraged to purchase fertilizer and hybrid seed. In selected EPAs, District

Commissioners registered eligible smallholders according to Ministry of Agriculture and Irrigation records. Those registered received an inputs card to be exchanged for seed and fertilizer at the specified ADMARC markets. Actionaid and NSCM were contracted to ensure that the needed inputs were delivered to appropriate markets on time.

In all, a total of 726, 444 households out of a total of 1.8 million smallholders were targeted by the program for distribution of 3,500 metric tons of hybrid maize seed, 21 metric tons of sorghum seed and 23, 000 metric tons of fertilizer (GoM, 1999b). An evaluation of the SIP found that the forecast production increase were in general below what would be expected under good management. The report highlighted the fact that there was insufficient attention paid to extension, logistics and pests and recommended that for future SIPs there was need to improve the extension effort, logistics and increasing efforts to control pests (GoM, 1999b). Previous policy focused on intensifying maize production. This policy was undoubtedly unpopular among farmers. Under these circumstances, those who were able to adopt the necessary technologies did so while those who were unable to do so universally expressed a desire for key components of seed and fertilizer. But adoption came at a major cost of distortion to the economy such as input subsidies that Malawi was unable to fund from its own resources (Hardy, 1998). Once these distortions were removed and a largely liberalized economy was in place the use of improved maize seed and fertilizer was no longer affordable to most farmers. The withdrawal of non-humanitarian aid to Malawi in the early 1990's aimed at forcing the then regime to adopt democratic principles,

which compromised the economic stability of the country. Over 600% devaluation of the Kwacha followed between 1994 and 1998 (from about MK4 to the US dollar in 1994 to around MK25 by 1998). This had great impact on input prices, the village level purchase price for fertilizer quadrupling in 1997/98 season producing widespread hardship amongst the poor majority of the population. Compounded by the collapse of the smallholder credit scheme (SACA) the results were tragic. After the 1996/97 season, in spite of the relatively good rains, production fell to 1.2 Million metric tons (Stevens *et al*, 2002), marketed maize fell precipitous, the village level purchase price of maize quadrupled and there was widespread hardship amongst the majority poor section of the population (Hardy, 1998).

The only realistic hope for Malawi to break out of the downward spiral was to restart vigorous economic growth in a non-inflationary environment. The best way was to get hybrid seed and fertilizer into the hands of all Malawi's farmers. Nothing would quell inflation and dispel the current state of gloom and insecurity like a bumper maize harvest shared by all of Malawi's farmers, and delivered to the consumers at lower and reasonably predictable maize prices (Hardy, 1998). The Government of Malawi turned to the recommendation drawn by the Maize Productivity Task Force (MPTF). The MPTF was instituted in 1996 with the aim of investigating: (1) crop response to applied mineral and organic fertilizers, (2) testing of open pollinated varieties (OPV) for adaptation in different agro-ecological zones, and (3) development of an effective and efficient extension delivery system (IFDC, 2005). The MPTF had recommended area specific smallholder fertility management technologies and other strategies that

promised to increase maize productivity among smallholder farmers in Malawi. The proposal for the Starter Pack Program was put forward, MPTF proposed that the target group be the entire smallholder population, because from a national point of view, introducing the improved maize seed and fertilizer technology into all zones and to all smallholders should have a high pay off (Levy, 2005).

From the onset, the starter pack program provoked heated debate among donors and even between individuals within the donor agencies. The disagreements centered on beneficiary dependency, impact on private sector agricultural input supply and cost effectiveness. There was also a consensus that if starter pack went ahead it should not become politicized. This meant ensuring accountability, transparency and avoidance of political partnership in beneficiary selection and distribution of packs. In 1998 the Starter Pack Program (SP) was introduced as a response to insufficient maize production and food insecurity. The concept was that every farm family received a suitable pack for their area containing the appropriate cereal seed, legume seed and fertilizer to plant 0.1 hectares of land. The objectives were threefold; i) to assist fill the food gap ii) To promote crop diversification and iii) To promote the concept of soil fertility improvement. The universal SP program of 1998-99 and 1999-2000 provided free packs containing 15kgs of fertilizer, 2kgs of improved maize seed and 1kg of legume seed for 2.8million rural households (Levy, 2003).

Fertilizer was supplied from the Smallholder Farmer Fertilizer Revolving Fund of Malawi (SFFRFM). Agriculture Development and Marketing Corporation (ADMARC) and Farmers World were engaged when stocks of 23:21:0 + 4s were in

short supply at SFFRFM. The two organizations imported or blended 23:21:0 + 4s for the project and received other types of fertilizer from SFFRFM in payment. This entails that the capacity existed in the private sector to facilitate the implementation of the program but the design did not aim at promoting the private fertilizer suppliers. However, given that the tool kits contained fertilizer enough for only 0.1hectares, demand for commercial fertilizer still existed (GoM, 1999c).

In the SP program years maize production rose to 2.5million tons from 1.8million tons produced in 1997/98 (Stevens *et al*, 2002). However, for purposes of sustainability and as a gradual exit strategy the program was scaled down to a targeted program (Chinsinga, 2007). The program concept was also changed under donor pressure from its 'Best Bets' productivity focus to become a targeted safety net package distributing lower productivity but recyclable open pollinated variety (OPV) maize seed rather than high yielding non recyclable MH17 and MH18 hybrid seed. The idea was to provide farmers with varieties that allowed seed recycling for a number of seasons without major reduction in yield. The program was renamed Target Input Program (TIP) to reflect the changes. In 2000-01 the coverage was reduced from 2.86 million in the previous year to 1.5 million with only the poorest of the poor being targeted. Based on a pilot voucher scheme instituted in the 1999-00 SP program in Mzimba, Luchenza, Mponela, a voucher scheme was introduced. Identified beneficiaries were issued with vouchers, which were used to procure inputs from traders.

The contribution of the TIP to household and national maize production was much less than that of the universal SP, and the poverty targeting was unsuccessful (Levy and

Barahona, 2002). In TIP's initial year (2000-01) maize production fell to pre-starter pack harvest levels of 1.7million metric tons (Stevens *et al*, 2002). In 2002-03 and 2004-05 growing seasons Malawi was faced with severe hunger incidences. The persistence of food shortages despite the TIP interventions quickly provided the platform to question the wisdom of continuing on this path of support to the agricultural sector particularly on the part of Department for International Development (Chinsinga, 2007).

During the electoral campaign leading to 2004 a strong national consensus on the need to change the strategy from free input distribution to subsidies was evident. Two broad positions on fertilizer subsidy could be distinguished during this campaign. The ruling United Democratic Front (UDF) and its coalition partners advocated for a universal fertilizer subsidy for maize producers only. They promised to reduce the price of fertilizer from MK3000 to MK1500 per 50kg bag. The opposition block led by the Malawi Congress Party (MCP) advocated for a universal fertilizer subsidy program for both maize and tobacco producers (Chirwa, *et al.*, 2006).

After the May 2004 elections there was uncertainty about whether or not the government would implement a universal subsidy program in 2004/2005 growing season. The government delayed its decision and finally resorted to implementing an Expanded TIP. This had two serious consequences first; it made it extremely difficult for the private sector to make orders for fertilizer on a timely basis (Chinsinga, 2007). This in turn led to scarcity of fertilizer on the market even for those farmers who could afford to buy at the prevailing market prices. Secondly, the Expanded Target Input

Program (ETIP) inputs arrived very late due to the time it takes to get fertilizer into the country from overseas supplies. The distribution of ETIP inputs was delayed and in most cases done when the maize had already passed the critical stage for the application of basal fertilizer (Chimphonda and Dzoole-Mwale, 2005). This coupled with severe drought during the 2004/2005 growing season culminated in severe hunger crisis affecting about 4 million Malawians. The food deficit was estimated within the region of 700,000- 1,000,000 tones out of the 2.1 million metric tons of the annual food requirements.

The 2004/05 hunger also prompted the Parliamentary Committee on Agriculture and Natural Resources (PCANR) into action. Members of PCANR carried out a study that critically reviewed the food security situation, possible interventions and the status as well as the prospects of agriculture in the country. The recommendation of PCANR, dominated by the MCP, was that the country should introduce and implement a universal subsidy for maize and tobacco. The justification on tobacco and maize was that it was going to address the market and productive sides of the food security equation respectively. The PCANR presented its findings to the President with whom they discussed various options and scenarios but on the overall stressed on universal subsidy for maize and tobacco as key solution. PCANR's proposal was that price of maize and tobacco fertilizers should be between MK700 and MK900 per 50kg bag (Chiphonda and Dzoole- Mwale, 2005). However the president's immediate response to PCANR's diagnosis avoided any reference to the subsidy issue. The main thrust of

his response was that the solution to Malawi's predicament lies in massive investment in irrigation, which past governments had grossly neglected.

Most of the donors had pulled out of the TIP before DFID announced its withdrawal from the program in 2005. DFID pulled out mainly because the timeframe for program support had expired but also to some extent due to personnel changes. Besides, program appraisals revealed that the TIP was not the best way of offering support to the agricultural sector. Households targeted under TIP were the poorest of the poor who could not make use of the productive inputs. In most cases they ended up selling the input packs they received from the program (Levy, 2005)

Coming out of a poor harvest in 2004/05 growing season, in 2005/06 the Government of Malawi then re-introduced fertilizer subsidy with a view of promoting access to and use of fertilizer in both maize and tobacco production in order to increase agricultural productivity and food security. In 2005/06 growing season the government subsidized 147,000 tons of fertilizer, with 55,000 tons each of 23:21:0 and urea for maize; and 22,000 tons and 15,000 tons of compound D and CAN, respectively, for tobacco. The initiative was implemented with modifications in 2006/07 growing season, involving 150,000 metric tons of maize fertilizer (this included 75,000 metric tons each of NPK and Urea). Additional 10,000 tons each of D Compound and CAN were subsidized for tobacco. The government also subsidized 6,000 tons of hybrid and open pollinated varieties (OPV) maize seeds. In the 2007/08 growing season the program was also implemented, subsidizing a total of 150,000 tons of fertilizer for maize production (75,000 tons each of NPK and Urea). The program also subsidized 10,000 tons each of

D Compound and CAN fertilizers for tobacco alongside 8,000 tons of maize seeds. The government also subsidized cottonseeds and pesticides and 1,000 tons of flexible coupons.

For various reasons stated already and coupled with mounting pressure from the opposition parties taking advantage of his lack of significant parliamentary support, the president announced the introduction of fertilizer subsidy program in June 2005 during the budget session of parliament (GoM, 2005). He indicated and emphasized that the subsidy would be targeted at resource constrained but productive maize farmers. This objective of the program was to provide fertilizer not as safety net but to people who have the resources to use productively but would otherwise have difficulty in obtaining it. The President ruled out a universal subsidy program as advocated by the PCANR. He argued that Malawi cannot afford to implement such a program.

Table 3.1 FISP expenditure and maize output growth 2005-2012

Year	FISP expenditure			Investment			
	FISP expenditure	(2005 = 100)	Annual growth	Output	Output growth	Output value	output ratio
2005/06	12,942,842,409.00	12942842409		2611486		57,113,198,820.00	0.226617361
2006/07	12,807,000,000.00	11,243,651,039.36	-0.131284251	3226418	0.235472065	70,561,761,660.00	0.181500571
2007/08	17,700,000,000.00	14,393,486,276.12	0.280143454	2800061	-0.132145618	61,237,334,070.00	0.289039362
2008/09	33,319,947,700.00	24,920,910,393.56	0.731401963	3767408	0.345473545	82,393,212,960.00	0.404401607
2009/10	23,558,049,998.94	16,253,990,006.22	-0.347777037	3419409	-0.092370935	74,782,474,830.00	0.315021
2010/11	22,162,702,262.76	14,237,205,175.27	-0.124079369	3193344	-0.066112302	69,838,433,280.00	0.317342489
2011/12	21,220,985,436.92	12,664,959,739.11	-0.110432168	2905992	-0.089984668	63,554,045,040.00	0.33390456

Source: Calculated based on Agricultural Production Estimates and Actual Expenditure Statements from MoAFS

3.5 Explaining public policy choices

In early years, economists used policy analysis to understand the process of policy formulation and the direction that agricultural policies will take. They found out that using policy analysis alone, the direction of agricultural policies could not be identified. This led to political economy studies for agricultural policies. Swinnen and Van Der Zee (1993) highlighted the interaction between economic and political markets, Political preferences, the influence of lobbying groups, voters and politicians as the political models influencing the environment within which agricultural policies are made.

The main issues that led to studies on political economies and their application to agricultural policies is to understand why rich industrialized countries subsidize their producers while poor developing countries tax them. Bastelaer (1998) stated that although agricultural producers in industrialized countries represent a small proportion of the labor force, they have high political influence while farmers in the developing countries, despite constituting a majority of the labor force, struggle for influence over public policies that affect their returns. According to Swinnen & Van Der Zee (1993), this policy switch, from taxing farmers to assisting them, in course of development is a result of decreased free rider problems associated with collective action of farmers.

The first studies on political economy models were conducted by Downs in 1957. These adopted the traditional view of political economy, emanating from Pigou (1932) that looks at government as being fully exogenous to the economic system. Like an

omniscient, benevolent dictator, the government tries to maximize "social welfare" by correcting market failure and ensuring allocative efficiency in the economy. If the occurrence of less than optimal policy outcomes is detected, this can be explained by a lack of specific knowledge or poor management (Swinnen and van der Zee, 1993).

As a reaction to the obvious shortcomings of the Pigovian approach, the 'new political economy approach' emerged, where in the behavior of politicians, bureaucrats, pressure groups and voters is clearly motivated by self-interest. These rationally behaving agents try to maximize an objective function similar to agents in economic markets. However, since the political system cannot create wealth per se, the links between the economic and the political system are an important feature in ensuring optimal behavior of the agents in both systems.

One line of research, focusing on the interaction between politicians and voters, emanates from Downs (1957). Recent research in this tradition in the field of agricultural economics has been done by de Gorter and Tsur (1991), de Gorter and Swinnen (1993a, 1993b, 1993c) and Swinnen (1994). Politicians seeking support provide policy interventions to meet the demands of voters supplying support. The support which politicians receive depends solely on how their actions affect the economic welfare of individuals in the favored group.

A different approach, based on Peltzman (1976) and Becker (1983), focusses on the behavior of and interaction between interest groups and government. Important contributions focusing on agricultural applications have been made by Rausser and

Freebairn (1974), and Gardner (1983). According to Bhagwati (1989), one can identify two analytical viewpoints within this approach: the *self-willed government* formulation which assumes that the government chooses policy instruments in order to maximize its own political support (Rausser and Freebairn, 1974; Sarris and Freebairn, 1983; Riethmueller and Roe, 1986; Lopez, 1989; Ohmke and Yao, 1990; Foster and Rausser, 1993; von Cramon-Taubadel, 1992; Bullock, 1994a); and the *clearinghouse government approach* which assumes the government reacts to intervention of interest groups in a way that maximizes the expected value of its re-election prospects (Becker, 1983, 1985; Gardner 1987a, 1987b; Carter *et al.* 1990, Miller, 1991; Bullock 1992, 1994b). Swinnen *et al.*, (2011) summarized the existing theories explaining public choices as follows imperfect information, efficient redistribution and transaction costs.

3.5.1 Imperfect information

The *imperfect information* approach focuses on how differences in access to information amongst various interest groups and politicians affects their preference for certain policies. Because voters are assumed not to be or poorly informed about the effect of policy, politicians have an incentive to select less efficient policy instruments instead of more efficient (and more transparent) ones (Tullock, 1983; Olson, 1982). This approach includes the “obfuscation” explanation which argues that governments use policies which obfuscate the costs of the policies to those hurt by the policies or which obfuscate the transfer itself (Magee *et al.*, 1989; Hillman and Ursprung, 1988;

Ray, 1981; Trebilcock *et al.*, 1982). Politicians will try to obfuscate the transfer to hide the influence of interest groups and voters in order to keep their reputation clean (Coate and Morris, 1995) or to protect international relations (MacLaren, 1991).

The policy obfuscation theory depends crucially on the assumption of rationally ignorant Downsian voters (Swinnen and van der Zee, 1993). With increasing voter sophistication, parties must disguise their redistributive activities more effectively. The better-informed voters are, the more indirect policies, such as non-tariff barriers, (which are assumed to be more obfuscated) will arise, because they increase voter support for protectionist politicians. But simultaneously the equilibrium level of distortions will rise: the voter information paradox (Magee *et al.*, 1989). Kono (2006) argues that electoral competition reinforces obfuscation effects as some policies are easier to explain to voters. The obfuscation argument is often used to explain the persistence of agricultural price supports and tariffs in OECD countries, and to explain why non-budget methods of redistribution (such as tariffs) are politically superior to production subsidies and direct income payments (Lindbeck, 1985).

3.5.2 Efficient redistribution

The obfuscation argument is refuted by among others Becker (1976; 1983). He argues that competition among pressure groups favors ‘efficient’ instruments of redistribution, i.e. instruments that minimize deadweight costs per unit of transfer. ‘Seemingly inefficient instruments’ will turn out to be efficient if all costs and benefits are taken into account. Models following this logic are sometimes referred to as the

efficient redistribution approach. They are part of a larger class of models focusing on political competition as a key factor determining the choice of policies with rational agents having perfect information. Regarding instrument choice, models in which government policy choice is determined by politicians maximizing political support will yield results very similar to those where pressure groups lobby play the central role.

Competition in the political market place, whether between interest groups, or between political parties, or both induce governments to choose policy instruments that minimize market distortions (Wittmann, 1989; Besley *et al.*, 2010). A reason why inefficient policies may still be chosen by rational governments in a perfect information world is when they are used as *compensation* instruments in a larger political economy framework. Compensation through redistributive policies may be required to reduce opposition from those hurt by policies, which increase aggregate welfare. This argument fits into the logic of models studying joint policy analysis of public goods and redistributive policies (Rausser, 1992; Swinnen and de Gorter, 2002).

For example, Foster and Rausser (1993) show why governments may prefer price support over lump-sum transfers as price support allows discrimination between heterogeneous producers. As a consequence, the total transfers with price support, including deadweight costs, may be less than with lump-sum transfers to satisfy a political need to compensate a minimum blocking coalition from vetoing efficiency enhancing government policies. In this respect, price distorting compensation schemes are the cheapest way of making an efficiency enhancing government policy politically

acceptable. The Foster and Rausser (1993) argument is related to more recent theories of inefficient redistribution, based on contractual problems, such as those proposed by Acemoglu and Robinson (2001) and Acemoglu (2003), where inefficient policies and institutions are chosen because they serve the interests of politicians or social groups holding political power. Here the emphasis is on the commitment problems inherent in politics: parties holding political power cannot make commitments to bind their future actions because there is no outside agency with the coercive capacity to enforce such arrangements.

3.5.3 Transaction costs

Another set of studies focus on *transaction costs*. They typically argue that correct policy analyses should explicitly account for costs involved in the implementation, administration and enforcement of the policies (Coase, 1960, 1989; North, 1990). Coase (1989) refers to economic analyses that exclude transaction and administration costs as “blackboard economics” which has relevance only in the classroom but not in the real world. Taking into account real world transaction costs and constraints may change the evaluation of the relative efficiency of certain instruments (Dixit, 1996). Interestingly, the existence of transaction costs has been used both to defend and to disapprove the use of certain policies. Coase (1989) concludes that by ignoring transaction costs most studies underestimate the costs of government policy and that existing policies are even more inefficient than usually argued. In contrast, Munk (1989; 1994) argues that including transaction costs in the analysis leads to the conclusion that existing agricultural policies are more efficient than often claimed

since the transaction costs are low compared to other policies (like lump-sum transfers). Similarly, Vatn (2002) argues that the traditional argument in agricultural economics preferring decoupled and better targeted policies over price support policy, based on dead weight costs arguments, may no longer be correct when transaction costs are taken into account. A related argument is made by Mitchell and Moro (2006), who argue that compensation through distortive policies, such as tariffs, may be more effective if one does not know *ex ante* the amount of transfer needed – as these information costs induce rent-seeking.

A problem with the transaction costs approach to public policy is the limited empirical measures. Indeed, the size of transaction costs of different policies is only rarely measured (North, 1990; OECD, 2007; Rørstad *et al.*, 2007). Although these reasons are understandable to some extent, they can hardly be used as an excuse for ignoring these costs in policy analysis, in particular since there is substantial *ad hoc* evidence that they do affect policy decisions in reality. Therefore, a relevant analysis of instrument choice should include transaction costs. At the same time however, since data on transaction costs are very limited, we will need to make some assumptions in the empirical application on how to capture transaction costs.

Apart from the political economy theories used to explain policy choices world over, debate on the politics and policy in sub Saharan Africa has recently been dominated by two broad explanations about how policy processes could be understood. The two focus on neopatrimonialism and neo liberalism.

3.5.4 Neopatrimonialism

Zolberg (1969) was the first to apply the concept of neopatrimonialism to contemporary societies. Since then it has been widely applied by scholars to Africa, Asia and Europe (von Soest, Bechle and Korte, 2011). Neopatrimonialism refers to a system of governance where the formal rational-legal state apparatus co-exists and is supplanted by an informal patrimonial system of governance (Weber, 1980). Patrimonialism is defined as a social and political order where the patrons secure the loyalty and support of the clients by bestowing benefits to them from own or state resources. Patrons are typically office-holders who use public funds or their power to build a personal following. Social practice as a result is fundamentally different compared to the impersonal formal rules, which are supposed to guide official action (von Soest, Bechle and Korte, 2011).

Neopatrimonialism gives rise to a 'hybrid' state where real decision-making power about state functions, such as resource distribution, lies outside of the formal institutions. Instead, powerful politicians and their cronies who are linked by informal, personal and clientelist networks that exist outside of the state structure make decisions about resources. A neopatrimonial regime makes the government a transfer pump: the government collects resources and distributes them to its supporters. While such transfers may be a feature of many political systems, in functioning democracies the transfers are more impartial and based on the needs of the public at large. On the other hand, in neopatrimonial systems the transfers only benefit particular groups who are connected to the politicians through patronage networks, at the cost of the rest of

the constituents. The basic structure of neopatrimonial regimes consists of three sectors - the 'ins', the 'outs' and the government. The government derives its support by providing patronage to the 'ins' (clients, cronies, etc.) and funds this by taxing the 'outs'. Resource distribution in neopatrimonial systems is always motivated by the patron's incentive to ensure incumbency. However, the specific resources and distributive mechanisms of patronage networks vary by the cultural, economic and political institutions found in particular countries. Distribution of resources or benefits might be primarily motivated by personal relationships or ethnic/tribal loyalties. In such cases distribution can take the form of personal favors such as, appointing relatives or people from the ruler's ethnic / tribal group to important government posts.

Neopatrimonialism proponents don't go without criticism. Numerous recent publications have criticized the loose application of the concept of neopatrimonialism (von Soest, Bechle and Korte, 2011; Pitcher, *et al.*, 2009; de Grassi, 2008; and Therkildsen, 2005). Although the concept has been used in so many different ways its analytical utility remains questionable. Furthermore, its use is not supported with empirical evidence showing how it works and affects policies (Pitcher *et al.*, 2009). Only a few studies have used neopatrimonialism as an analytical concept for systematic comparison (von Soest, Bechle & Korte, 2011). This study provides new insights about neopatrimonialism by empirically testing how it affects agricultural protection.

3.5.5 Neoliberalism

The second approach postulates that the observed policies in Africa are a result of the implementation of the neoliberal reforms, which created room for expansive influence of western aid agencies in African policy making (Chinsinga, 2011). According to this line of argument, African countries have pursued too much neo-liberal reforms premised on an idealized model of how markets work. This resulted in the deindustrialization of the existing manufacturing industry and the neglect of increasing agriculture productivity. It did not lead to the spontaneous building of new productive capabilities. Furthermore, international financial institutions and western aid agencies expanded their influence over policies in African countries, resulting in fragmented authority over policy making and implementation and a state elite preoccupied with implementation of donor driven agenda (Whitfield and Therkildsen, 2011).

Malawi, which ranks 164 out of 177 on the Human Development Index relies considerably on foreign aid, which represents 11% of GDP, 30% of the national budget and 60% of the national development (capital) budget (GoM, 2011b). This makes donor agencies, especially the international financial institutions, have huge influence on the nature of policies adopted. This influence was direct during the structural adjustment programs but has since been replaced by an approach that focuses more on country ownership (Wolfensohn and Bourguignon, 2004).

Despite economic growth and development strategies being crafted by in country experts, international organizations such as International Monetary Fund (IMF) and

bilateral donors still wield strong influence by using budgetary support to put pressure on government to reform policies. For instance in 2010/2011, fiscal year all major donors to Malawi withdrew Common Approach to Budgetary Support (CABS) to force government to reform its exchange rate and other macroeconomic policies.

The two approaches don't go without criticism. Numerous recent publications have criticized the loose application of the concept of neopatrimonialism (von Soest, Bechle and Korte, 2011; Pitcher, *et al.*, 2009; de Grassi, 2008; and Therkildsen, 2005). Although the concept has been used in so many different ways its analytical utility remains questionable. Furthermore, its use is not supported with empirical evidence showing how it works and affects policies (Pitcher *et al.*, 2009). On the other hand, the anti-neoliberal theorists argue that the neoliberalism framework overlooks the importance of domestic politics in shaping the incentives facing state elites as well as how foreign aid relations and domestic policies interact (Chinsinga, 2011). Alternate explanations to domestic policies that exist over time include role unintended consequences.

Explaining agricultural policy choices based on the notion that government actions are purely out of self-interest would be incomplete as there is evidence suggesting that government sometimes engage in reform to correct policy failures or unintended consequences. Governments have political and social objectives such as food self-sufficiency, low food prices for consumers, fair prices for producers, as well as macroeconomic objectives such as low inflation and foreign exchange earnings

(Krueger, Schiff and Valdes, 1991). Policies put in place to achieve these goals do not always yield intended consequences (Birner and Resnick, 2010).

For instance, in the early years of the SAPs in Malawi, maize prices were deliberately kept low to encourage allocation of land to cash crops amongst smallholders. However, the strategy of increasing production of exportable crops by displacing the main food crop proved to be disastrous. By 1987, Malawi faced a food crisis. This took two forms; a decline in maize production per capita particularly improved maize (Sahn, *et al.*, 1990) and a collapse in ADMARC ability to purchase maize. A complete reversal of policies followed.

3.6 Past research on producer support and political economy

Despite numerous policy reforms in Malawi's agricultural sector, empirical studies producer support levels have been scanty and poorly documented. There is a general lack of understanding of what are the motivating factors behind these reforms and how they affected producer incentives. This lack of understanding has often hampered efforts to improve policy performance as research falls short of explaining how policy interventions will impact current production incentives. Furthermore, the lack of understanding on inherent political and economic interactions that affect the willingness to redistribute income within the economy result in policy advice that lacks political appeal and that is rarely adopted by policy makers (Politicians).

One of the common approaches to examining political economies involves the use of econometric methods to test the applicability of theories to observed policies across and within countries. Some of these studies that used this approach include:

Duttand Devashish (2008) examined the political-economy drivers of the variation in agricultural protection, both across countries and within countries over time. The study found that both the political ideology of the government and the degree of inequality are important determinants of agricultural protection. Thus, both the political-support-function approach as well as the median-voter approach can be used in explaining the variation in agricultural protection across countries and within countries over time. The results were consistent with the predictions of a model that assumes that labor is specialized and sector-specific in nature. Some aspects of protection also seem to be consistent with predictions of a lobbying model in that agricultural protection is negatively related to agricultural employment and positively related to agricultural productivity. Public finance aspects of protection also seem to be empirically important.

Olper, (2001) tested the effects of three alternative measures of democracy and two composite indices of the quality of institutions that protect and enforce property rights. He observed that democracy affect protection positively but it was not the level of democracy per se that mattered but quality of institutions that protect and enforce property rights.

Swinnen *et al.*, (2001) used 100 years of annual data on 11 agricultural commodities from Belgium to measure the impact of structural changes coinciding with economic development and changes in political institutions on agricultural protection. The analysis shows that changes in agricultural protection are caused by a combination of factors. Governments have increased protection and support to farmers when world market prices for their commodities fell, and vice versa, offsetting market effects on producer incomes. Other economic determinants were the share of the commodities in total consumer expenditures (negative effect) and in total output of the economy (positive effect). With Belgium a small economy, there was no impact of the trade position.

Changes in political institutions have affected agricultural protection. Democratic reforms, which induced a significant shift in the political balance towards agricultural interests, such as the introduction of the one-man-one-vote system, led to an increase in agricultural protection. The integration of Belgian agricultural policies in the Common Agricultural Policy in 1968 coincided with an increase in protection, *ceteris paribus*. Both institutional factors, related to changes in access to and information about the decision-making at the EU level, and structural changes in the agricultural and food economy may explain this effect.

Giuliano and Scalise (2009) studied the determinants of agricultural market reforms in developing countries. What prompted the governments in these countries to abruptly begin deregulating their agricultural markets in the late 1980's? The study constructed dataset on agricultural market regulations in 88 developing countries from 1960 to 2003. An econometric analysis was then carried out to determine how political

economic and institutional variables affected reform. The results suggest that the sudden and strong decline in the international price of agricultural commodities played a crucial role in destabilizing the financial equilibrium of marketing boards. In addition, changes in the rural representation in the political arena and government ideology also played significant roles in breaking up the status quo.

Masters and Garcia, (2009) used data Nominal Rate of Protection (NRA) data from 68 countries from 1955 through 2007 for 72 products to test stylized facts and political economy explanations of agricultural policy. The results supported *rational ignorance* effects as smaller per-capita costs (benefits) were associated with higher (lower) proportional NRAs, particularly in urban areas. Results also supported *rent-seeking* motives for trade policy, as countries with fewer checks and balances on the exercise of political power have smaller distortions, and support was also found for *time-consistency* effects, as perennials attract greater taxation than annuals. Partial support was also evident for *status-quo bias* as observed NRAs are higher after world prices have fallen but there is no correlation between policies and lagged changes in crop area.

Basteliar (1998) used the interest group approach to study the role of political agendas. He found evidence that, regardless of the degree of economic development, the level of political pressure wielded by interest groups in food markets, and hence the level of protection they receive, is an inverse function of the relative size of their constituencies. The results recommended the application of collective action concepts

to the understanding of agricultural policies in countries, which are at different stages of development of their constituencies.

3.7 Conclusions: Research Gap and Contribution of this study

Agriculture has the potential to be the lead sector in economic development and poverty reduction in Malawi and the rest of sub-Saharan Africa. However, despite heavy investment in the past four decades growth has remained sluggish and opportunities and potentials that the sector has have been missed. This is bound to continue unless policies change and resources are used more effectively. Transforming the policy landscape to be effective is a complex task that requires an adequate understanding of the effect of existing policies, what has shaped them over time and how government which is the most influential actor in the policy processes is influenced by non economic motives. Research is supposed to provide such information to the relevant stakeholders. However, the review carried out in this chapter has identified some key research questions that are yet to be answered

- The aggregate effect of policies on the agriculture sector has not been analyzed. As such policy appraisals have relied on partial equilibrium analysis that does not present a full picture of the incentive faced by domestic producers. This affects the effectiveness of designed programs.
- Empirical evidence on the applicability of the political economy theories to Malawi has not been studied.
- Neopatrimonialism and neoliberalism have been touted as the probable explanation

behind sluggish growth in sub Saharan Africa. But empirical evidence is lacking on how these concepts affects incentives to farm production.

- A very important role of government was exposed by Abermann, *et al.*, (2012) in the policy network study but it's still not clear on how government decisions are made. What political preferences are in play and how these preferences change as the economic variables change?

This research is therefore conceptually designed to help reduce these knowledge gaps.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

In order to achieve the central objective of the study, which is to analyze the impact of policies and what has shaped policies over time. The approach was first to understand the impact of policies in the maize sector by using the producer support estimate (PSE). The PSE is used as a proxy of incentives that are created by policy. Then we endeavor to explain the variation in protection levels using a political economy framework. An econometric test of applicability of political economy hypothesis A mathematical model of government behavior was constructed to determine how government willingness to redistribute income to various interest groups. The political preference function analysis which assumes that a group's voting behavior is related to its economic well-being and that policy-makers are primarily concerned with attaining and/or maintaining power was used to derive the political weights of consumers and producers. The political weights represent the willingness of government to redistribute income in favor of a particular group. These weights were then regressed on economic variable to derive a model that predicts government's behavior given prevailing macro-economic conditions.

This chapter presents a description of the analytical methods used by first outlining the theoretical model and then a presentation of how it has been applied in this study. The

latter involves a narrative on the variables included in the model, data sources, why they have been included in the model and expected results.

4.2 Analysis of impact of Policy Distortions

4.2.1 Producer Support Estimates

PSEs capture the overall effects of different types of governmental programs and interventions in a single number. This method more suitable compared to other measures such as nominal or effective rates of protection, since these often account for only a small proportion of the transfers between the government and the producers of agricultural commodities (Chitiga, *et al.*, 2008). The unavailability of consistent time series data meant that indicators such as the Nominal Rate of Assistance (NRA) could not be estimated. The PSE is an indicator of the value of the transfers from the domestic consumers and taxpayers to producers resulting from a given set of policies, at a point in time. Thus the PSEs are aggregate measures of total monetary measures of the assistance to output and inputs on a commodity-by-commodity basis, associated with agricultural policies.

PSEs can be expressed in three ways: (i) as the total value of transfers to the commodity produced (TPSE); (ii) as the total value of transfers per unit of the commodity produced (UPSE) and (iii) as the total value of transfers as a percentage of the total value of production including transfers (PPSE). The calculation of PSEs acknowledges the fact that policies which deliver assistance to producers do so by

transferring income from either consumers or taxpayers. The value of production can be measured at domestic prices or at world prices.

In algebraic form, where the level of production is Q_p , the domestic market is P_d , the world price is P_w , direct payments are D , levies on producers are L and all other budgetary-financed support is B the PSE expressions are:

$$TPSE = Q_p \times (P_d - P_w) + D - L + B \quad (1)$$

$$UPSE = \frac{TPSE}{Q_p} \quad (2)$$

$$PPSE = \frac{TPSE}{Q_p \times P_d} \times \frac{100}{1} \quad (3)$$

The TPSE is essentially comprised of two main components: Market Price Support (MPS) component and Budgetary Transfer component. The MPS measures the monetary value of transfers from consumers to producers arising from policy measures that create a gap between domestic and border prices. On the other hand the budgetary transfers component represents the various budgetary payment made directly to producers (Kirsten *et al.*, 2000). Detailed components of the PSE are presented below:

Producer Support Estimate (Sum A to H)

- A. Market Price Support
- B. Payment based on output
- C. Payment based on area planted
- D. Payment based on historical entitlements
- E. Payment based on input use
 - 1. Based on use of a variable input
 - 2. Based on use of on farm services
 - 3. Based on use of fixed inputs
- F. Payment based on input constraints
 - I. Based on constraint on variable input
 - II. Based on constraints on fixed inputs
 - III. Based on constraints on a set of inputs
- G. Payment based on overall farming income
- H. Miscellaneous payments

However in the maize sector in Malawi, the only form of payments made to producers in the period under review (1970-2010) were based on variable inputs (seed and fertilizer). All other forms of payments that are part of the PSE calculation were zero. As such the estimates derived in this study are a summation of the market price support and payment based on variable input use.

4.3 Supply response to PSE

Maize is the staple food crop for over 90% of the population (Ragnar, *et al.*, 2003) as such production decisions especially amongst the poor farm families are not driven entirely by economic motives. As such assuming that farmers respond to some form of support e.g. PSE would be questionable in absence of empirical evidence. The study therefore examined the long run and short run relationship between national output and PSE. A number of econometric methodologies are available for testing production/supply responses to some variables of interest. These include single equation Ordinary Least Squares (OLS) regression, Vector Error Correction model (VECM) and Auto Regressive Distributed Lag Models (ARDL). The OLS is considered inadequate in studying causality or cointegration relationships. The VECM require the underlying time series to have the same order of integration. Economic theory indicates that a set of variables is cointegrated if there is a linear combination among them without stochastic trend. In this case, a long run relationship exists amongst the variables. However, inference is only valid if the requirement of the same order of integration has been met otherwise the results are spurious.

The ARDL model or bounds testing approach was used in the analysis based on 3 key strengths; 1) it allows a mixture of different integration orders i.e. I(1) and I(0) variables as regressors, that is the order of integration does not need to be the same as is the case with VECM, 2) Easy to estimate because once the lag order has been identified, OLS is used, and 3) the technique is appropriate for small or finite sample size (Pesaran *et al.*, 2001).

Following Pesaran *et al.*, (2001) we constructed the VAR of order p denoted as $VAR(p)$ for the following output equation:

$$z_t = \mu + \sum_{i=1}^p \beta_i z_{t-i} + \varepsilon_t \quad (4)$$

where z_t is the vector of both x_t and y_t , where y_t is the dependent variable defined as maize output and $x_t = [pse]$ is the vector matrix which represents a set of explanatory variables. There is one explanatory in this model Producer Subsidy Equivalent (PSE). $\mu = [\mu_y, \mu_x]$, t is the time or trend variable, β_i is a matrix of VAR parameters for lag i . According to Pesaran *et al.*, (2001), y_t must be $I(1)$ variable but the regressor x_t can either be $I(0)$ or $I(1)$. We further developed a vector error correction model (VECM) as follows;

$$\Delta z_t = \mu + \alpha t + \lambda z_{t-1} + \sum_{i=1}^{p-1} \gamma_i \Delta y_{t-i} + \sum_{i=0}^{p-1} \gamma_i \Delta x_{t-i} + \varepsilon_t \quad (5)$$

where Δ is the first difference operator. We then partitioned the long-run multiplier matrix λ as:

$$\lambda = \begin{bmatrix} \lambda_{yy} & \lambda_{yx} \\ \lambda_{xy} & \lambda_{xx} \end{bmatrix} \quad (6)$$

The diagonal elements of the matrix are unrestricted, so the selected series can either be $I(0)$ or $I(1)$. If $\lambda_{yy} = 0$, then y is $I(1)$. In contrast if $\lambda_{yy} < 0$, then y is $I(0)$. The VECM procedures described above are important in the testing of at most one cointegration vector between the dependent variable y_t and a set of regressors x_t .

derive our preferred model, we followed the assumptions made by Pesaran *et al.*, (2001) in Case III that is, unrestricted intercepts and no trends. After imposing the restrictions $\lambda_{xy} = 0$, $\mu \neq 0$ and $\alpha = 0$, the exported-led growth function can be stated as the following unrestricted error correction models (UECM):

$$\Delta prod_t = \beta_0 + \beta_1 prod_{t-1} + \beta_2 X_{t-1} + \sum_{i=1}^p \beta_3 prod_{t-i} + \sum_{i=0}^q \beta_4 X_{t-i} + u_t \quad (7)$$

where Δ is the first-difference operator, u_t is a white-noise disturbance term and all variables are expressed in natural logarithms. Equation (7) can be viewed as an ARDL of order (p,q). It indicates that production tends to be influenced and explained by its past values, so it involves other disturbances or shocks. Therefore, equation 7 was modified in order to capture and absorb certain economic shocks. Two dummy variables were introduced; *drain* that assumed the value of one in a drought year and zero otherwise; *dvar* that assumed a value of one in the period after the release of high yielding flint varieties and zero otherwise. These have been included in equation (8):

$$\Delta prod_t = \beta_0 + \beta_1 prod_{t-1} + \beta_2 X_{t-1} + \delta drain_t + \phi dvar_t + \sum_{i=1}^p \beta_3 prod_{t-i} + \sum_{i=0}^q \beta_4 X_{t-i} + u_t \quad (8)$$

The structural lags are determined using Akaike's Information Criterion (AIC). The first step in the ARDL bounds testing approach is to estimate equation (8) by ordinary least squares (OLS) in order to test for the existence of a long-run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables. Two asymptotic critical values bounds provide a test for cointegration when the independent variables are I(d) (where 0_d_1): a lower value assuming the regressors are I(0), and an upper value assuming purely I(1) regressors. If

the F-statistic is above the upper critical value, the null hypothesis of no long-run relationship can be rejected irrespective of the orders of integration for the time series. Conversely, if the test statistic falls below the lower critical value the null hypothesis cannot be rejected. Finally, if the statistic falls between the lower and upper critical values, the result is inconclusive. The approximate critical values for the F-test were obtained from Pesaran and Pesaran, 1997).

From the estimation of UECM, the long run elasticities are the coefficients of one lagged explanatory variable (multiplied by a negative sign) divided by the coefficient of the one lagged dependent variable (Bardsen, 1989). The short run effects are captured by the coefficients of the first differenced variables in (8).

4.3.1 Determinants of Producer Support Levels

A regression model was fitted to assess how UPSE is affected by changes in the political economy. The data used in this analysis had a time element as it is made up of 41 annual observations from 1970 – 2010. The use of Ordinary Least Squares (OLS) regression on such data was considered in appropriate because of two main reasons. First, time series data often displays autocorrelation or serial correlation of the disturbance across periods (Greene, 2008). This results in inefficient estimates and inference based on least squares is spurious. Secondly, time series processes are sometimes non-stationary. If a time series is stationary, its mean, variance and auto covariance (at various lags) remain the same no matter at what point we measure them;

that is, they are time invariant (Gujarat, 2004). Non-stationary data violates the assumptions of classical regression.

In order to counter these shortfalls inherent in OLS regression we adopted the Newey – West regression. This is an extension of the Huber/White/sandwich robust variance estimator that produces consistent estimates in the presence of heteroskedasticity. The Newey – West (1987) variance estimator produces consistent estimates when there is autocorrelation in addition to possible heteroskedasticity. The coefficient estimates are derived as those in OLS regression.

$$\hat{\beta}_{OLS} = (X'X)^{-1}X'y \quad (9)$$

That is the coefficients are simply those of OLS regression. For no autocorrelation, the variance estimates are calculated using the white formulation:

$$X'\hat{\Omega}X = X'\hat{\Omega}_0X = \frac{n}{n-k} \sum_i \hat{e}_i^2 x_i'x_i \quad (10)$$

In this case $\hat{e}_i = y_i - x_i\hat{\beta}_{OLS}$, where x_i is the i th row of the X matrix, n is the number of observations and k is the number of predictors in the model, including constant if there is one. If autocorrelation exists up to lag (m), $m > 0$, the variance estimates are calculated using the Newey – West (1987) formulation

$$X'\hat{\Omega}X = X'\hat{\Omega}_0X + \frac{n}{n-k} \sum_{l=1}^m \left(1 - \frac{1}{m+1}\right) \sum_{t=l+1}^n \hat{e}_t \hat{e}_{t-1} (x_t'x_{t-l} + x_{t-l}'x_t) \quad (11)$$

Where x_l is the row of the X matrix observed at time l .

Traditional welfare analysis has attempted to explain the causes of government intervention as a corrective measure aimed at addressing market failures by looking at government as an exogenous entity. This kind of analysis has often fallen short of describing the observed policies as it is widely recognized that government intervention is not positively related to incidence of market failures (Kwon, 1989). Policies are a result of interaction between politics and economics rather than a necessity to correct market failures. In order to answer the questions of why and how the public policy evolves in a way that exhibits certain regularities beyond the horizons of traditional welfare analysis much literature focused on the integration of the political and economic markets and the endogeneity of government policy (Anderson and Hayami, 1986). This new approach is what was termed “political economy”. Using a political economy framework a number of competing hypothesis and tested;

Social accountability: Pareto-inefficient policy choices will persist as long as government officials can avoid accountability (Masters & Garcia, 2009). Social accountability was measured using *checks and balances* available in the World Bank Political Institution Database created by Keefer (2010). *We hypothesize that the level of producer support (PSE) would be positively related to the degree of check and balances*

International donor pressure: Giuliano and Scalise, (2009) highlighted the role that international donor pressure plays in shaping policies most especially in developing countries. Following the poor economic performance of Malawi in the late 1970s, International Monetary Fund (IMF)/World Bank loan were obtained to maintain economic stability. Reforms such as liberalization of markets were preconditions to accessing these loans. Donor pressure was measured by a dummy variable that assumed a value of 1 in the period of Structural Adjustment Programs (SAPs) and zero otherwise. Since liberalization is aimed at introducing competition in the market, *a positive relationship between donor pressure and PSE was envisaged.*

Electoral competition: Elections are an important input process of the final policy outcome (Cox, 1990; Myerson, 1993). Electoral periods in Malawi are characterized by policy swings. For instance, Tobacco and maize fertilizers started off at K1450 and K950 per 50kgs respectively in 2005. They were harmonized in the subsequent year at K900; reduced to K800 before being slashed to K500 in the lead up to 2009 general elections without any plausible economic reasoning (Chinsinga, 2010). Since farmers constitute a majority of the populace, *the value of producer protection (PSE) is expected to increase in the lead up to elections.*

Politician voter interaction: The Downsian Politician Voter Interaction Model (Downs, 1957) offers alternate explanation for observed agricultural policies. The theory does not concentrate on either lobbying power or social by aspects (de Gorter&Swinnen, 1994). It is based on the behavior of a self-interested and fully informed voters and politicians. A key feature of the Politician Voter Interaction Model is that an

exogenous change in the relative income per capita between groups will induce politicians to partially compensate a group experiencing a relative reduction in their income. Income ratio measured as the ratio of per capita income in agricultural sector to those in other sectors of the economy was included in the model. *A negative relationship between PSE and this variable is anticipated*

Food sufficiency motives: Food self-sufficiency has been a prime objective of the Government of Malawi from as early as 1950 (Phiri, 1993). It has always been cheaper for Malawi to produce its own maize than import (Mataya& Kamchacha, 2005) and importation of food worsens the import bill that is already hard to satisfy without balance of payment support from international and bilateral donors. Self-sufficiency using a ratio of domestic production to consumption i.e. production divided by consumption. *An inverse relationship with PSE is anticipated as the government is expected to transfer more resources to producers when output falls and reduce it otherwise.*

In addition to these international hypotheses used to explain policy choices, neopatrimonialism has gained recognition as one of the key explanations as to why governments in sub Saharan Africa have pursued policies that have failed to achieve significant growth(Whitfield and Therkildsen2011). The basic thrust of neopatrimonialism is that politics both caused Africa's economic stagnation and prohibited the state from adopting economic reforms and developing developmental institutions. It is argued that the government essentially functions as a transfer pump of resources by political leaders to their respective clients in return for support (van de

Walle, 2005). A review of agricultural policy or policies in Malawi quickly exposes elements of neopatrimonialism in the three regimes, Banda (1964-1994), Muluzi (1994-2004) and Mutharika (2004-2012) that ruled Malawi during the post-independence period from 1964 to 2010.

The policies pursued by Kamuzu Banda Malawi's first native president fostered a creation of the elite class of farmers *Achikumbwe* (Cammack and Kelsall 2010). The *Achikumbwe* consolidated customary land, leased it and joined the estate subsector. Government through its grain marketing board, Agricultural Development and Marketing Cooperation (ADMARC) taxed smallholder farmers through its pricing policies and used the income to promote estate farming (Mhone 1992). Eventually the elite class constituted Banda's patronage that included parliamentarians, key government officials and certain members of the then ruling Malawi Congress Party (Cammack and Kelsall 2010).

The change to multiparty democracy in the early 1990s culminated into the election of Muluzi a self-acclaimed democrat but maintained patronage politics. In fact more than anything else what really changed was the form not the practice. Coming in at a time when Structural Adjustment Programs (SAPs) were in full swing Muluzi, quickly abolished the elitist policies pursued by Banda and opened up the production of high value crops to smallholder farmers that were initially restricted through the Special Crops Act (Kumwenda and Phiri 2010). However, a two track political economic programme was observed in Malawi under his tenure (1994-2004). The first programme was grounded in formal policy documents and aimed at achieving poverty reduction goals outlined in the country's medium term strategy Malawi Poverty

Reduction Strategy (MPRS). The second followed a different path – a client-oriented political logic that aimed at keeping the regime in power after 1999 and 2004 general elections (Cammack and Kelsall 2010).

Corruption in the civil service, which was minimal during the Banda era (Anders 2006), was in its dominant form during Muluzi era. Misappropriation around procurement was the main source of illicit funding. Corruption or *Katangale* in local language was fueled by the decline in civil service salaries. The World Bank (1994) estimated the government salaries in 1992 were equivalent to half of those in 1982 measured at constant prices. The election of Bingu Mutharika a self-styled technocrat helped the country achieve high levels of economic growth and maize self-sufficiency largely due to the implementation of the Farm Input Subsidy Program (FISP) that provided fertilizer and seed to smallholder farmers at reduced prices (MoDPC, 2011). The evaluation of FSIP also points to the existence of a neopatrimonialism. The way procurement and transportation contracts were awarded provided evidence of rent seeking activities (Holden and Tostensen 2011). Since its launch in 2005, the program expenditures have exceeded the initial budget by between 41-105 percent (Dorward and Chirwa 2011). The over-expenditures could be attributed to the fluctuations in the prices of fertilizer but this explanation is not sufficient (Chinsinga, 2011). World Bank (2011), estimates that the cost could have been inflated by as much as 50% due to favoring of certain contractors rather than applying competitive pricing. The favored contractors played a key role in bankrolling the May 2009 electoral campaign for Democratic Progressive Party (DPP) as a governing party.

It is therefore, reasonable at this point to assume that neopatrimonialism is at play in

the country's agricultural policy-making arena. Bratton and Van de Walle (1997) identified three dimensions that can be used to estimate the degree of neopatrimonialism in a state and its development over time. These are: concentration of power; systematic clientelism; and corruption. The power concentration index (PCI) measures the extent to which a political leader (such as the president) dominates the political setting. The PCI is the ratio of the average tenure of the president to that of cabinet ministers. It is assumed that a longer tenure of the president relative to that of ministers represents a high informal concentration of power.

Systematic clientelism refers to appointment of individuals in key government positions in exchange for personal loyalty and support. This practice can be observed through analyzing the size and the structure of a country's cabinet, a body that often acts as a focal point for awarding personal favors to the political elite (Von Soest 2007). The tendency of cabinets to grow is mirrored by an increase in the size of other national bodies. Thus, in addition to studying the growth of the cabinet, the size of the whole public administration and of state-owned enterprises can be analyzed (Van de Walle 2005). However, historical data on the size of entire civil service is not available in Malawi; hence only cabinet size is used to measure systematic clientelism.

Finally, corruption refers to the use of a public office for private gain. For this study we use the "control of corruption" indicator from the World Bank's Worldwide Governance Index (WGI) (Kaufmann *et al.* 2009).

4.4 Neopatrimonialism and agricultural protection

We attempt to explain how neopatrimonialism affects agricultural policy by analyzing its effects on three agricultural protection indicators; Producer Support Estimate (PSE), Nominal Rate of Protection (NRP) and Budgetary Transfers. PSEs capture the overall effects of different types of governmental programs and interventions in a single number. Negative PSE implies that funds are being transferred from producers to other sectors of the economy while a positive PSE means vice versa. On the other hand, NRP measure protection created by trade policies. It measures the proportional difference between domestic and border prices of a commodity. A negative/positive NRP means domestic price are less than/more than the boarder prices. Budget transfers are direct outlays to producer from government through support to output and input market participation.

Data used in this analysis had a time element as it is made up of 41 annual observations from 1970–2010. The use of Ordinary Least Squares (OLS) regression on such data is considered inappropriate because of two main reasons. First, time series data often displays autocorrelation or serial correlation of the disturbance across periods (Greene, 2008). This results in inefficient estimates and inference based on least squares is spurious. Secondly, time series processes are sometimes non-stationary. If a time series is stationary, its mean, variance and auto covariance (at various lags) remain the same no matter at what point we measure them; that is, they are time invariant (Gujarat, 2004). Non-stationary data violates the assumptions of classical regression.

In order to counter these shortfalls that are inherent in OLS regression we adopted the Newey –West regression and Prais Winsten regression. The Newey – West (1987) variance estimator produces consistent estimates when there is autocorrelation in addition to possible heteroskedasticity.

4.5 Analysis of government role in policy processes

4.5.1 Measuring political power of interest groups in influencing policy

The political preference function (PPF) approach was used to estimate the influence of consumers and producers. The PPF approach is based on the assumptions that a group's voting behavior is related to its economic well being and that policy-makers are primarily concerned with attaining and/or maintaining power. It acknowledges the influence of political agents and groups in the policy process by the assumption that an abstract policy maker maximizes a weighted objective function subject to economic constraints (Swinnen and van der Zee, 1993). There are three general approaches to obtaining weights of a PPF; the direct approach by interviewing policy makers, the indirect revealed preference approach, and the arbitrary approach.

The direct alternative involves interviewing central decision makers. Target respondents are individuals and groups who seem likely to significantly influence the final outcome of the policy bargaining process, and the objectives and preference functions of these individuals and groups. There are at least two major problems confronting the interview approach. First, there is some doubt about whether political decision makers are prepared or even able to articulate their preferences in detail. In

part, successful bargaining places a premium on not revealing one's true preferences. Furthermore, preferences may be imperfect and change in response to new information obtained during the bargaining process. Second, the interview procedure is costly and it may be difficult to obtain access to central decision makers.

The indirect alternative that uses policy preference functions to infer weights from decisions that have been made in the recent past. These procedures treat as given the mathematical form and arguments of the preference function and a known econometric model describing the economic sector of interest, and it is assumed the policy maker is rational and consistent preference function maximization. In the arbitrary approach, a researcher chooses weights according to own belief.

In this study we adopt the indirect approach and assumption that policy makers adopt the following PPF

$$\text{Max. } PPF = PS(a_i) * \omega_p + CS(a_i) * \omega_c + B(a_i) * \omega_g \quad (12)$$

Where PS, CS and B denote producer surplus, consumer surplus, and Government budget, respectively, for each commodity examined. The term w_e , and w_k are the political weights of respective producer groups and the aggregate consumer, respectively. Substituting formulas for PS, CS and B in (1) yields

$$MaxPPF = w_p \int_{pw}^{pp} S(P) dP - w_c \int_{pw}^{cp} D(P) dP + w_g \{CP * D(CP) - PP * S(PP)\} \quad (13)$$

Where PP and CP are consumer and producer price for maize and are policy variables that must be decided each year. Then the optimal pricing policy can be obtained by differentiating the PPF with respect to the prices.

$$\frac{\partial PPF}{\partial PP} = S(PP)(w_p - w_g) - S(PP) * w_g(PP - PW) = 0 \quad (14)$$

$$\frac{\partial PPF}{\partial CP} = D(CP)(w_g - w_c) + D(CP) * w_g(CP - PW) = 0 \quad (15)$$

In addition, we have additional normalization equations such the $w_e + w_k + w_{ag} = 3$ and we set the $w_{ag} = 1$ because our interest is to compare the influence of consumers and producers. Once we have established functional forms for the political weights, we can derive the formulas for describing endogenous domestic maize prices for producers and consumers. Arranging the above first order conditions (14) and (15), we derive equations for endogenous price determination and subsequently formulas for optimal price wedges from which political weights can be calculated.

$$\gamma = \frac{PP-PW}{PP} = \{(w_p - w_g)/w_g\} * (1/\epsilon) \quad (16)$$

$$\infty = \frac{CP-PW}{PP} = \{(w_c - w_g)/w_g\} * (1/\rho) \quad (17)$$

Prior knowledge of price elasticity of demand (ρ) and supply (ϵ) and the setting of government weight to equal one ($w_g = 1$) makes the political weight of producers and consumers the only unknown parameters in equation (5) and (6) respectively. The weights can then be easily estimated using data from the period under consideration. Elasticities used in this study were obtained from previous empirical work. Kumwenda (1991) estimated the supply response of maize using the Nerlove partial adjustment framework and reported a price elasticity of supply (ϵ) of 0.1. Ecker and Qaim (2008) used the Quadratic Almost Ideal Demand System to estimate the income and price elasticities of food demand and nutrient consumption in Malawi. A price elasticity of demand (ρ) of -0.487 reported in this study. After calculation of the weights, we test the hypothesis that $w_c = w_p = 1$ and that $w_c \neq w_p$.

4.5.2 Econometric model: Effects of macroeconomic variables on relative influence of consumers to producers in determining policy outcomes

4.5.2.1 Theoretical model

An ARIMA model is then fitted to the data to determine factors that affect the relative influence of the interest groups. The ARIMA model developed by Box and Jenkins (1976) has become popular due to its advantages of power and flexibility.

$$X_t - \sum_{i=1}^p \phi_i X_{t-i} = a_t - \sum_{j=1}^q \vartheta_j a_{t-j} \quad (18)$$

Where ϕ and θ are model parameters; p and q are the orders of the Auto Regressive (AR) and Moving Average (MA) processes respectively. If the B operator such as $X_{t-1} = BX_t$ is introduced, the general form of an ARMA model can be written as:

$$\phi(B).X_t = \theta(B).a_t \quad (19)$$

Estimation of this model requires some conditions to be verified: the series must be stationary that is the Autocorrelation Function (ACF) and Partial Autocorrelation Function (PACF) must be time independent. Variance non-stationarity can be removed if the series is transformed with the logarithmic function. Mean non-stationarity can be removed using the operator $\nabla = 1 - B$ applied d times in order to make the series stationary. Such transformations lead to an ARIMA (AR integrated MA) model:

$$\nabla^d \phi(B).X_t = \theta(B).a_t \quad (20)$$

The above model is a univariate ARIMA model because it contains only one variable, depending on its past values. Starting from a univariate ARIMA model, some explanatory (or independent) variables can be inserted. In this case, the dependent variable X_t depends on lagged values of the independent variables. The lag length may sometimes be known a priori, but usually it is unknown and in some cases it is assumed to be infinite. Generally, for one dependent variable and one explanatory variable the model has the form:

$$X_t = \alpha + \beta_0 y_t + \beta_1 y_{t-1} + \dots + \beta_p y_{t-p} + e_t \quad (21)$$

where P is the lag length. Such model is called finite distributed lag model, because the lagged effect of a change in the independent variable is distributed into a finite number of time periods. To compute P, these sequential hypotheses can be set up:

$$H_0^i : P = M - i \rightarrow \beta_{M-i+1} = 0 \quad (22)$$

where M is an upper bound. The null hypotheses are tested sequentially beginning from the first one. The testing sequence ends when one of the null hypotheses of the sequence is rejected for the first time. To assess the i-th null hypothesis the test can be written as:

$$\lambda_i = \frac{SSE_{M-i} - SSE_{M-i+1}}{\hat{\sigma}_{M-i+1}^2} \quad (23)$$

where SSE(.) is the sum of the square errors for a tested lag length. λ_i is F distributed with 1 and (N-M+ i-3) degrees of freedom if $H_0^1, H_0^2, \dots, H_0^i$ are true, N being the sample size of the dependent variable. The lag length being computed, the explanatory variable can be inserted in the univariate model to derive the so-called multivariate ARIMAX model. In the general case of more than one explanatory variable, the model is written as:

$$\nabla^d \Phi(B). X_t = \vartheta(B)_t \cdot a_t + \sum_{j=1}^k \sum_{i=0}^{p_j} \beta_{t-j}^{(j)} y_{t-i}^{(j)} \quad (24)$$

Where: $y_{t-i}^{(j)}$ is the jth independent variable at time (t-i) and $\beta_{t-j}^{(j)}$ is the corresponding parameter.

4.5.2.2 *Choice of variables in the model*

The dependent variable is ratio of consumer weight to the producer weight expressed mathematically as

$$W = w_p/w_c \quad (25)$$

Where W is the ratio, w_c is the consumer weight and w_p is the producer weight. The weight ratio (W) can be interpreted as the relative influence or power of the consumers to producers (Ochmeke& Yao, 1990). We test the hypothesis that relative influence of the interest groups is affected by changes in real prices of maize, self-sufficiency ratio and income ratio.

The real price (RP) is the average consumer price of maize deflated by the food price index. We envisage a positive relationship between RP and the dependent variable because governments are concerned guaranteeing less expensive food for the politically volatile urban populations in Africa (Maxwell, 1999).

Food or maize sufficiency has been a central objective for the Malawi government since pre independence (Kumwenda and Phiri, 2010). We measured self sufficiency (SSR) as a ratio of domestic production to domestic consumption and postulate a negative relationship with W . if the SSR declines government is expected to implement policies that favor producers to boost production.

Majority of Malawians (>80%) are employed in the agribusiness sector (NSO, 2005).

Declining incomes in the agricultural sector mean a reduction in welfare of the

population. We calculated an income per capita ratio (IR) of agriculture to other sectors. A negative relationship with W is hypothesized as we expect the government to intervene when the income disparities worsen.

CHAPTER FIVE

PRODUCER SUPPORT AND SUPPLY RESPONSE IN MALAWI'S MAIZE SECTOR: AN INVESTIGATION USING BOUNDS TEST

5.1 Introduction

Chimangandimoyo (maize is life) is a famous saying that underlines the importance of maize as the main staple food for Malawians (Smale, 1995). For the past 100 years Malawi government has implemented a number of policies aimed at boosting production and consumption of maize but the outcomes have been disappointing. Following the wide spread famine in 1912, the colonial administration passed The Native Foodstuffs Ordinance Number 12 to empower government to restrict trading in maize, the main staple food. The ordinance was passed ostensibly to protect Africans by preventing peasants from selling their food. In reality, such action compounded the problem as it affected the movement of maize from the unaffected areas (Vaughan, 1982). In 1926 a marketing and price intervention board was instituted but it wasn't involved in marketing until 1938 when the board functions changed and it began to buy produce directly from smallholder farmers (Phiri, 1993). However, the Second World War (1939-1945) disrupted the operations of the board.

After the Second World War a Maize Control Board (MCB) was put in place and once again it became illegal to sell, destroy or move maize without the board's approval.

Uncertainty over supply was the apparent motive for such legislation (Kettlewell, 1965). The cost of maintaining a countrywide distribution network was so high that the board fixed a very low buying price while the selling price to domestic consumers was double the market price of the previous year. Growers reacted by withholding maize and consumers became hostile when the quantities of maize available for internal market dropped significantly by 1948. The operation problems of the board and erratic rainfall culminated in the infamous Nyasaland famine of 1949. Under pressure from the Anglican bishops and others, the colonial government responded by dissolving the marketing board and introducing the first fertilizer subsidies in 1952 (Phiri, 1993).

At independence in 1964 Malawi adopted an economic growth policy that focused on promotion of commercial agriculture for exports and creation of an import substituting industry. The peasantry was to provide stable living standards for those people not yet in wage employment or self employed in the estate sector (Kydd, 1982). As such the country avoided the anti-agricultural bias seen in much of sub Saharan Africa but there was a severe bias within the agricultural sector (Harrigan, 2003). The bias took three main forms; transfer of land from the smallholder to estates, ban on production of high value cash crops in the smallholder sector and Agricultural Marketing and Development Corporation (ADMARC) monopsony powers over smallholder produce. ADMARC was used as a transfer pump siphoning resources from smallholder sector by offering low producer prices and using the profits to promote the estate sub sector and invest in the other sectors of the economy. Over time ADMARC had made investment in twenty firms in that provided insurance, financial, banking,

transportation, shipping and agro processing (Malindi, *et al.*, 2003).

These anti-peasant policies achieved substantial economic growth; during 1964-77 the gross domestic product grew at an average of 5.5% per annum while the estate sector and smallholder sector grew by 17% (Harrigan, 2003). In contrast, the real value of output from peasants grew by 1.2% per annum from 1965-1982. The higher population growth rates of about 2.9% in the same period meant that per capita output actually declined in by 1.3%. Food production registered sluggish growth at 0.5% per annum. In fact maize output in 1980/81 was about the same as that in 1968/69 (Kydd, 1982) and annual per capita consumption declined from 177kg to 166kg. Consequently, by 1980 malnutrition and poverty were rampant and the country was slipping into recession caused by a series of exogenous shocks that include; the civil war in Mozambique that disrupted the external trade routes, drought in 1979/80 season, and 35% decline in terms of trade (Harrigan, 2003).

In 1981 Malawi adopted the World Bank/International Monetary Fund, Structural Adjustment Programs (SAP) to address structural weaknesses and adjust the economy to attain sustainable growth and poverty reduction. The programs were implemented from 1981-1995. Many reforms were focused on the agricultural sector and included the removal of producer subsidies, price decontrol, and market liberalization. However, the SAPs brought little change, agricultural incomes remained low with over 67 % of households in the rural areas earning below the poverty threshold and 64% of children under the age of five were malnourished. It had now become apparent that improving maize production would require a policy change.

The government turned to the recommendations of the Maize Productivity Task Force and implemented an input kit distribution program, initially universal – Starter Pack Program (1998-1999) and a variant that targeted vulnerable households – Target Input Program (2000-2004). Despite the success associated with the program in its earlier years, the contribution of the TIP to household and national maize production was much less than that of the universal SP, and the poverty targeting was unsuccessful (Levy and Barahona, 2002). In TIP's initial year (2000-01) maize production fell to pre-starter pack harvest levels of 1.7million metric tons (Stevens *et al*, 2002). In 2002-03 and 2004-05 growing seasons Malawi was faced with severe hunger incidences. The persistence of food shortages despite the TIP interventions quickly provided the platform to question the wisdom of continuing on this path of support to the agricultural sector particularly on the part of Department for International Development (Chinsinga, 2007).

During the electoral campaign leading to 2004 a strong national consensus on the need to change the strategy from free input distribution to subsidies was evident. In 2005/06 season Malawi started implementing the Farm Input Subsidy Program (FISP). By 2010 maize production per capita has since risen by 120% from 107kg per capita in 2005 to and 236kg in 2010. However, the heavy cost burden of the FISP, taking up to over 70% of the agricultural budget in 2009/10 (Dorward *et al.*, 2010), has crowded out provision of research, extension and other agricultural development activities. Furthermore, per capita maize consumption remains low at 133kg in 2009, poverty

level did not decline during the FISP period at 57% (NSO, 2011) and malnutrition amongst under-five children is remains high at 48% .

Unless policies change and resources are used more effectively, it is projected that the prevalence of poverty and the number of undernourished people will continue to rise. This requires an understanding of the true nature of incentives and disincentives that producers face as a prerequisite to identifying the role that improved policies and investment can play. Government intervention in the agricultural markets usually involves transferring of resources to small-scale farmers through distribution of free or subsidized inputs. However, creating incentives to boost production is more complex than mere provision of inputs. It is reasonable to expect that marketing, trade and exchange rate policies even if specifically directed to other sectors of the economy can exert an important influence on agricultural incentives and performance. In this chapter we analyze the protection/support to maize farmers using the Producer Support Estimate (PSE) that is calculated based on OECD (2000) methodology. The chapter concluded by detailing the performance of the sector.

5.2 Trends in Producer support

This section presents the producer support estimates in the maize sector in Malawi (1970 - 2010). It begins by discussing the two main components of PSE: market price support and budgetary transfers. The components are then aggregated to into a single figure, the PSE, which summarizes the interaction amongst various policies and how they affect government support to farm production.

5.2.1 Market price support

Market price support (MPS) is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures creating a gap between domestic market prices and border prices of maize. The MPS estimates are presented in figure 5.1. The negative values of the MPS entail that farmers are being taxed by the policies that keep the domestic producer prices at levels lower than the border price.

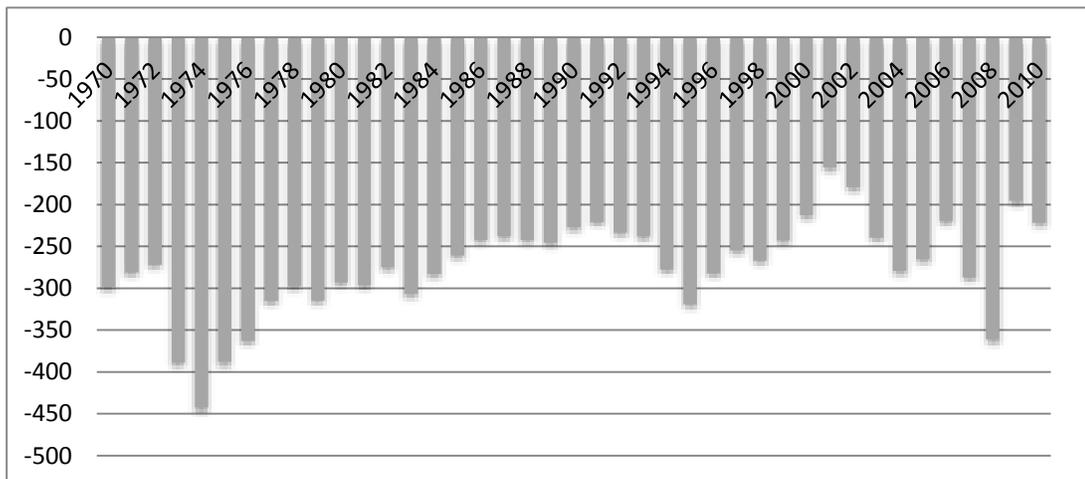


Figure 5.1 Market price support for farmers per ton

Maize is a strategic crop in Malawi. As a result government has always maintained control to ensure that it remains affordable to the urban consumers. Before market liberalization in 1987, ADMARC was the sole buyer of smallholder produce. The corporation in consultation with the Ministry of Agriculture set minimum smallholder producer prices. The prices were pan seasonal and pan territorial implying that they were the same across the country and seasons. ADMARC was not allowed to sell

below its purchase price but in principle any losses it realized were to be offset by outlays from the Department of Treasury. In reality no losses were ever covered by government. As a result ADMARC maintained low consumer prices and yet prevented losses by keeping the producer prices low (Kircher *et al*, 1985). This created a wedge between the domestic prices and the import parity prices ranging between \$272 to \$442/ton from 1970-1980.

In 1981 Malawi started implementing SAPs. One area of focus for these programs was to increase the production of smallholder export crops by increasing producer prices offered by ADMARC while at the same time maize prices were to be held down to reduce the relative price of food crops so as to encourage transfer of land to export crop production (Harrigan, 2003). Consequently, producer prices did not adjust towards the border price. By 1987 Malawi faced a food crisis. This took two forms; a decline in maize production per capita particularly improved maize (Sahn *et al.*, 1990) and a collapse in ADMARC's ability to purchase maize. The food crisis put pressure on government and the Life President Hasting Kamuzu Banda as he identified his populist legitimacy with domestic maize availability. A complete reversal of policies followed. Government increased maize producer prices by 36% (Harrigan, 2003). This reduced the wedge to \$237/ha.

The post liberalization era has seen a decline in ADMARCs market share and consequently its ability to influence market prices. Government price control mechanisms such as the price band (1995-2000), government set prices (2000-2004) and minimum producer prices (2005 to present) have not been adhered to. This

resulted in a declining price reaching a record low in 2001 (\$155). However, government has maintained some form of control by regulating the supply on the local market through export bans in times of shortages and food imports. In 2008, government announced a state monopoly and monopsony in maize marketing. Licenses for all traders except ADMARC were revoked. The producer price was fixed at K45000/ton. This increased the price wedge to \$-360/ton.

5.2.2 Budgetary transfers to producers

The most common form of government intervention in the maize production system in Malawi relates to payments that reduce the on-farm cost of variable inputs. Fertilizer and maize seed programs have been implemented in Malawi since 1952 (Phiri, 1993). They are either implemented as subsidies or safety net programs aimed at addressing vulnerable households. Table 3 presents a summary of input programs implemented in Malawi from 1970-2010. The main aim of these programs has been to improve productivity of smallholder maize farms so as to achieve food sufficiency.

Table 5.1 Main maize input programs implemented in Malawi

Year	Program	Description
1970-1995	Agricultural Input Subsidy Program	Subsidized seed and fertilizer for smallholder farmers
1995-1997	Supplementary Program	Input kit distribution to vulnerable households
1998-99	Starter Pack Program	Universal distribution of fertilizer and seed
2000-04	Targeted Input Program	Targeted fertilizer and seed distribution
2005	Extended Target Input Program	Expanded Targeted fertilizer and seed distribution
2006-2010	Farm Input Subsidy program	Targeted voucher based Maize seed and Fertilizer subsidies

The value payments for variable input use have been increasing (figure 6.2). The effects of the Fertilizer Subsidy Removal Programs implemented in the 1980s are visible. By 1986 the subsidy per hectare had declined by 50% from \$6.6 in 1980 to \$3.3 in 1986. However, following the food crisis in 1987 the fertilizer subsidy level was increased to 24% and the Fertilizer Subsidy Removal Program was suspended indefinitely. This represented a high subsidy level of \$8.5/ha. The removal program was revived in the early 1990s under the Agricultural Sector Assistance Credit (ASAC). This coincided with a change in government in 1994. The newly elected, Muluzi administration was so keen to win back donor confidence and swiftly moved to

implement reforms that included massive devaluation of the kwacha and complete removal of subsidies.

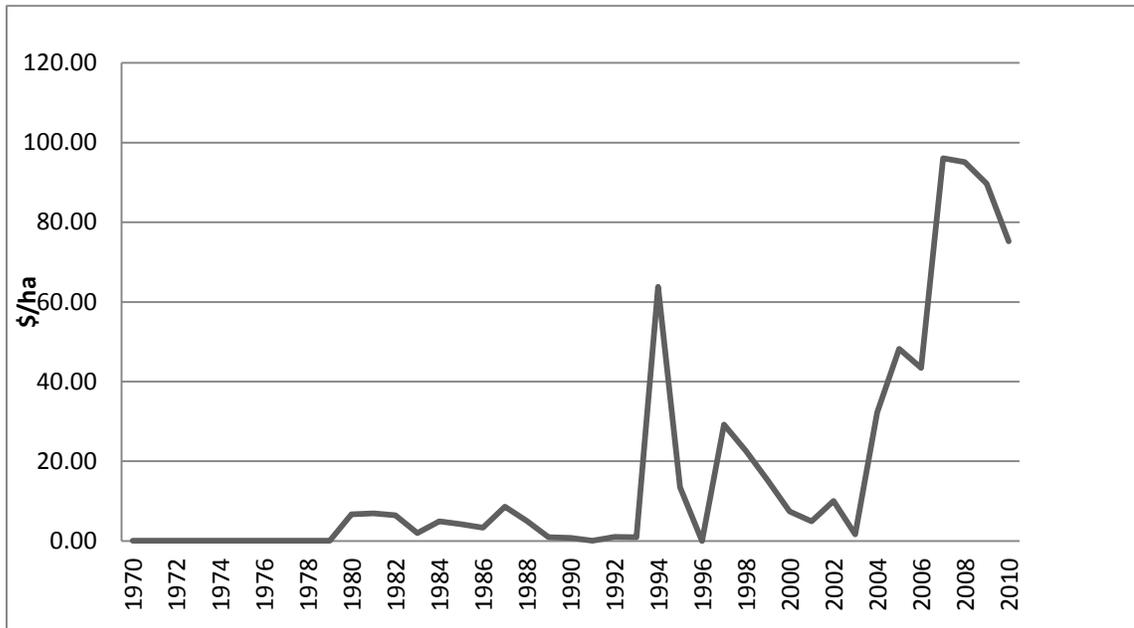


Figure 5.2 Variable input payment per hectare: 1970-2010

Source: Own calculations

The universal input subsidies were eventually completely removed in 1995. However, the droughts in 1992 and 1994 resulted in widespread poverty and food insecurity. The government responded by implementing safety net programs. Notably, Starter Pack Program (SPP) a universal input kit program that transferred \$22/ha in 1998/99 season and its successor the Targeted Input Program (TIP) that was implemented from 2000-2004, investing \$32/ha in its final year. During the electoral campaign leading to 2004 a strong national consensus on the need to change the strategy from free input

distribution to subsidies was evident (Chirwa&Dorward, 2006). The subsidies were eventually reintroduced in 2005/06 season at \$48/ha and rose to \$75/ha by 2010.

5.3 Producer Subsidy Equivalent

On average producers are deprived of US\$269/ton/year due to government policies, probably is because African governments protect cheap food interests of the urban minority, who by some strange twist of African politics are more politically powerful than the rural majority (FAO, 1997). The result reaffirm a well known stylized fact about agricultural protection is that developing country tax agricultural sector while their developed counterparts subsidize it (Swinnen and van der Zee, 1993)

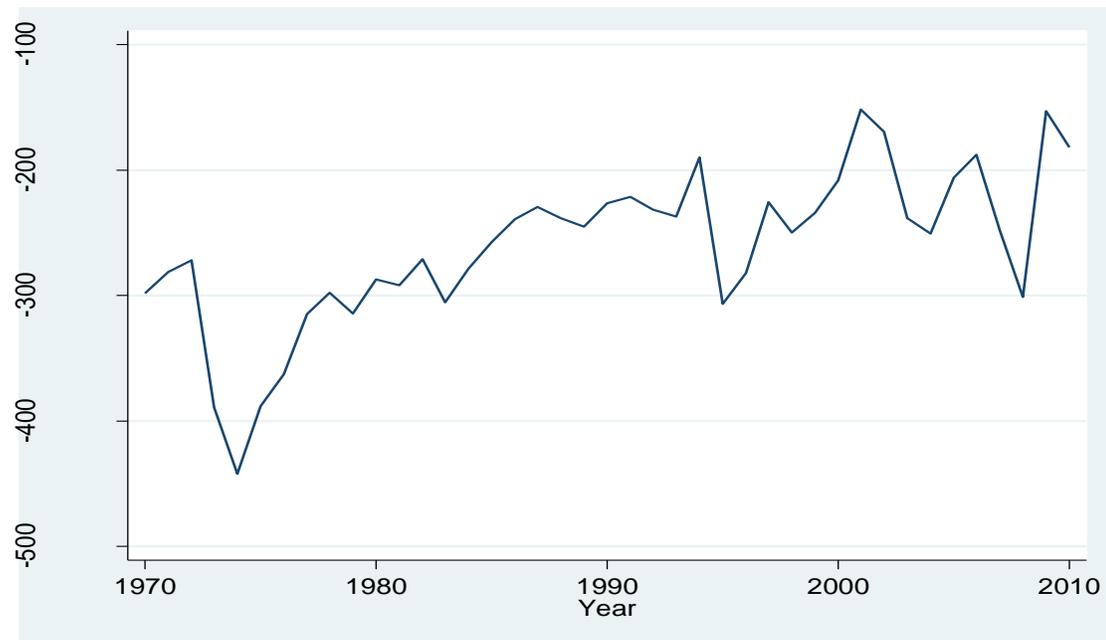


Figure 5.3 Producer Support Estimate (PSE) per ton (1970-2010)

Source: Own calculations

5.4 Maize production response to the policy

5.4.1 Unit root test

A ARDL model was run to test if national maize output production to changes in the aggregate effect of policies. The first step in bounds test procedure is to test the order of integration of the variables. A series is said to be integrated if it accumulates some past effects, so that following any perturbation the series will rarely return to any particular 'mean' value, hence is non-stationary. The order of integration is given by the number of times a series needs to be differenced so as to make it stationary. If series are integrated of the same order, a linear relationship between these variables can be estimated, and co-integration can be tested by examining the order of integration of this linear relationship. Augmented Dickey Fuller (ADF) test for unit root (Dickey and Fuller, 1979) was employed to test for the presence of unit root. The results of the ADF test (Table 5.2) indicate that the null hypothesis of the existence of unit root or non-stationarity could not be rejected at 5% level of significance for both variables. Differencing the series once led to the rejection of the null hypothesis of unit root at 1% level of significance. This implies that both production and prices are integrated of order 1, I(1).

Table 5.2 ADF unit root test results

Variable	Test statistic	5% Critical value	P-value
ln_pse	-1.661	-2.972	0.4515
ln_prod	0.088	-2.969	0.9652
ln_dt	-2.075	-2.986	0.2546
ln_mps	-1.777	-2.964	0.3918
ln_rp	0.054	-2.964	0.9628
d_ln_dt	-3.713	-2.994	0.0039***
d_ln_mps	-4.226	-2.966	0.0006***
d_ln_rp	-5.454	-2.966	0.0000***
d_lnpse	-10.663	-2.964	0.0000***
d_lnprod	-11.745	-2.961	0.0000***

***significant at 1%

5.4.2 Bounds cointegration test

The existence of long-run relationship or cointegration between production and policy variables was tested using the bounds approach. We used a general-to-specific modeling approach guided by the short data span and AIC respectively to select a maximum lag order of 1 for the conditional ARDL-VECM. Following the procedure in Pesaran and Pesaran, (1997), we first estimated an OLS regression for the equation 4 (Table 6.3) and then test for the joint significance of the parameters of the lagged level

variables. The calculated F-statistic for a joint test of parameter was 13.36 and 4.875 for the PSE and individual policy variable models respectively, which is higher than the upper-bound critical value 4.781 at the 1 per cent level. Thus, the null hypotheses of no cointegration are rejected, implying long-run cointegration relationship exist.

Table 5.3 Results for joint test of parameter significance

Dependent variable	Independent variable	Test statistic	Critical value (1% level of significance)
ln_prod	ln_pse, d_rain, d_var	13.36***	4.781
ln_prod	ln_dt, ln_mps, ln_rp, d_rain	4.875***	4.781

*** significant at 1% level

5.4.3 Elasticities

The results in Table 5.4 show that the level of PSE measured as an implicit tax significantly affects with estimated elasticities of -0.24 and -0.38 in the short and long run periods respectively. This implies that a 10% increase in implicit taxes imposed by domestic policies will reduce maize output by 2.4% in the short run and 3.8% in the long run. An increase in taxes i.e. a more negative PSE implies that either the domestic price is falling relative to the border price and/or support on variable input has been reduced. This creates a disincentive to investment in maize farming, as it becomes less profitable due to low output prices and/or high input costs. Commercial producers will allocate their land to alternate and relatively more profitable farm enterprise while the major aim in the peasantry will be production for subsistence. On the other hand a

reduction in the implicit tax emanating from either, increasing real prices or input support will increase returns and cause producers to allocate more land to maize. Chibwana, *et al.*, (2012) observes that farmers who received coupons for maize seed and fertilizer under FISP allocated 43% more land to improved maize, 13% more land to maize (total), 17% less land to other crops.

Table 5.4 Short run and Long run production response elasticities

Variable	Short run	Long run
ln_pse	-0.24**	-0.38**
Dvar		-0.28
Drain		-0.12
ln_mps	-1.05**	-0.32
ln_dt	-0.066*	-0.068
ln_RP	0.525**	0.71**

Significance level *** 1%, **5% and *10%

The response to rising real maize prices can be looked at in two ways; first, assuming the farmer is profit maximizing as is the case with estate subsector in Malawi any inputs and timeliness of production activities for the following season resulting in low yields (Mose, *et al.*, 2002). In addition, farmers re allocate land to alternate and more profitable farm enterprise. Secondly, for a smallholder farmer who is a both a producer and consumer of maize. Rising real prices of maize do not only mean high incomes from production but also economic gains by substituting expensive purchases with own production. As a result smallholder farmers respond by increasing the

amount of land allocated to maize consequently raising production.

The cost of variable inputs especially fertilizer is the largest component of costs of production that farmers face. A change in fertilizer prices adjusts the rate of use or the area under maize production. Subsidies lower cost of fertilizer and seed. A decrease in the price of fertilizer is expected to lead to an increase in the area under maize or increase the intensity of use, consequently leading to more production. The arguments for use of subsidies to boost food production emphasize on a short span program. A time-bound input subsidy may provide an alternative to failing markets, leading to more use of the input, with higher production that then raises the incomes of farmers, provides more work for agricultural laborers, and reduces the cost of food, allowing those on the breadline to consume more and become more productive. The subsidy then could become an element in breaking through limits to growth and shifting both the agricultural and national economies to a path of faster growth (Wiggins and Brooks, 2010). The findings in this study agree with this notion as subsidy were found to have a significant impact only in the short run. Suggesting that they are not well suited to addressing long term objectives.

As expected the dummy variable for drought years was also found significant and negatively related to production with an elasticity of -0.19. The dependence on rain fed farming makes maize production susceptible to weather shocks. The years registering negative or meager output growth rates such as 1980, 1992, and 1994 and in the early 2000s are characterized by low and erratic rainfall. This seems to emphasize the need to move from almost total dependence on rain-fed agriculture to increasing the

proportion of irrigated fields. The dummy variable for availability of high yield had a positive but insignificant influence on production. Despite the presence of high yield and more palatable flint varieties from early 1990's, the productivity levels are very low. National yield in 2012 was 2.3 tons/ha against a potential yield of between 4-8 ton/ha for the available hybrid varieties. This can be attributed to a number of factors including; recycling of seed and poor agronomic practices especially amongst peasants.

5.5 Conclusion remarks

This chapter reports analyses of the impact of policies on maize producers. In the period under consideration in this study (1970-2010), all the PSE were negative while all CTE were positive. This implies that producers are taxed through policies that transfer income from producers to consumers. Evidence from the ARDL shows that producers respond to changes in the PSE, it can therefore be concluded that the negative PSEs create disincentives to production and perhaps explains why it has proved difficult to sustain high level of maize production in absence of subsidies. Noteworthy, the PSE has varied overtime reflecting public policy reforms. In the next chapter we discuss the driver forces behind these reforms.

CHAPTER SIX

POLITICAL ECONOMY OF PRODUCER INCENTIVES IN MALAWI: AN ECONOMETRIC TEST OF DETERMINANTS OF PRODUCER SUPPORT ESTIMATES IN THE MAIZE SECTOR

6.1 Introduction

National food sufficiency has been at the center of government agenda since the pre-independence famine in 1949. However, in the last four decades self-sufficiency has been remained a distant dream or attained through heavy cost burden. In chapter 5 it was observed that producers respond to PSE as such it is reasonable to think that policies have failed to create incentives to stimulate sustainable growth in the maize sector. Political science literature provides two key explanations, neoliberalism and neopatrimonialism, as to why governments in sub Saharan Africa have pursued policies that have failed to achieve significant growth. The neopatrimonialism explanation postulates that countries have not achieved growth because the incumbent governments are concerned with channeling resources from government to their supporters. On the other hand neoliberalism theorists argue that African countries pursued too much neo-liberal reforms that resulted in the deindustrialization of the existing manufacturing and the neglect of increasing agriculture productivity hence sluggish growth.

Apart from these two concepts, Political economists have put forward a number of theories that can be used to explain these variations in protection. Masters and Garcia

(2009) identified six major political economic theories that might explain agricultural policy. These are rational ignorance, absolute group size, rent seeking motives, pure status core, and time consistency and commitment mechanism. In a developing world, context additional explanations include international donor pressure (Giuliano&Scalise, 2009). The traditional approach in applying these theories to a country case is to regress some measure of protection on a number of economic and political variables. The relevance of the variables is motivated by theoretical literature (Brooks, 1996). Results from testing potential explanations or hypotheses set in chapter 4 are presented and discussed.

6.2 Data properties

The independent variables in the model were income ratio, dummy variable for International Monetary Fund Programs, electoral years, dummies for party in office, maize sufficiency ratio, and check and balances index.

6.2.1 Income ratio (INCOMER)

The income ratio is the ratio of per capita income in the agricultural sector to that in the rest of the economy. The results presented in figure 4 point to a large discrepancy between per capita incomes in agriculture and other sectors. After two major droughts in 1992 and 1994, per capita incomes in the agricultural sector had declined to an equivalent of 7% of those in the other sectors. The highest ratio was 19% recorded in 1979 and 1993. In general, the low incomes in the agricultural sector can be attributed to limited value addition within the sector. Unprocessed products fetch low prices and

keep Agriculture GDP low. On the contrary, the other sectors of the economy produce high value products. In addition, the low adoption of modern technologies results in low productivity of labor employed in agriculture compared to other sectors.

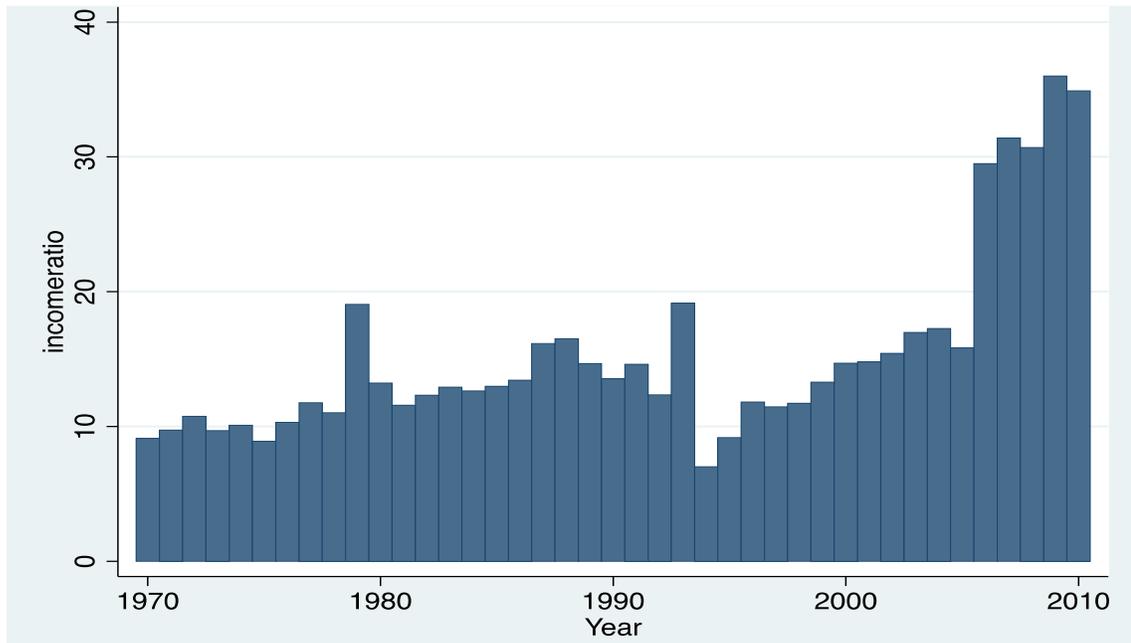


Figure 6.1 Ratio of per capita income in the agricultural sector to the rest of the economy -1970-2010

Source: Own calculation-using data from National Statistical Office, and World Bank

6.2.2 IMF programs

The implementation of Structural Adjustment programs started in 1981. Following the poor performance of the Malawi's economy in the late 1970s, the government obtained loans from International Monetary Fund (IMF)/World Bank to maintain economic stability. However, these loans had strict pre conditions that had to be followed before

they could be disbursed. These conditions included structural reforms and liberalization of markets. The SAPs were implemented between 1981 and 1995.

6.2.3 Electoral years

Malawi made a transition to multiparty democracy in 1993 and paved way to periodic election of president and legislator. Both presidential and legislator terms last for 5 years and upon expiry a fresh mandate is sought. So far, four general elections have taken place in Malawi in 1994, 1999, 2004 and 2009.

6.2.4 Political party in government

Malawi has been under three presidents; Kamuzu Banda (1964–1994) from the Malawi Congress Party (MCP), Bakili Muluzi (1994-2004) from the United Democratic Front (UDF) and Bingu Mutharika (2004 to date) initially of UDF but formed his own party the Democratic Progressive Party (DPP) early in his first term.

6.2.5 Self-Sufficiency Ratio (SSR)

The Self Sufficiency Ratio was calculated as the ratio of domestic production to consumption. A ratio of greater than 1 means that the country was self sufficient and otherwise if less than. The average ratio for the period between 1970 and 2010 was 1.09 means that in an average year domestic production in Malawi meets the maize consumption needs. However, in drought years' production usually falls critically below demand. For instance, the lowest SSR was in 1992 when a major drought

reduced maize production by half such that production could only cover 48% of the domestic production.

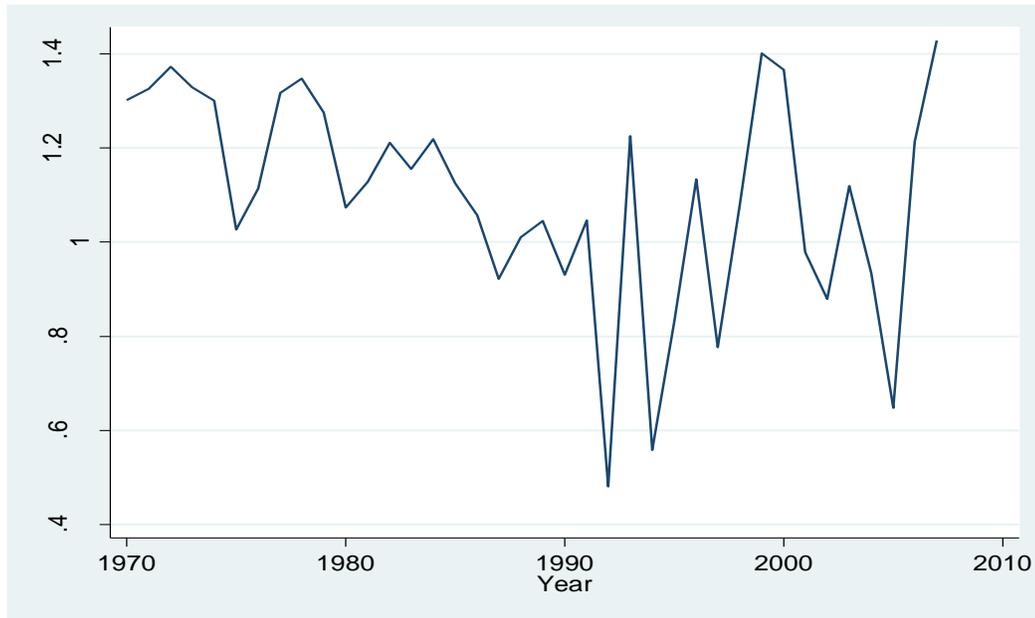


Figure 6.2 Maize self sufficiency ratio in Malawi 1970-2010

Source: calculated using data from National Statistical Office, and World Bank

6.2.6 Checks and Balances

Checks and Balances measure the degree to which policy implementers can be held accountable for their actions. We used the checks and balances index from the World Bank Political Institution Database (Keefer, 2010).

In a presidential system the index rises by one:

- For each chamber of the legislature UNLESS the president's party has a majority in the lower house AND a closed list system is in effect (implying stronger presidential control of his/her party, and therefore of the legislature).
- For each party coded as allied with the president's party and which has an ideological (left-right-center) orientation closer to that of the main opposition party than to that of the president's party.

In parliamentary systems, index is incremented by one

- For every party in the government coalition as long as the parties are needed to maintain a majority.
- For every party in the government coalition that has a position on economic issues (right-left-center) closer to the largest opposition party than to the party of the executive.

In parliamentary systems, the prime minister's party is *not* counted as a check if there is a closed rule in place – the prime minister is presumed in this case to control the party fully.

The index had a value of 1 from 1975 to 1994, 4 from 1995-2008, and 3 from 2009-2010. The values are reflective of the level of control that the president or ruling party has over the legislature and other control systems. During the MCP one party regime, the presidency was for life and membership to the legislature was by appointment hence the lowest value of the index. The decline in the index from 4 to 3 in 2009 is due to the overwhelming majority of the ruling party (DPP) in parliament.

6.2.7 Neopatrimonialism trends

6.2.7.1 Systematic clientelism

In the past four decades (1970-2010) the size of cabinet ranged between 10 and 46 ministers. Malawi's first president, Kamuzu Banda maintained a relatively small cabinet compared to other presidents. He maintained a lean cabinet that was appointed purely on loyalty and had little to offer in terms of policy advice. Appointments into the Civil Service were primarily based on merit (Cammack and Kelsall, 2010). In the post multiparty era, the dynamics of employment in the service changed. Ministerial and other positions were now traded for support. Several former Ministers have resigned from the ruling parties after being fired from cabinet. Likewise, some serving cabinet Ministers dumped their political parties to join the incumbent's party to maintain their jobs. Other positions such as appointment to diplomatic positions have become patronage based since Muluzi era. Clientelism worsened under the Mutharika administration as he attempted to centralize political power with appointment of people and design of policies based on ethnic calculus. The drastic increase in levels of clientelism in the 1990s can most likely be explained by the country's switch to multiparty democracy in 1993. Adoption of multiparty democracy meant that the life presidency was abolished and sitting presidents were allowed to serve a maximum of two five-year terms. This gave rise to the need for personal loyalty and support to ensure re-election.

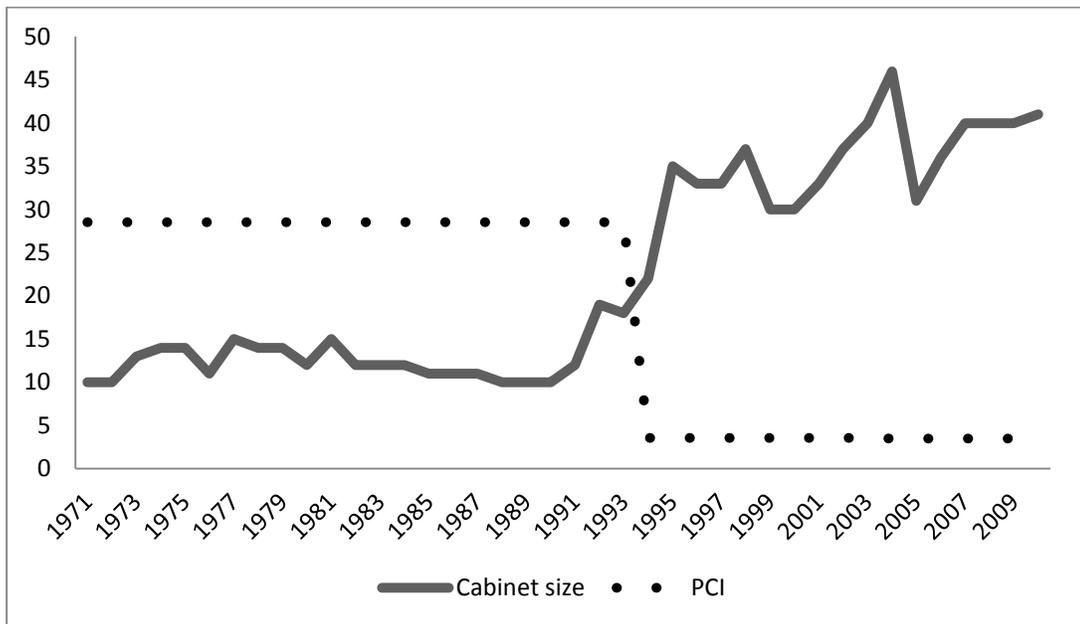


Figure 6.3 Size of cabinet and Power concentration Index in Malawi: 1970-2010

Source: Malawi Parliament Hansards 1970-2010

6.2.7.2 Concentration of Power

The index was highest during Kamuzu’s life presidency (28.52) while little variation has been observed between Muluzi and Mutharika regimes. Kamuzu Banda maintained an effective strategy for controlling ministers psychologically through annual cabinet dissolution. The ministers and their families were expected to move from government houses and return their official cars at the end of each year. The President would call the politicians back one by one and appoint his new ministers (Cammack and Kelsall, 2010). Overall, the high PCI indicate the prevalence of “big man politics” (Young, 2004) where the president or “big man”, stays in power for a long time, sometimes until the end of his life. The “big men” frequently rotate the political elite in order to prevent any potential opponent from developing his/her own

power base, and to extend the clientelist network (Bratton and van de Walle 1997; Snyder and Mahoney 1999). The end result has been long-term dominance of the incumbent. For instance, Kamuzu Banda (1964-1994) was for a long time considered one with unmatched capabilities and the only man capable of ruling Malawi and was given life long presidency. Similarly, towards the end of the mandatory two terms, Bakili Muluzi (1994-2004) was touted as the only capable individual and significant attempts were made to remove the limit on the number of presidential terms. The Mutharika administration (2004-2012) was characterized by estranged vice presidents that had little access to resources to gain political mileage.

6.2.7.3 Corruption

The World Bank's Worldwide Governance indicator "control for corruption (CC)" was used. The variable ranges from 0 (lowest) to 100 (highest). In general efforts to control corruption have been weak. Significant advances were made at the turn of the century in 2000 with CC estimated at 41 but by 2010 it had declined to 28 (Figure 6-2). However, the calculation of the indicator started in 1995 as such corruption control between 1970 and 1994 were assumed to be constant and estimated at 35 based on qualitative information. The social, political and administrative factors tend to provide an environment that is conducive to corrupt practices in Malawi. In addition to high-level systemic corruption, petty corrupt practices and extortion by public officials in the procurement of goods and services tend to be widespread in sectors of public service in urban areas and at local level (Hussein, 2005).

6.2.8 Neoliberalism

Neoliberalism was measured using the Economic Freedom of the World (EFW) index calculated by Fraser Institute. In general economic freedom has marginally improved in Malawi from 5.4 in 1975 to 6.68 in 2010.

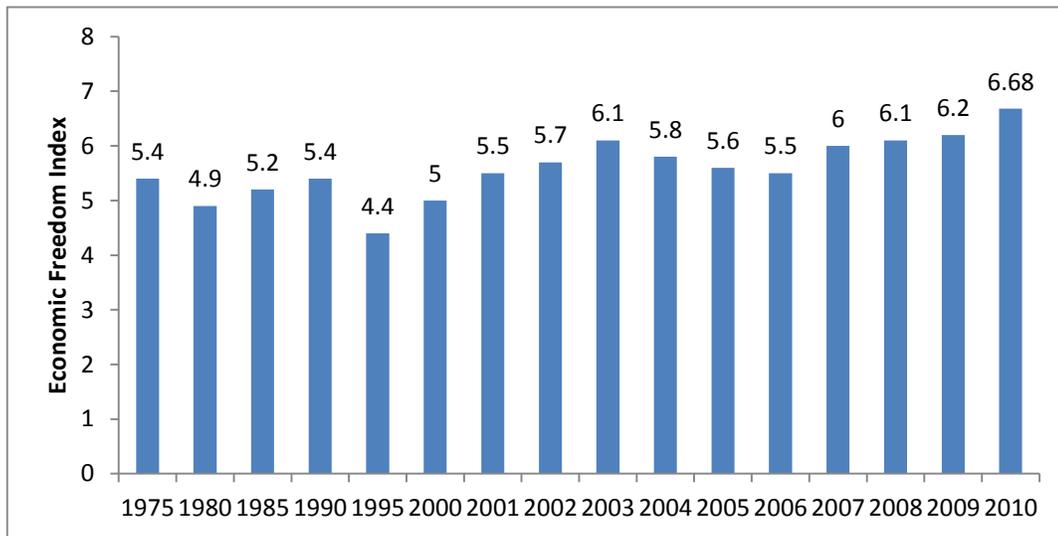


Figure 6.4 Economic Freedom of the World Index: 1970-2010

Source: Fraser Institute, 2012

6.3 Results

The first step was the estimation of Ordinary Least Squares (OLS) regression. Due to Multicollinearity problems all variables could not be included in a single model. Instead we estimated two equations. The results obtained from the regression were then used to check for presence of heteroskedasticity and autocorrelation. Heteroskedasticity was estimated using the Breusch – Pagan/Cook Weisberg test, in

both models the null hypothesis of constant variance was rejected at 1% level of significance. Autocorrelation was tested using Durbin Watson d statistic, the estimated d statistic was 1.20 and 1.05 for model 1 and 2 respectively. The residuals from the fitted model were then predicted. Autocorrelation function of the residuals was plotted to determine the autocorrelation lag length.. The presence of both heteroskedasticity and autocorrelation means that assumptions OLS regressions are violated and the estimates are no longer the Best Linear Unbiased and Efficient (BLUE). Conclusions drawn from such estimates would be spurious. The Newey – West regression was the used to fit the models. This model uses the Newey–West (1987) variance estimator that produces consistent estimates when there is autocorrelation in addition to possible heteroskedasticity. The regression results are presented in table 6.1.

Table 6.1 Model estimation results

Variables	PSE	PSE	NRP	NRP	Transfers	Transfers
Constant	-392.0118*** (25.2624)	-342.184*** (52.3568)	-95.2128*** (3.9949)	-90.4615*** (3.7730)	3.3774 (3.4164)	40.1725** (17.7815)
INCOMR	0.0040182*** (0.0013129)	0.0060167*** (0.0009505)	0.5469 (0.3831)	0.1636 (0.4352)	-0.2362 (0.3070)	-1.1095 (0.5628)
IMFPROG	65.56419*** (18.99645)	79.38904*** (28.71167)	-2.9634 (1.8917)	-1.6999 (2.2665)	3.3273** (1.5050)	2.5937 (3.6188)
ELEC	-17.1679 (17.84038)		-1.6566 (2.6602)	1.0345 (3.0752)	12.4011* (6.7463)	19.8438 (11.3509)
D_UDF	47.68829** (18.64351)		4.9075** (1.3494)		-36.4213*** (3.3386)	
D_DEM	10.74416* (5.810537)		14.2798*** (2.8933)		47.4649 (3.1379)	
SSRATIO		-0.6064586** (0.2689277)		-0.3307 (0.4487)		0.2336 (0.1252)
CHECKS		24.6108*** (8.069339)		3.1111*** (1.1246)		2.1928 (1.7455)
D_DPP		-38.77045*** (10.81705)		4.7249 (4.8209)		18.1994 (9.9988)
Prob> F	0.0000	0.0000				

Significance level: *** 1%, ** 5% and * 10%, () standard errors

6.3.1 Effects of Structural Adjustment Programs

The SAPs promoted two kinds of reforms in the maize sector: market liberalization and removal of input subsidies. Market liberalization and price decontrols were supposed to bid up the prices and reduce the difference between the domestic and the border price implying positive gains for producers. On the other hand the removal of subsidies would reduce direct transfers to producers and PSE. Contrary to expectation, results in table 7.1 point to insignificant but negative relationship between NRP and SAPs implying the price wedge worsened. The significant and positive coefficient in the transfer's model shows that direct farm support increased during the SAPs. These results entail that the observed significant and positive effect of SAPs on PSE resulted from increasing transfers and not market liberalization as expected. This is probably a consequence of lack of commitment from government to implement the reforms in both input and output markets during the adjustment period.

Despite removal of fertilizer subsidies being part of World Bank thinking in the first Structural Adjustment Loan (SAL I) the issue of fertilizer subsidies was not tackled. It was argued that subsidies were necessary to improve the balance of payment by encouraging export crop production (Hewitt and Kydd, 1986). In the SAL II government agreed to reduce subsidies in University Education, Housing, Health, and Agricultural Services. A schedule for eliminating fertilizer subsidies was also agreed (World Bank, 1983). By 1984, the government had abandoned the FSRP citing the surging fertilizer prices as a justification for maintaining high subsidy levels.

Under the SAL III in 1985, the issues of subsidies resurfaced. However, the World Bank strategy of increasing production of exportable crops by displacing the main food crop maize proved to be disastrous and by 1987 Malawi faced a food crisis. This took two forms; a decline in maize production per capita particularly improved maize (Sahn *et al.*, 1990) and a collapse in ADMARC ability to purchase maize. The food crisis put pressure on government as the life president as he identified his populist legitimacy with domestic maize availability. A complete reversal of policies followed. Government increased maize producer prices by 36% (Harrigan, 2003), and announced a 24% subsidy on fertilizer and the indefinite suspension of the FSRP II (Phiri, 1993).

Following the commitments under the Agricultural Sector Assistance Credit (ASAC), government yet again adopted a process of phasing out the subsidies. The commitments under the ASAC were that the overall subsidy rate on fertilizers was not to exceed 30% in 1990/91, 25% in 1991/92, and 20% in 1992/93, while total subvention as a proportion of total government expenditure was not to exceed 2%, 1.6%, and 1.3% in 1990/91, 1991/92, and 1992/93 seasons respectively (Tchale,*et al.*, 2001). The elimination of the subsidies in agriculture was only achieved after the adjustment period in 1995.

6.3.2 Effects of Social accountability and Democracy

Checks and Balances and dummy variable for democracy were found to positively influence the level of support to producers. This means that increasing social

accountability reduced the implicit taxation of producers. In the first three decades of autocratic rule (1964-1994) the government had zero tolerance to criticism and politicians were not held accountable even if they implemented sub optimal policies. However, the advent of multiparty democracy in the mid 1990s led to more scrutiny of government and its institution. This result entails that increasing accountability within the public system has the potential to improve policy performance.

6.3.3 Effects of self sufficiency motive

Food sufficiency is also a significant determinant of producer support. The negative coefficient sufficiency ratio in model 2, indicates that government will increase support the producers whenever domestic production declines. It has always been cheaper for Malawi to produce its own maize than import (Mataya and Kamchacha, 2005) and importation of food worsens the import bill that is already hard to satisfy without balance of payment support from international and bilateral donors. As such it is natural for any government to intervene in the maize market and stimulate domestic production. The negative and significant coefficient in the transfer's model indicates that the government increases outlays to stimulate production. This is usually in form of input programs such as; Starter Pack Program (1998-1999), Targeted Input Program (2000-2004) and Farm Input Subsidy Program (2005- to date). However, the insignificant coefficient in the NRP model indicates that government does not use the pricing, marketing and trade policies to boost production.

Apart from the negatives associated with rising food prices in the political arena, such as loss of political support and legitimacy to govern the country economically surging maize prices in Malawi are inflationary and would rise in instability. As such government is usually unwilling to introduce policies that will bid up the prices. In most cases it moves in with food imports and exports bans to quell price increases when domestic supply declines.

6.3.4 Effect of Political support motive

Prior to 1994 Malawi had a life president and members of parliament were appointed by the presidency. This meant no voting rights for the populace. After constitutional reforms, the periodic general elections were introduced in 1994 and farmers who constitute a majority (over 80% of the population) became an obvious target for anyone vying for office. Promises of favorable food policies or maize policies per se, are a common feature in party manifestos and any successful input program is high politicized and personalized. A clear indication that the farming community power through their ability to influence outcome of elections.

As expected, PSE was more positive as incomes in the agricultural sector fell relative to the incomes in the rest of the economy. This result implies that politician will respond with redistributive policies whenever income in the agricultural sector declines. A fall in income of farmers increases the marginal utility of income of farmers and the effective demand for support. *Ceteris paribus*, governments can increase their political support by exploiting this difference in forthcoming marginal

political support through increasing agricultural protection when agricultural income is falling in relative terms (Swinnen *et al.*, 2000). The high politicizing of agricultural input programs such as Starter Pack Program and FISP is probably a result of this phenomena, as governments want to appear responsive to farmers needs to amass support.

6.3.5 Effect of electoral periods

Elections are an important input process of the final policy outcome (Cox, 1990; Myerson, 1993). The results show that in the lead up to general elections direct transfers to maize producers increase probably to woo support from farmers who represent the majority of the electorate. For instance, government has exploited the Farm Input Subsidy Program (FISP) through populist pricing to shore up its popularity and legitimacy (Chinsinga, 2011). In the lead up to 2009 presidential and parliamentary elections the redeemed price of fertilizer was slashed from K800 to K500 per 50kg bag. However, the results show that the changes in PSE levels were statistically insignificant.

6.3.6 Effects of Regime change and policies

Finally, we analyzed whether a change from one government to the next had an effect on the producer support. We observed that implicit taxation reduced in the UDF regime while in the DPP regime it worsened. Immediately after assuming office in 1994, the UDF government introducing wide ranging reforms in both input and output market. The fertilizer subsidies were eliminated in 1995 but the implementation of in

favor of relief programs such as, Drought Recovery Program (1994/95), Supplementary Input Program (1995/1996) and Starter Pack Program and Targeted Input Program maintained a significant amount of budgetary transfers to maize producers.

In output markets the pan territorial and pan seasonal and pan territorial pricing of maize was replaced by a price band system that required ADMARC to defend the floor price. The financial troubles that the parastatal was facing made it to defend the band. Coupled with low production and marketed surplus, the prices sharply rose. By 1998 the price of maize had quadrupled (Hardy, 1998). This reduced the wedge between domestic and border prices. The DPP government was characterized by price controls, market and export controls. In 2008 government revoked licences of all private traders and ADMARC assumed monopsony status. These sort of controls increased the price wedge, the revenue loss far much outweighed the gains from the heavy investment through FISP and the overall producer taxation increased.

6.3.7 Effects of Neopatrimonialism

Regression analysis results presented in Table 7.2 show that systematic clientelism had significant effect on the PSE indicating that as incumbents seek to transfer rent through positions in the public service support to maize producers reduces. The reduction in the value of transfers most probably emanates from the reallocation of funds from development programs to cater for an expanding public service as observed by a negative coefficient in the budgetary transfer equation. The insignificant coefficient in

the trade protection equation indicates that systematic clientelism has no influence on the trade policy pursued by government most probably because of absence of direct expenditure or revenue from maize trade that might be adjusted to finance expanding outlays brought about by a bloated public service.

The PCI was also found to have a similar effect on PSE. Incumbents “Big men” with a lower power concentration turn to the masses in the agricultural sector for support. The most obvious means to solicit support is the introduction of welfare enhancing programs such as subsidies. However, the negative and significant coefficient in the NRP model indicates that the incumbents also consolidate power by transferring resources to urban consumers. This result is consistent with the “urban bias” theory (Bates, 1981; Lipton, 1977) which suggests a class like divide between rural and urban areas. African states are more likely to appease the most vocal and better-organized urban population by ensuring low food prices at the expense of rural producers. Despite the structural reforms in the 1980s and early 1990s that aimed at tilting the domestic terms of trade towards producers the notion of urban bias still shapes the views of planners and policy makers (Maxwell, 1999).

Control of corruption was negatively related to PSE and NRP. The effect of corruption on trade is multifaceted; Bardhan (2006) identifies two effects evasion and extortion. Evasion is where custom officials are bribed to do what they are not supposed to do allowing firms to avoid formal trade barriers. On the other hand, extortion is where corrupt customs officials request bribes to do what they are paid to do which is to clear goods. Extortion is a barrier to trade as it increases transactional costs while evasion

encourages trade. The results in the NRP model suggest that evasion effect is at play in Malawi. Since maize is a protected commodity that requires special permits to export, traders are compelled to pay bribes to engage in informal exports. A laxity in corruption control encourages corruption within regulatory agencies and promotes trade that would otherwise be impossible due to the maize export controls.

Table 6.2 Neopatrimonialism Model results

Variables	Unit PSE	NRP	Budgetary Transfers
	(Prais-winsten)	(Newey-west)	(Newey-west)
Constant	-50.5575 (51.9287)	-84.36154*** (8.2399)	13.2933*** (3.9598)
Cabinet size	-5.0464*** (1.4587)	-0.0831 (0.2335)	-0.1665 (0.1009)
PCI	-5.5543*** (1.3355)	-0.4081** (0.1580)	-0.2182** (0.0837)
Corruption	-98.9593** (41.1255)	-18.1985*** (5.5032)	-1.6049 (2.4320)
Ssratio	0.0188 (0.2792)	0.0239 (0.0271)	-0.0377*** (0.0125)
Incomeratio	-3.0199 (2.3695)	0.0262 (0.2383)	-0.0551 (0.0667)
Prob> F	0.0002	0.0000	0.0012

Significance level: *** 1%, ** 5% and * 10%, () standard errors

6.3.8 Effects of Neoliberalism

The effects of neoliberalism were insignificant in all three models. A positive relationship with NRP was observed indicating that gains in economic freedom resulted in decrease in protection. However, these changes were insignificant. As Chirwa (2004b) observed neo liberal reforms generated limited benefits to the agricultural sector. There is no evidence to suggest that the movements in the international prices and real exchange rate are reflected in the behavior of real domestic prices. In addition, export control on maize and other strategic crops remain resulting in domestic prices that still deviate from the parity prices.

The neoliberal reforms also aimed at improving performance of input markets by removing distortions created by input subsidies. By 1995, subsidies on smallholder seed and fertilizer had been eliminated. The removal of subsidies coincided with droughts in 1992 and 1994 and currency devaluation that resulted in a price surge (Hardy, *et al.*, 1998). The government responded by implementing Drought Recovery Programs and eventually a complete policy reversal with re introduction of subsidies in 2005. Given that adoption of neo liberal policies did not significantly affect trade protection and budgetary transfers to farmers the producers incentive measured by PSE also remained unaffected.

Table 6.3 Effect of neoliberalism and macroeconomic variables

Variables	PSE	NRP	Direct Transfers
Constant	-172.564*	-93.8154***	157.284***
	(94.0451)	(19.4830)	(50.7983)
SSratio	-1.2065***	-0.0747	-0.5959***
	(0.3932)	(0.0547)	(0.2555)
Incomeratio	9.9203***	0.4591	-0.4899
	(4.5529)	(0.4158)	(1.5350)
EFW	-17.7997	1.9143	-13.5901
	(94.0451)	(4.1865)	(9.3245)
Prob> F	0.0000	0.0000	0.0000

Significance level: *** 1%, ** 5% and * 10%, () standard errors

6.4 Concluding remarks

Recent political science literature has highlighted a number of potential explanations to both observed policy in Malawi. In this chapter an assessment of how these concepts affect producer incentives was conducted. A Newey West regression was fitted to analyze the determinants of three measures of policy effects on domestic producers; PSE which measures the aggregate effect of policies, NRP which measures the effect of trade policies on the domestic producer prices and direct transfers which measure total budgetary transfers to producers.

A number of competing hypotheses were drawn from political economy literature to help explain the estimated PSE. These included; social accountability, international donor pressure, political support motives, electoral campaign hypothesis, and food

sufficiency motive. Using a Newey –West regression analysis these hypotheses were tested and it was observed that; PSE increased with increasing levels of social accountability, international donor pressure and declining production. It was further observed that the government increased support to producers when their incomes fell relative to those in other sectors. However, we found no evidence supporting the hypothesis that PSE increase during campaign periods.

Neopatrimonialism was found to have a significant effect on the incentives that producers get. This is through its effects on both the trade protection and direct transfers. The effects of trade liberalization on producer incentives were found to be insignificant. Much as subsidies were removed due to neoliberal policies, budgetary transfers to producer still took place through safety net programs. In addition, economic liberalization did not lead to adjustment of domestic prices towards the parity prices because directly or indirectly government maintained control on maize pricing.

CHAPTER 7

GOVERNMENT BEHAVIOUR IN POLICY PROCESSES IN MALAWI

7.1 Introduction

Government is the most powerful player in the policy networks in Malawi. Government intervention in the maize sector is partly influenced by the incumbent's desire to transfer government resources to his/her supporters. As such using the efficiency criteria alone cannot sufficiently explain government intervention in agriculture, rather the decisions are endogenous and are likely manipulated by interest groups. Apart from vested interest it is clear from analysis in chapter 6 that government also responds to changes in the macro economy. Macroeconomic changes create unfavorable effects in the agricultural sector arousing political concerns.

This provides a concept that macroeconomic changes create political influence on formation of agricultural policies. It is therefore important to know how they can impact on the willingness of government to redistribute incomes amongst various interest groups. In this chapter, we developed a political macro economy model, which focuses on the relationship between economic variables and political aspects of maize policy. The aim is to provide information on why and how the formation of maize policy evolves in relation to economic changes. If political willingness to change policies adjust to changes in the economy this will provide a framework for determining desired policy reforms (Kwon, 1989). The outline of the chapter is as follows; in the next section a political preference function (PPF) is presented from

which political weights for producers and consumers are derived, then relative weight of the groups is calculated and regressed on economic variables.

7.2 Political Preference Function

The classical food policy dilemma of producers demanding high farm gate prices while consumer seeking affordable food prices comes into play. With the two groups involved in bargaining battle to achieve policies that favor their respective group, actions taken by government can be viewed as a direct result of the lobbying game. The bargaining or lobbying game is regarded as a zero sum game in the sense that consumers and producers compete for a relatively larger share of benefits from a given economic pie (Kwon, 1989). The power or influence of interest groups, consumer and producers, to affect policy outcome in their favor was measure using from political weights. The computation of political weights was done by maximizing the PPF given in Chapter 4. The estimated political weights are shown in Figure 7.1.

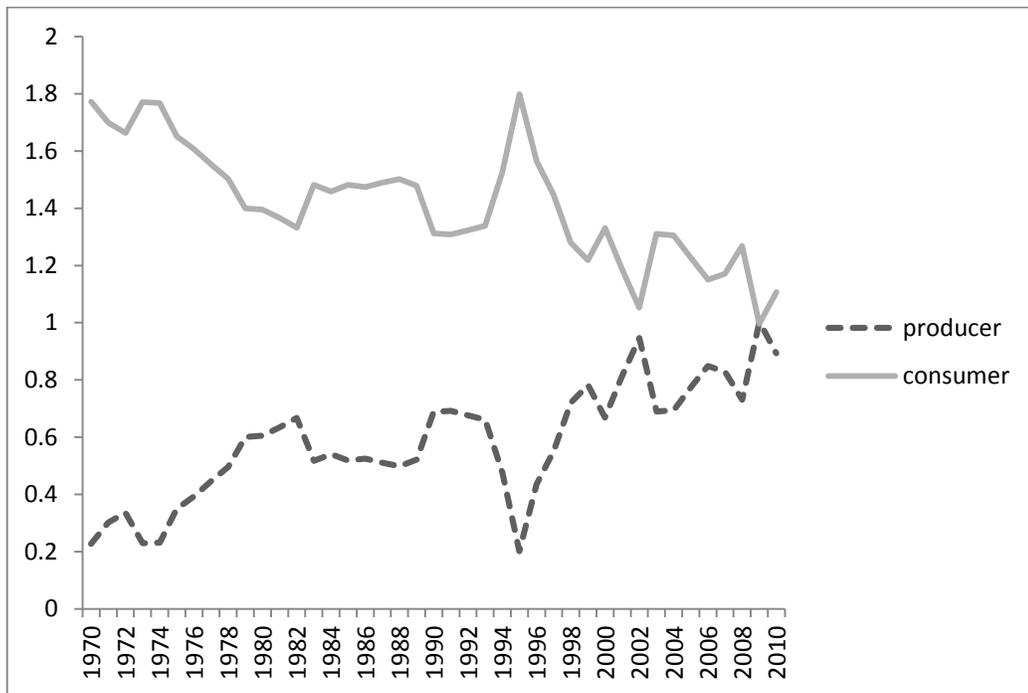


Figure 7.1 Producer and consumer weights 1970-2010

Source: Own calculation

Generally, political weights of consumers have been higher than those of producers. The average weights were 1.42 and 0.58 for consumers and producers respectively. A null hypothesis that $w_c = w_p$ i.e. mean difference is zero was tested. Results in Table 7.1 show that the two means are significantly different at 1% level of significance ($p < 0.01$). The individual means weights were also significantly different from the base value of 1. As a result, we reject the null hypothesis that politics doesn't influence maize policy. The rejection of the null hypothesis implies that politics exert an influence on the maize price policy outcome.

Table 7.1 Mean differences between consumer and producer weight

Null hypothesis	N	Mean	Std error	T statistics	p-value
$\bar{w}_c = 1$	41	1.42	0.03	-13.22	0.0000
$\bar{w}_p = 1$	41	0.58	0.03	-13.22	0.0000
$\bar{w}_c = \bar{w}_p$	41	-0.83	0.04	-18.69	0.0000

Where \bar{w}_c and \bar{w}_p are means for the consumer and producer weights respectively

7.3 Relative political influence of groups

Since we only have two groups in the study playing in a zero sum game, an increase in producer weight mean a decline in consumer weight by a similar magnitude and vice versa. We calculated relative influence/political power/political weight (W) of the two interest groups was measured by the ratio of the producer to consumer weight (w_p/w_c). It is presented as a proportion of the power exerted by consumers relative political power of producers.

The relative political power was lowest in 1970s. Eicher (1982) observed that in the late 1970s, the combination of unprecedented rates of rural/urban migration and agricultural stagnation in sub Saharan Africa gave rise to serious concerns over maintaining the supply of food to politically volatile urban populations. Consequently, the Malawi government adopted more favorable policies towards maize producers. Since maize production was encouraged to feed the growing urban population consumers maintained higher levels of influence despite the gain from the producers.

The rise in producer power was slow in the 1980's. Following the adoption of Structural Adjustment Programs (SAPs) in 1981, agricultural strategy in Malawi was dictated by the Structural Adjustment Loan (SAL) conditions. With advice from the World Bank, Malawi government fixed the price of maize from 1984 to 1987 to create disincentives for maize production. Maize producers had little influence on policy outcome during this period. However, the declining production which was caused by unfavorable maize input and output pricing policy forced government to unilaterally abandon the loan conditions and announce increases in prices in 1987 (Phiri, 1993). This coincided with the liberalization of the markets and price decontrols.

In the early 1990s, a number of key events took place. First, both government and World Bank realized that there was need to increase agricultural production if economic growth was to be achieved (Kumwenda and Phiri, 2010). Secondly, Malawi changed from one party autocratic rule to multiparty democracy and this led to the election of a new president and government in 1994. Farmers who form the majority of the electorate gained political power as candidate seek to amass political support. Consequently, the observed relative power declined between 1990–2010. . However, the fluctuations observed during this period suggest that economic variables also affect the relative influence of the two interest groups. For instance, in 1996 the relative influence declined to 0.11 while in 2002 and 2009 rose to over 0.80.

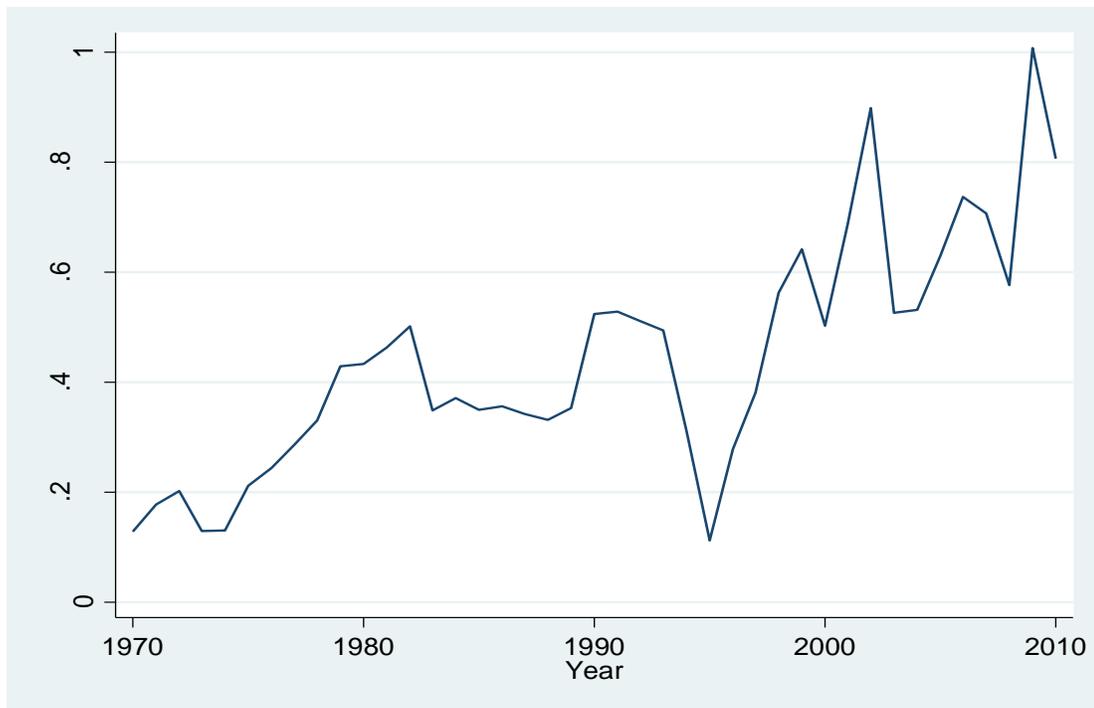


Figure 7.2 Relative political power of producers to consumers

Source: Own calculations

7.4 Effect of economic variables on relative political weight

Macroeconomic changes or performance determines the need for policy reform. We consider political weights to represent the political filter through which macroeconomic forces are able to link to policy changes (Kwon, 1989). This implies that the weights are endogenous and depend on the prevailing economic and political factors.

An ARIMA model was fitted to the data to analyze the effect of changes in economic variables on the relative influence of consumers on price policy outcome. In theory a

wide range of variables exist that affect the political power of interest group. However few variables were selected to ensure that the model is parsimonious. Relative influence was regressed on its past values Lag_1_W, Lag_2_W, Self Sufficiency Ratio (SSR), Income ratio (IR), and Real Producer Prices (RP). In order to avoid misleading results, time series variables must be stationary. We used the Augmented Dickey Fuller (ADF) test for unit root to test for the presence of unit root. The results of the ADF test of in Table 7.2 show that all variables were integrated of order 1. That is differencing the series once led to the rejection of the null hypothesis of unit root at 1% level of significance

Table 7.2 ADF test results

Variable	Test Statistics	Critical Value	P-value
W	-2.016	-2.964	0.2794
SSR	-2.095	-2.964	0.2467
IR	-1.905	-2.978	0.3299
RP	0.819	-2.964	0.9919
D_W	-4.393	-2.966	0.0003
D_SSR	-5.454	-2.966	0.0000
D_IR	-4.472	-2.980	0.0002
D_RP	-4.542	-2.619	0.0002

Table 7.3 shows that the relative influence is affected by the real price and income ratio of rural to urban consumers. The negative coefficient on real prices entails that increases in real consumer price results in a gain in consumer political influence. This implies that government moves in to protect consumers when the real price of maize

has increased. As it was expected, the coefficient on income was negative. The declining income ratio means that the gap between rural and urban incomes is widening. Under such circumstances, government is more willing to implement policies that will boost incomes in the agricultural sector. Self Sufficiency Ratio is the proportion of domestic production to consumption. This was found to be negatively related to W implying that as the Malawi is becoming less self sufficient in maize. However, the effect of the SSR was statistically insignificant at 5% ($P>0.05$). Most likely because government often times uses the input policy as opposed to price policy to increase production of maize.

Table 7.3 Political weight ratio model results

Variable	Coefficient	Std error	P-value
D_RP	-0.0897751	0.0258035	0.001***
D_SSR	0.0004289	0.0004535	0.344
D_IR	-0.0065968	0.0038607	0.088*
Lag_1_W	-0.2418678	0.3680714	0.311
Lag_2_W	-0.2966639	0.2504711	0.236
Sigma	0.0286232	0.0042636	0.000

Wald chi2 (5) = 16.16 prob> chi2 = 0.0064

7.5 Concluding remarks

The objective of the analysis in this chapter was to determine the political power or influence that interest groups have on maize policies in Malawi. Using weights derived

from a Political Preference Function we have tested two hypotheses. First whether agricultural policy is endogenously determined through political powers of various interest groups. Secondly, we test the effect of economic variables on the relative power of the interest group. The analysis focused on the political power of consumers and producers on the maize prices in Malawi. The results from this study reveal that price policies are endogenously determined and that consumer and producers have different levels of power. In general, consumers have more power than producers but over the years the difference has narrowed. Evidence from the ARIMA model shows that the political power varies with changes in maize prices and income.

CHAPTER EIGHT

CONCLUSION AND RECOMMENDATIONS

8.1 Summary of findings

Despite heavy investment in the past four decades agriculture growth has remained sluggish. Unless policies change resources are used more effectively this is bound to continue. Transforming the policy landscape to be effective is a complex task that requires an adequate understanding of the effect of existing policies, what has shaped them over time and how government which is the most influential actor in the policy processes is influenced by non economic motives. Research is supposed to provide such information to the relevant stakeholders. However, review carried out in this study has identified some key research questions that are yet to be answered;

- The aggregate effect of policies on the agriculture sector has not been analyzed. As such policy appraisals have relied on partial equilibrium analysis that do not present a full picture of the incentive faced by domestic producers. This affects the effectiveness of designed programs.
- Neopatrimonialism and neoliberalism have been touted as the probable explanation behind sluggish growth in sub Saharan Africa. But empirical evidence is lacking on how these concepts affects incentives to farm production.
- A very important role of government was exposed by Abermann, *et al.*, (2012)

in the policy network study but it's still not clear on how government decisions are made. What political preferences are in play and how these preferences respond to economic changes.

This study was carried out to reduce this knowledge gap by examining the extent to which policies have affected incentives and disincentives in the maize sector and explain why this has been the case in a political economy framework. This was achieved by analyzing the impact of policies through Producer Subsidy Equivalent and how it affects production. In a bid to explain the observed policies the effects of two key theoretical explanations (neoliberalism and neopatrimonialism) were tested using regression analysis. In addition, the role of unintended policy consequences was also analyzed. Lastly, the role of government in the policy processes was analyzed using a political macro economy model that describes how economic changes create political concerns to change policies. Following this analysis some interesting findings were obtained.

Government support to maize farmers rose in the 40-year period (1970-2010). Despite the increasing trend all the PSE were negative implying that producers are implicitly taxed through policies that transfer income from producers to consumers. Governments are concerned with keeping food prices low for consumers and implement policies that maintain the price at levels lower than the border price. Unfortunately the budgetary transfers are in small magnitude and do not offset entirely the effect of lower than parity prices resulting in an implicit tax on farmers. This result entails that government policies pursued this far offer incentives only to subsistence

producers whereas those producing for the market face huge disincentives resulting from unfavorable trade and marketing policies. Evidence from the ARDL shows that producers respond to changes in the PSE, the negative PSEs perhaps explains why it has proved difficult to sustain high level of maize production in absence of subsidies.

A number of competing hypotheses were drawn from political economy literature to help explain the estimated PSE. These included; social accountability, international donor pressure, political support motives, electoral campaign hypothesis, and food sufficiency motive. Using a Newey –West regression analysis these hypotheses were tested and it was observed that; PSE increased with increasing levels of social accountability, international donor pressure and declining production. It was further observed that the government increased support to producers when their incomes fell relative to those in other sectors. However, we found no evidence supporting the hypothesis that PSE increase during campaign periods.

Neopatrimonialism was found to have a negative and significant effect on the incentives that producers get. This is through its effects on both the trade protection and direct transfers. The trade protection was negatively related to concentration of power and corruption. On the other hand, direct transfers such as subsidies were affected by systematic clientelism and concentration of power. The effects of trade liberalization on producer incentives were found to be insignificant. Much as subsidies were removed due to neoliberal policies, budgetary transfers to producer still took place through safety net programs. In addition, economic liberalization did not lead to adjustment of domestic prices towards the parity prices because directly or indirectly

government maintained control on maize pricing. The role of unintended consequences was found to be a significant of reform. Self-sufficiency concerns and a growing disparity between income in agricultural sector and that in other sectors led to increased incentives to producers.

Maize price policies are endogenously determined and that consumer and producers have different levels of power. In general, consumers have more power than producers but over the years the difference has narrowed. Evidence from the ARIMA model showed that the political power varies with changes in maize prices and income.

8.2 Recommendations

The results obtained in this study show that the policy making process is not driven by efficiency motives alone but rather a political economy framework with its own demands that have to be understood by all stakeholders. We put forward the following recommendations for policy actors and advisors in Malawi.

- The overall effect of policies is negative. Given that producers respond to aggregate effect of policies, this negatively affects investment in maize production. If marketing and pricing policies can change to bid up the domestic price of maize production would be raised without need for massive public investment.
- Neopatrimonialism has a negative effect on producer incentives. Efforts to root out corruption and systematic clientelism should be promoted.

- Neoliberal policies have no effect on producer incentives because of its selective application. If rigidities that affect spatial adjustment of domestic prices to international prices can be addressed the producer incentives can be improved thereby encouraging production.
- Political weights are endogenously determined that is political willingness to distribute income to specific group varied with changes in economic variables. It is important for policy researchers to have an understanding of these preferences and incorporate them in their policy options if their advice is to be relevant in the policy processes. The model presented in this study present a potential framework for predicting weight based on prevailing economic conditions.
- Interest groups have shown to have strong influence on policy outcomes therefore policy reforms should be designed in a way that ensures that affected groups accept reform. International donors have an influence in policy outcomes. They therefore are an alternate entry point for research evidence. However, there is still need for research to identify more alternative actors through which research evidence can be channeled.
- Food sufficiency remains at the center of government policy. Policy options generated by researchers should ensure that availability of domestically produced food will not be compromised if they are to be considered by decision makers.

- Policy makers have shown preference to redistribute income to declining sectors. Policies that demonstrate low-income groups are being supported to reduce their welfare are more likely to be appealing to politicians and are likely to be considered for adoption.
- The study focused on maize, a strategic food crop. Further studies are recommended on cash crops or entire agricultural sector.

8.3 Limitations

The major limitation in the study is availability of data. Data used in the study had to be obtained from multiple sources that often contained conflicting values. We were unable to get official time series data on freight and insurance cost for imported maize as a result we had to rely on estimate based on available data. In addition, derivation of political weights was limited to consumers and producers only because price data on prices paid by other actors in the value chain was not available.

REFERENCES

- Aberman, N., Johnson, M., Droppelmann, K., Schiffer, E., Birner, R., and Gaff, P. (2012). *Mapping the contemporary fertilizer policy landscape in Malawi: A guide for policy researcher*. Discussion Paper No. 01204, International Food Policy Research Institute, Washington D.C., USA
- Acemoglu, D. (2003). Why not a political case theorem? social conflict, commitment and politics. *Journal of Comparative Economics*, 31:620-652.
- Acemoglu, D. and Robinson, J.A. (2001). Inefficient redistribution. *American Political Science Review*, 95(3): 649-661.
- Alston, L.J., Libecap, G.D. and Mueller, B. (2005). *How Interest Groups with Limited Resources can Influence Political Outcomes: Information Control and the Landless Peasant Movement in Brazil*. Working paper No. EB2005-0005 Institute of Behavioral Science, University of Colorado, Colorado, USA.
- Anders, Gerhard (2006). *Like Chameleons: Civil Servants and Corruption in Malawi*. Lebulletin de l'APAD 23-24.
- Anderson, T.W. (1951). Estimating linear restrictions on regression coefficients for multivariate normal distributions. *Annals of Mathematical Statistics*, 22: 327-351.

- Anderson, K. and Hayami, Y. (1986). *The political economy of agricultural protection: East Asia in international perspective*. Allen and Unwin, Sydney, Australia.
- Bardhan P. (2006). The Economist's Approach to the Problem of Corruption. *World Development*, 34 (2): 341-348.
- Bardsen, G. (1989). Estimation of long-run coefficients in error-correction models. *Oxford Bulletin of Economics and Statistics* , 51: 345–350.
- Baldwin, R.E., and Magee, C.S. (2000). Is trade policy for sale? Congressional voting on recent trade bills. *Public Choice*, 105: 79–101.
- Bates, R. (1981). *Markets and states in tropical Africa*. University of California Press, Berkeley, California, USA.
- Balisacan, A. M. (1985). *A positive theory of economic protection in developed and developing Countries*. Ph.D. dissertation, University of Hawaii, USA.
- Bastelaer, T.V. (1998). The political economy of food pricing: An extended empirical test of the interest group approach. *Public Choice*, 96: 43–60.
- Becker, G.S. (1976). Comment on Peltzman. *Journal of Law and Economics*, 19: 245-248.
- Becker, G.S. (1983). A Theory of Competition among Pressure Groups for Political Influence, *Quarterly Journal of Economics*, 98(3): 371-400.

- Bentley, A.F. (1908). *The process of government*. University of Chicago Press, Chicago, USA.
- Besley, T., Persson, T. and Sturm, D.M. (2010). Political competition, policy and growth: theory and evidence from the US. *Review of Economic Studies*, 77(4):1329-1352.
- Bhagwati, N. (1989). Is free trade passé after all? *Weltwirtschaftliches Archiv*, 125: 17-44.
- Birner, R. and Resnick, D. (2010). The political economy of policies for smallholder agriculture. *World Development*, 38(10):1442-1452.
- Borgatti, S.P., M.G. Everett, and Freeman, L.C. (2002). *Ucinet 6 for windows*. Harvard Analytic Technologies, USA.
- Bouwen, P., and McCown, M. (2007). Lobbying versus litigation: political and legal strategies of interest representation in the European Union. *Journal of European Public Policy*, 14: 422–443.
- Bouwen, P. (2002). Corporate lobbying in the European Union: the logic of access. *Journal of European Public Policy*, 9(3): 365–90.
- Box, G. E. P. and, Jenkins, G. (1976). *Time series analysis: Forecasting and control*. San Francisco, CA: Holden-Day 1970 (1976) p 575.

- Bratton, M. and van de Walle, N. (1997). *Democratic experiments in Africa: Regime transitions in comparative perspective*. Cambridge University Press, Cambridge, United Kingdom.
- Brinca, P. (2006). *The Impact of Public Investment in Sweden A VAR Approach*. Master's Thesis, Department of Economics, Stockholm University, Sweden.
- Brooks J. (1996). Agricultural policies in OECD countries: what can we learn from political economy models? *Journal of agricultural economics*, 47:366-389.
- Bullock, D. S. (1992). Objectives and Constraints of Government Policy: The Counter-cyclicity of Transfers to Agriculture. *American Journal of Agricultural Economics*, 74: 617-629.
- Bullock, D. (1994). In Search of Rational Government: What Political Preference Function studies measure and assume. *American Journal of Agricultural Economic*, 76: 347-361.
- Cammack, D. and T. Kelsall (2010) *Developmental Patrimonialism? The case of Malawi*. APPP Working Paper, Institute of Development Studies at the University of Sussex, Brighton BN1 9RE, UK
- Carter, C. A., Faminow, M. D., Lyons, R.M.A. and Peters, E. (1990). Causes of Intervention in Canadian Agriculture. *Canadian Journal of Agricultural Economics*, 38: 785-795.

Coase, R.H. (1960). The problem of social costs. *Journal of Law and Economics*, 3:1-44.

Coase, R.H. (1989). *The firm, the market and the law*. University of Chicago Press, Chicago, USA.

Coate, S. and Morris, S. (1995). On the form of transfers to special interests. *Journal of Political Economy*, 103(6): 1210-1235.

Chemonics International Inc. (2009). *Staple foods value chain analysis country report – Malawi*. Lilongwe, Malawi. Available at <http://www.standardsfacility.org/Files/EconAnalysis/Malawi/04%20Chemonics%20USAID%20Staple%20Foods%20Value%20Chain%20Analysis%20Malawi.pdf> [accessed on 20th July 2011].

Chibwana, C., M. Fisher, and G. Shively. 2012. Cropland Allocation Effects of Agricultural Input Subsidies in Malawi. *World Development*, 40 (1): 24–133.

Chimphonda, S., and Dzoole-Mwale, V. (2005). *The Status of agricultural sector in Malawi: A parliamentarian's perspective*. The Parliamentary Committee on Agriculture and Natural Resources, Malawi Parliament, Lilongwe, Malawi.

Chinsinga B. (2011). *The Political economy of agricultural policy processes in Malawi: A case study of the fertilizer subsidy programme*. Working Paper No. 039, Futures Agriculture, University of Sussex, UK.

Chinsinga B. (2010). *Seeds and subsidies: The political economy of input programs in Malawi*. Working paper No. 13, Future Agriculture, University of Sussex, UK. Available at http://www.future-agricultures.org/index.php?option=com_docman&task=doc_details&gid=1426&Itemid=524 [accessed on 11 December 2012].

Chinsinga B., (2007). *Reclaiming policy space: Lessons from Malawi's 2005/2006 fertilizer subsidy program*. Chancellor College, University of Malawi, Zomba, Malawi.

Chinsinga B. (2003). The participatory development approach under a microscope: The case of the poverty alleviation programme in Malawi. *Journal of Social Development in Africa*, 18:135-159

Chinsinga, B. (1995). *The Poverty Alleviation Programme: A Formidable Policy Initiative*. B.A. project paper, Chancellor College, University of Malawi, Zomba, Malawi.

Chirwa, E., Kydd, J., and Dorward, D. (2006). *Future Scenarios for Agriculture in Malawi: Challenges and Dilemmas*. Paper Presented at the Future Agricultures Consortium held at the Institute of Development Studies, University of Sussex.

- Chirwa, E.W. (2004). *Access to land, growth and poverty reduction in Malawi*. Working Paper WC/05/04, University of Malawi, Chancellor College, Malawi.
- Chirwa E.W. (2004). *Effects of economic and trade policy reforms on food security in Malawi*. Working Paper WC/02/04, University of Malawi, Chancellor College, Zomba, Malawi/
- Chirwa, E.W. (2001). *The compatibility of trade policy with domestic policy interventions affecting the grain sector in Malawi*. University of Malawi, Chancellor College, Department of Economics, Zomba, Malawi.
- Chitiga, M., Candiero, T. and Ngwenya, P. (2008). Agricultural Trade Policy Reform in South Africa, *Agrekon*, 47(4): 1-27.
- Chipeta, C. (1993). *The impact of structural adjustment on the people of Malawi*. In Adepoju A. (ed.), *The impact of structural adjustment on the population of Africa*. James Currey, London, UK.
- Clark, J. (1991). *Democratizing development: The role of voluntary organizations*. Earthscan Publications, London, UK.
- Conant, L. (2002). *Justice contained: Law and politics in the European Union*. Ithaca College, New York.

- Cox, G. (1990). Centripetal and centrifugal incentives in electoral systems. *American Journal of Political Science*,34(4):903-35.
- de Gorter, H. and Tsur, Y. (1991). Explaining Price Policy Bias in Agriculture: The Calculus of Support-Maximizing Politicians. *American Journal of Agricultural Economics*,73: 1244-1254.
- deGorter, H. and Swinnen, J.F.M. (1994). *The Economic Policy of Farm Policy in Europe and the United States*. Paper prepared for the International Conference on New Dimensions in North American-European Agricultural Trade Relations in Calabria, Italy.
- de Gorter, H. and Swinnen, J. F. M. (1993a). *Agricultural protection and economic development: A study of the determinants of agricultural protection in Belgium since 1880*. Paper prepared for presentation at the 1993 AAEEA-Meeting.
- de Gorter, H. and Swinnen, J. F. M. (1993b). *The Economic Polity of Farm Policy in Europe and the United States*. Paper prepared for the International Conference on "New Dimensions in North American-European Agricultural Trade Relations" in Calabria, Italy.
- de Gorter, H. and Swinnen, J. F. M. (1993c). *The political economy of commodity and research policy in agriculture*. Paper presented at the VIIth EAEE Congress in Stresa, Italy.

deGrassi, A. (2008). Neopatrimonialism and agricultural development in Africa: Contributions and limitations of a contested concept. *African Studies Review*, 51(3):107-133.

Department for International Development (2005). *How to use evidence to strengthen policy making*. Scotland, UK.

Devereux S. (2002). The Malawi famine of 2002. *Institute of Development Studies Bulletin*, 33(4): 70-87.

Dewatripont, M., and Tirole, J. (1999). Advocats. *Journal of Political Economy*, 23:1-39.

Dickey, D.A. and Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74:427- 31.

Dixit, A.K. (1996). *The making of economic policy: A transaction-cost politics approach*. MIT Press, Cambridge, UK.

Doan, T.A. (1992). *RATS user's manual III*. Estima, USA.

Dorward, A. and Chirwa, E. (2011). The Malawi Agricultural Input Subsidy Program: 2005-6 to 2008-9. *International Journal of Agricultural Sustainability*, 9(1): 232-247

- Dorward, A., Chirwa, E. and Slater, R. (2010). *Evaluation of the 2008/9 agricultural input subsidy programme Malawi*. Preliminary report on programme impact, Lilongwe, Malawi.
- Downs, A. (1957). *An economic theory of democracy*. Harper, New York.
- Dutt, P. and Devashish, M. (2008). *Political economy of agricultural protection: theory and evidence* In Anderson, K. (ed.) *Political Economy of Distortions to Agricultural Incentives*,. Cambridge University Press, UK.278-303
- Eicher, Carl K. (1982). *Facing up to Africa's food crisis*. Foreign Affairs. Fall
- Ecker O and Qaim M. (2008). *Income and price elasticities of food demand and nutrient consumption in Malawi*. Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Orlando, FL.
- Eisenstadt, Samuel N. (1973). *Traditional Patrimonialism and Modern Neopatrimonialism*. London/Beverly Hills, CA.
- Enders, Walter (2010). *Applied Econometric Time Series*, 3rd ed. John Wiley & Sons, New York.
- Food and Agriculture Organization of the United Nations [FAO] (2011). *Monitoring African Food and Agricultural Policies in Africa*. Project brief, MAFAP Secretariat, Rome, Italy.

FAO (1997). *The political economy of food, agriculture and irrigation development in East and Southern Africa in irrigation technology transfer in support of food security*. Water Reports - 14 Proceedings of a sub-regional workshop, Harare, Zimbabwe.

FAOSTAT (2013). Available at <http://faostat.fao.org/>

Foster, W.E. and Rausser, G.C. (1993). Price-distorting compensation serving the consumer and taxpayer interest. *Public Choice*, 80:173-189.

Gardner, B. L. (1983). Efficient Redistribution through Commodity Markets. *American Journal of Agricultural Economics*, 65 (2): 225-234.

Gardner, B. L. (1987a). Causes of U.S. Farm Commodity Programs. *Journal of Political Economy*, 95(21): 290-309.

Gardner, B. L. (1987b). *The Economics of Agricultural Policies*. McGraw-Hill Publishing Company, UK.

Giuliano, P. and Scalise, D. (2009). The political economy of agricultural market reforms in developing countries. *The B.E. Journal of Economic Analysis & Policy*, 9(1):Article 33.

Global Donor Platform for Rural Development (2011). *Aid to agriculture, rural development and food security: unpacking aid flows for enhanced transparency, accountability and aid effectiveness*. Working Paper –Malawi, Lilongwe, Malawi.

Government of Malawi (2011). *Agricultural Sector Wide Approach Program (ASWAp)*, Ministry of Agriculture and Food Security, Lilongwe, Malawi.

Government of Malawi (2011). *The 2010/11 Mid-year Budget Review*. Ministry of Finance, Lilongwe, Malawi.

Government of Malawi (2006). *Malawi Growth and Development Strategy*, Government Printing and Press, Lilongwe, Malawi.

Government of Malawi (2005). *Delivery on our promise: 2005/2006 budget speech by President Binguwa Mutharika 6th June 2005*. Lilongwe, Malawi.

Government of Malawi (2003). *Malawi Economic Growth Strategy (MEGS)*. Government Printing and Press, Lilongwe, Malawi.

Government of Malawi (2002). *Malawi Poverty Reduction Strategy (MPRS)*. Government Printing and Press, Lilongwe, Malawi.

Government of Malawi (2000). *Agriculture extension in the new millennium. policy document for the department of agricultural extension services*. Government Printing and Press, Lilongwe, Malawi

Government of Malawi (1999a). *Review of the agricultural and livestock development policies and strategies*. Government Printing and Press, Lilongwe, Malawi

- Government of Malawi (1999b). *The Starter Pack Scheme – Phase II. first draft proposal*. Planning Division, Ministry of Agriculture and Irrigation, Lilongwe, Malawi
- Government of Malawi (1999c). *Implementation of Starter Pack Scheme 1998*. Final Report, Starter Pack Logistics Unit, Lilongwe, Malawi.
- Government of Malawi (1995a). *Agricultural and Livestock Development Strategy and Action Plan (ALDSAP)*. Government Printing and Press, Lilongwe, Malawi.
- Government of Malawi (1995b). *The Drought Recovery Project final report*. Government Printing and Press, Lilongwe, Malawi
- Government of Malawi (1964). *Development Plan 1965-1969*. Government Press, Zomba, Malawi.
- Gujarat, D. (2004). *Basic Econometrics*. Fourth Edition, The McGraw–Hill Companies, USA.
- Gorssman, G., and Helpman, E. (2001). *Special Interest Politics*. MIT Press, Cambridge, Mass.
- Granger, C., (1969). Investigating Causal Relations by Econometric Models and Cross-Spectral Methods. *Econometrica*, 37(3):424-38
- Green, W. (2008). *Econometric analysis*. Prentice Hall, USA.

- Hardy, T. (1998). *Malawi: Soil fertility issues and options*. University of Malawi, Bunda College, Lilongwe, Malawi.
- Harrigan, J. (2003). U-turns and full circles: two decades of agricultural reform in Malawi 1981-2000. *World Development*, 31(5): 847-863.
- Hewitt, A. and Kydd, J. (1986). Malawi: Making effective use of aid resources. *IDS Bulletin*, 17: 77-85.
- Hillman, A.L. and Ursprung, H.W. (1988). Domestic politics, foreign interests and international trade policy. *American Economic Review*, 78(4):729-745.
- Holden, S., and Tostensen, A. (2011). *Appraisal of the Malawi Medium Term Plan for the Farm Inputs Subsidy Programme (FISP-MTP) (2011-2016)*. Ministry of Agriculture and Food Security, Lilongwe, Malawi.
- Hussein, M. (2005). Combating corruption in Malawi: An assessment of the enforcing mechanisms. *African Security Review*, 14(4).55-81.
- International Fertilizer Development Center [IFDC] (2005) *Evolution of Fertilizer Policy in Malawi*, Sasakawa Global 2000 Workshop Paper, Lilongwe, Malawi.
- Jere, P. (2008). *Assessing the economic benefits & costs of Malawi input subsidy program*. Consultancy report, Bunda College, Lilongwe, Malawi.
- Johansen, S. (1995). *Likelihood-based inference in cointegrated vector autoregressive models*. Oxford University Press, Oxford.

- Johnson, M. and Birner, R. (2011). *The role of research in the agricultural policy landscape in Malawi: A survey of the literature and historical narrative*. Development Strategy and Governance Division, International Food Policy Research Institute, Washington D.C.
- Jumbe, C. and Msiska, F. (2008). *The role of policy evidence in policy development in Malawi: Options for strengthening capacity for agricultural policy research and analysis*. Consultancy report, IFPRI, Washington D.C.
- Kaluwa, B., Ngalande, E., Chilowa, W., and Silumbu, E. (1992). *The structural adjustment programme in Malawi: A case of successful adjustments?* SAPES Books Monograph Series No 3, Harare, Zimbabwe.
- Kandoole, B. F., Kaluwa, B. M. and Buccola, S. (1988). Market Liberalization and Food Security in Malawi In Rukuni, M. and Bernstein, R. H. (eds) *Southern Africa: Food Security Policy Options. Proceedings of the Third Annual Conference on Food Security Research in Southern Africa*, University of Zimbabwe/ Michigan state University Food Security Research Project
- Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi (2009). *Governance Matters VIII: Aggregate and Individual Governance Indicators for 1996- 2008*. Policy Research Working Paper, 4978, Washington, DC: World Bank.
- Keefer, P. (2010). *Database of Political Institutions*. World Bank, Washington DC. Available at <http://go.worldbank.org/2EAGGLRZ40> [accessed on 5 August 2011].

Kettlewell, R.W. (1965). *Agricultural change in Nyasaland 1945-60*. Food Research Institute Studies 6p.240

Kirchner, J., 1. Singh, and Squire, L. (1988). *Agricultural pricing and marketing policies in Malawi: A multi-market analysis*. Draft CPD Discussion Paper No. 198517. Washington, D.C.

Kirsten, J.F., Tregurtha, N., Gouse, M. and Tswai, J. (2000). Producer support estimate (PSE) for South African agriculture for 1996, 1997, 1998. *Agrekon*, 39(4):708-717

Kono, D.Y. (2006). Optimal obfuscation: democracy and trade policy transparency. *American Political Science Review*, 100(3):369-384.

Kumwenda, I. and H. Phiri (2010). *Government interventions in fertilizer market in Malawi: from 1994 – 2009*. Consultant report to International Food Policy Research Institute by Agriculture and Natural Resources Management Consortium, Lilongwe, Malawi.

Kumwenda, I. (1991). *Supply response of maize and groundnuts in the smallholder subsector of Malawi*. MSc. in Agricultural Economics, Department of Agriculture, University of Aberdeen.

Krueger, Anne O., Maurice, S. and Alberto, V. (1991). *Political economy of agricultural pricing policy*. Johns Hopkins University Press, Baltimore.

- Kwon, Yond Dae (1989). *Political macroeconomy of agricultural policy: Rice policy adjustments in korea*. Ph.D. Thesis, University of Hawaii
- Kydd, J. and Christiansen, R. (1982). Structural change in Malawi since independence: consequences of a development strategy based on large-scale agriculture. *World Development*, 10:355-375.
- Levy, S. (2005). *Starter Packs: A strategy to fight hunger in developing countries? Lessons from the Malawi experience 1998-2003*. CABI Publishing, Reading, UK.
- Levy, S. (2003). *Starter Packs and hunger crises: A Brief for policymakers on food security in Malawi*. Department for International Development [DFID], Lilongwe, Malawi. Available at <http://www.reading.ac.uk/ssc/n/TIP%20Archive%20CD/TIP02-03/Starter%20Packs%20and%20Hunger%20Crises%20-%20Briefing%20Paper%20-%20Sept%202003.pdf> [accessed on 12 November 2009].
- Levy, S. and Barahona, C. (2002). *2001/02 Targeted Input Program: Main report of the evaluation program*. Department for International Development [DFID], Lilongwe, Malawi.
- Lianos, T.P. and Rizopoulos, G. (1988). Estimation of social welfare weights in agricultural policy: The case of Greek cotton. *Journal of Agricultural*

Economics, (39): 61-68.

Lindbeck, A. (1985). Redistribution policy and the expansion of the public sector,
Journal of Public Economics, 28:309-328.

Lipton, M. (1977). *Why poor people stay poor*. Harvard University Press, Cambridge, MA.

MacLaren, D. (1991). Agricultural trade policy analysis and international trade theory:
A review of recent developments, *Journal of Agricultural Economics*,
42:250-297.

Magee, S.P., Brook, W.A. and Young, L. (1989). *Black Hole Tariffs and endogenous
policy theory: political economy in general equilibrium*. Cambridge
University Press, UK.

Malindi E., Kumwenda I. and Mataya C. (2003). *Restructuring of ADMARC Draft
Report*. Ministry of Agriculture and Irrigation, Lilongwe, Malawi

Masters W. and Garcia, A. (2009). Agricultural Price Distortion and Stabilization:
Stylized Facts and Hypothesis Tests Anderson, K. (ed.), *Political Economy of
Distortions to Agricultural Incentives*. The World Bank, Washington D.C.

Mataya, C. and Kamchacha, D. (2005). *Maize pricing policy in Malawi. Strategic
options*. IFDC, Lilongwe, Malawi

Maxwell D., (1999). The Political economy of urban food security in sub-Saharan
Africa. *World Development*, 27(11):1939-1953.

- Mhone, Guy C.Z. (ed.) (1992) *Malawi at the Crossroads: The Post-Colonial Political Economy*. SAPES Books, Harare
- Miller, T.C. (1991). Agricultural Price Policies and Political Interest Group Competition. *Journal of Policy Modeling*, 13(4): 489-513.
- Ministry of Development Planning and Cooperation (2011) *Economic Report 2011*. Government Printing and Press, Lilongwe, Malawi.
- Mitchell, M. and Moro, A. (2006). Persistent distortionary policies with asymmetric information. *American Economic Review*, 96(1):387-393.
- Munk, K.J. (1994). Explaining agricultural policy: Agricultural policy for the 21st century. *European Economy Reports and Studies*, 4:93-119.
- Munk, K.J. (1989). Price support to EC agricultural sector: an optimal policy? *Oxford Review of Economic Policy*, 5(2):76-89.
- Mwakasungura, A.K. (1986). *The rural Economy of Malawi: A critical analysis*. Bergen, Norway
- Myerson, Roger, B. (1993). Incentives to cultivate favored minorities under alternative electoral systems. *American Political Science Review*, 7(4):856-69.
- Nankumba, J. (1981). *Evolution of agricultural policy in Malawi and the National Rural Development Programme (NRDP): A historical review (1891-1980.)* Department of Agricultural Economics. The University College of Wales,

Aberystwyth.

National Statistical Office (2011). *The Third Integrated Household Survey Report*.

National Statistical Office, Zomba, Malawi

National Statistical Office (2009). *The national welfare monitoring survey (WMS)*

2009. National Statistical Office, Zomba, Malawi.

National Statistical Office (2008). *2008 Population and Housing Census Report*.

National Statistical Office, Zomba, Malawi.

National Statistical Office (2007). *2006/07 National Census of Agriculture and*

Livestock (NACAL). National Statistical Office, Zomba, Malawi.

National Statistical Office (2005). *Second integrated household survey main report*.

National Statistical Office, Zomba, Malawi.

National Statistical Office (1982). *1981/82 National Census of Agriculture and*

Livestock (NACAL): Summary of findings. National Statistical Office, Zomba,

Malawi

Newey, W.K. and Kenneth, D.W. (1987). A simple, positive semi-definite,

heteroskedasticity and autocorrelation consistent covariance matrix.

Econometrica, 55(3): 703-708

- Ng'ong'ola, C. (1986). Rural development and the reorganization of customary land in Malawi: Some lessons from the Lilongwe Land Development Program. *University of Malawi Journal of Social Sciences*, 2: 39-56.
- North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press, Cambridge, UK.
- Organization for Economic Co-operation and Development [OECD] (2007). *The costs of implementing agricultural policy*. Organization for Economic Co-operation and Development (OECD), Paris.
- Organization for Economic Co-operation and Development [OECD] (2000). *Agricultural policies in OECD countries: Monitoring and evaluation 2000: Glossary of agricultural policy terms*. OECD, Paris.
- Olper, A. (2001). Determinants of agricultural protection: The role of democracy and institutional setting. *Journal of Agricultural Economics*, 52(2):425-447.
- Olson, M. (1982). *The rise and decline of nations*. Yale University Press, New Haven, USA.
- Oehmke, J. F. and Yao, X. (1990). A Policy Preference Function for government intervention in the U.S. wheat market. *American Journal of Agricultural Economics*, 72: 631-640.

- Orr, B., Barbara E., Tim, F. and Luke M. (1998). *Public lands utilization study*. University of Arizona, USA.
- Paarlerg, P.L. and Abbott, P. (1986). Oligopolistic trade behavior of public agencies in international trade: The world wheat market. *American Journal of Agricultural Economics*, 68:528-42.
- Peltzman, S. (1976). Toward a more general theory of regulation. *Journal of Law and Economics*, 19: 211-240.
- Pesaran M.H, Pesaran B. (1997). *Working with Microfit 4.0: Interactive econometric analysis*. Oxford University Press, Oxford, UK.
- Pesaran, M.H., Shin, Y., Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16:289-326.
- Pereira, A. (2001). Public investment and private sector performance: International evidence. *Public Finance and Management*, 1(2): 261-277.
- Phiri, C.D. (1993). *Agricultural policy in Malawi 1971-1987*. Ph.D. Dissertation, Cambridge University, UK.
- Phiri, H., Kumwenda, I. and Gunya, G. (2011). *Agricultural Market and Price Information User Needs in Malawi*. Unpublished Consultancy Report for IRLAD Project, Lilongwe, Malawi.
- Pigou, A. C. (1932). *The Economics of Welfare*. MacMillan, London

- Potters, J. and Sloof, R. (1996). Interest groups: A survey of empirical models that try to assess their influence. *European Journal of Political Economy*, 12:403-442.
- Pitcher, A., Mary, M. and Johnston, M. (2009). Rethinking patrimonialism and neopatrimonialism in Africa. *African Studies Review*, 52:125-156.
- Potters, J., and Van Winden, F. (1995). *Models of interest groups: Four different approaches*, In: Schofield, N. (ed.), *Social choice and political economy*. Kluwer, Boston, MA.
- Prat, A., (2000). Campaign spending with office-seeking politicians, rational voters and multiple lobbies. *Journal of Economic Theory*. 45(4):212-220.
- Ragnar, O., Roberto G., Atle, G., Kachule, R., Mwanaumo, A., Mwanawina, J., EspenSjaastad, M. (2003). *The maize of maize. improving input and output market access for poor smallholder in southern african region, the experience of Zambia and Malawi*. Report No. 26, ISSN 0802-9210, department of Economics and Resource Management, Agriculture University of Norway.
- Rausser, G.C. (1992). Predatory versus productive government: the case of U.S. agricultural policies. *Journal of Economic Perspectives*, 6: 133-158.
- Rausser, G. C. (1982). Political economic market: PERTs and PESTs in food and agriculture. *American Journal of Agricultural Economics*, 64: 821-833

- Rausser, G. C. and Freebairn, J.W. (1974). Estimation of Policy Preference Functions: An application to U.S. beef import quotas. *The Review of Economics and Statistics*, 56(4): 437-449.
- Ray, A.J. (1981). The determinants of tariff and nontariff trade restrictions in the United States. *Journal of Political Economy*, 89(1): 107-121.
- Rørstad, P.K., Vatn, A. and Kvakkestad, V. (2007). Why do transaction costs of agricultural policies vary? *Agricultural Economics* 36:1-11.
- Sahn, D., Arulpragasam, J., and Merid, L. (1990). *Policy reform and poverty in Malawi: a survey of a decade of experience*. Cornell University, Ithaca, New York.
- Sarris, A. H. and Freebairn, J. (1983). Endogenous price policies and international wheat prices. *American Journal of Agricultural Economics*, 65(2): 214-223.
- Scarborough, V. (1990). *Domestic food marketing liberalization in Malawi: A preliminary assessment*. ADU Occasional Paper 13, Wye College, University of London. UK.
- Schattschneider, E.E. (1960). *The semi-sovereign people*. Holt, Rinehart and Winston, New York.
- Sims, Christopher (1980). Macroeconomics and reality. *Econometrica*, 48(1): 1-48.

- Smale, M. (1995). Maize is life': Malawi's delayed green revolution. *World Development*, 23(5): 819–31.
- Stevens, C., Stephen, D. and Kennan, J. (2002). *The Malawi famine 2002: More questions than answers*. Institute of Development Studies, United Kingdom.
- Swinnen, J. F. M. (1994). A Positive Theory of Agricultural Protection. *American Journal of Agricultural Economics*, 76: 1-14.
- Swinnen, Johan F.M., Olper, A. and Vandemoortele, T. (2011). *The political economy of policy instrument choice: Theory and evidence from agricultural policies*. Katholieke Universiteit Leuven, LICOS Centre for Institutions and Economic Performance, Waaistraat.
- Swinnen, J., Gow, H. and Maviglia, I. (2000). Modest Changes in the West, Radical Reforms in the East, and Government Intervention Everywhere: European Sugar Markets at the Outset of the 21st Century. In: Schmitz, A., Spreen, T. and W. Messina, *Sweetener Markets in the 21st Century*, Kluwer Academic Publishers, Netherlands.
- Swinnen J.F., Anurag, B.N. and de Gorter, H. (2001). Economic development, institutional change, and the political economy of agricultural protection An econometric study of Belgium since the 19th century. *Agricultural Economics*, 26:25–43.
- Swinnen, J.F.M. and de Gorter, H. (2002). On government credibility, compensation,

- and under-investment in public research. *European Review of Agricultural Economics*, 29(4): 501-522.
- Swinnen, J and van der Zee, F. (1993). The political economy of agricultural policies: A survey. *European Review of Agricultural Economics*, 20: 261-290.
- Snyder, R. and Mahoney, J. (1999): The Missing variable. Institutions and the study of regime change. *Comparative Politics*, 32 (1):103-122.
- Tchale, H. (2005). *Agricultural Policy and Soil Fertility Management in the Maize-based Smallholder Farming System in Malawi*. Peter Lang, Germany.
- Tchale, H., Chulu, O., Kydd J., and Dorward, A. (2001). *Agricultural Policies and Pro-Poor Growth Strategies in Malawi: A Review of Literature*. IC/IFPRI/UM Joint Research Project.
- Therkildsen, O. (2005). *Understanding Public Management through Neopatrimonialism: A Paradigm for all African Seasons?* In: Engel, Ulf, and Gorm Rye Olsen (eds.), *The African Exception*. London: Ashgate, 33-51.
- Trebilcock, M.J., Hartle D.G., Prichard R.S. and Dewees, D. (1982). *The choice of governing instruments*. Study prepared for the Economic Council of Canada, Toronto, Canada.
- Truman, D.B., (1951). *The governmental process*. Knopf, New York.

- Tullock, Gordon (1967). The welfare costs of tariffs monopolies, and theft. *Western Economic Journal*, 5(3):81-115.
- Tullock, G. (1983). *Economics of income redistribution*. Kluwer-Nijhoff, Boston, USA.
- Tyers, R. (1990). Implicit policy preferences and the assessment of negotiable trade policy reforms. *European Economic Review*. 34(7): 1399- 1426
- United Nations Development Program (2011). *Human Development Report :Sustainability and equity, a better future for all*. Washington DC
- van Bastelaer, F. (1998). The political economy of food pricing: An extended empirical test of the interest group approach. *Public Choice*, 96: 43–60.
- van de Walle, Nicolas (2005): *The Donors and the State in Africa: How Much Has Changed?* In: Engel, Ulf; Olsen, Gorm Rye, (eds.), *The African Exception*. London: Ashgate, 69-84
- Vatn, A. (2002). Multifunctional agriculture: Some consequences for international trade regimes. *European Review of Agricultural Economics*, 29(3). 309-327.
- Vaughan, M. (1982). Food production and family labour in southern Malawi: The Shire Highlands and upper Shire Valley in the early colonial period. *The Journal of African History*, 23: 351-364.
- Verbeek, M. (2004). *A Guide to Modern Econometrics*, John Wiley, UK.

- VonCramon-Taubadel, S. (1992). A critical assessment of the political preference function approach in agricultural economics. *Agricultural Economics*, 7: 371-394.
- von Soest, Christian (2007): How does neopatrimonialism affect the African state? The Case of tax collection in Zambia. *Journal of Modern African Studies*, 45 (4): 621-645.
- VonSoest, C., Karsten, B. and Nina, K. (2011). *How neopatrimonialism affects tax administration: A comparative study of three world regions*. GIGA Working Paper Series 172, GIGA German Institute of Global and Area Studies, Germany.
- Weber, M. (1980). *Wirtschaft und Gesellschaft. Grundriß der verstehenden Soziologie.*: J.C.B. Mohr, Tübingen.
- Whitefield, L., and Therkildsen, O. (2011). *What drives states to support the development of productive sector? Strategies ruling elites pursue for political survival and the policy implications*. DIIS Working Paper 2011: 15 Danish Institute for International Studies, Copenhagen, Denmark.
- Wiggins, S. and Brooks, J. (2010). *The Use of Input Subsidies in Developing Countries*. Paper was first presented to the Working Party on Agricultural Policy and Markets, 15-17 November 2010 TAD/CA/APM/WP(2010)45.
- Wittman, D. (1989). Why democracies produce efficient results. *Journal of Political Economy*, 97(6): 1395-1424.

- Wiyo K. and Mthethiwa, J. (2008). *Determining the major factors that have led to slow development of irrigation in Malawi*. Center for Agricultural Research and Development, Bunda College, Lilongwe, Malawi.
- Wolfensohn, J.D. and Bourguignon, F. (2004). *Development and poverty reduction looking back, looking ahead*. Paper Prepared for the 2004 annual meetings of The World Bank and IMF, Washington D.C.
- World Trade Organization (2010). *Malawi trade policy review report*. Lilongwe, Malawi
- World Bank, Ministry of Finance, Ministry of Agriculture and Food Security and Office of the Director of Public Procurement and Central Internal Audit (2011) *Malawi: Poverty Reduction Support Credit, Fertilizer Procurement Review of the 2010/11 Farm Input Subsidy Programme (FISP)*. Lilongwe, Malawi.
- World Bank (1983). *Structural Adjustment Loan I*. The World Bank, Washington D.C., USA.
- Young, C. (2004): The end of the post-colonial state in Africa? Reflections on changing African political dynamics. *African Affairs*, 103(410):23-49.
- Zolberg, Aristide R. (1969): *Creating political order: The party states of West Africa*. Rand McNally, Chicago, IL.

APPENDIX 1: ARDL MODEL RESULTS

```
. reg d_lnprod2 l(1/1).ln_prod2 l(1).ln_pse var31 var40 d_lnpse l(1/1).d_lnprod2 l(1).d_lnpse
```

Source	SS	df	MS			
Model	3.34411084	7	.47773012	Number of obs =	37	
Residual	1.46181604	29	.05040745	F(7, 29) =	9.48	
Total	4.80592688	36	.133497969	Prob > F =	0.0000	
				R-squared =	0.6958	
				Adj R-squared =	0.6224	
				Root MSE =	.22452	

d_lnprod2	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ln_prod2 L1.	-1.634574	.3175461	-5.15	0.000	-2.284029	-.9851196
ln_pse L1.	-.6238665	.1423022	-4.38	0.000	-.9149072	-.3328257
var31	.0458146	.0880445	0.52	0.607	-.1342566	.2258857
var40	-.1944	.1034448	-1.88	0.070	-.4059684	.0171683
d_lnpse	-.2411169	.1181176	-2.04	0.050	-.4826945	.0004607
d_lnprod2 L1.	.2138845	.1964152	1.09	0.285	-.1878298	.6155988
d_lnpse L1.	.0938612	.113742	0.83	0.416	-.1387673	.3264898
_cons	26.85164	5.18758	5.18	0.000	16.24184	37.46143

.

```

. reg d_lnprod2 l(1/1).ln_prod2 l(1/1).ln_mps2 l(1).ln_RP l(1).ln_dt var31 d_lnRP d_ln_mps2 d_ln_dt
> l(1).d_lnprod2 l(1).d_lnRP l(1).d_ln_dt l(1).d_ln_mps2

```

Source	SS	df	MS	Number of obs =	31
Model	2.61560225	12	.217966854	F(12, 18) =	4.14
Residual	.948512728	18	.052695152	Prob > F =	0.0034
Total	3.56411498	30	.118803833	R-squared =	0.7339
				Adj R-squared =	0.5565
				Root MSE =	.22955

d_lnprod2	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ln_prod2						
L1.	-1.009762	.4143296	-2.44	0.025	-1.880236	-.1392876
ln_mps2						
L1.	-.3263571	.3963569	-0.82	0.421	-1.159072	.5063579
ln_RP						
L1.	.7183485	.254812	2.82	0.011	.1830084	1.253689
ln_dt						
L1.	-.06917	.0448201	-1.54	0.140	-.1633337	.0249936
var31						
d_lnRP						
L1.	-.3045816	.2071441	-1.47	0.159	-.7397752	.130612
ln_mps2						
D1.	-1.052553	.3975352	-2.65	0.016	-1.887743	-.2173622
ln_dt						
D1.	-.0667157	.0358083	-1.86	0.079	-.1419462	.0085148
d_lnprod2						
L1.	-.2716998	.410533	-0.66	0.516	-1.134198	.5907981
d_lnRP						
L1.	-.229627	.2194972	-1.05	0.309	-.6907734	.2315195
ln_dt						
LD.	.0547471	.0364461	1.50	0.150	-.0218234	.1313175
ln_mps2						
LD.	-.0933653	.337774	-0.28	0.785	-.8030021	.6162716
_cons	14.70232	6.560998	2.24	0.038	.9181731	28.48646

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APPENDIX 2: POLITICAL WEIGHTS

Wc	Wp	Wp/Wc	Year
0.2273614	1.7726386	0.1282616	1970
0.301467	1.698533	0.1774867	1971
0.3361049	1.6638951	0.2019988	1972
0.2286514	1.7713486	0.1290832	1973
0.2315042	1.7684958	0.1309046	1974
0.3491322	1.6508678	0.211484	1975
0.3927992	1.6072008	0.2443996	1976
0.446183	1.553817	0.2871529	1977
0.4965133	1.5034867	0.3302413	1978
0.6002494	1.3997506	0.4288259	1979
0.6050538	1.3949462	0.4337471	1980
0.6335685	1.3664315	0.4636664	1981
0.6677088	1.3322912	0.5011733	1982
0.5173914	1.4826086	0.3489737	1983
0.5410269	1.4589731	0.3708272	1984
0.5183079	1.4816921	0.3498081	1985
0.5251458	1.4748542	0.3560662	1986
0.5102089	1.4897911	0.3424701	1987
0.4978923	1.5021077	0.3314625	1988
0.521319	1.478681	0.3525568	1989
0.6880848	1.3119152	0.5244888	1990
0.6918915	1.3081085	0.5289252	1991

0.6767593	1.3232407	0.5114408	1992
0.6611553	1.3388447	0.4938253	1993
0.4746503	1.5253497	0.3111747	1994
0.2012292	1.7987708	0.1118704	1995
0.4351007	1.5648993	0.2780375	1996
0.5519417	1.4480583	0.3811599	1997
0.7203778	1.2796222	0.5629613	1998
0.7819761	1.2180239	0.6420039	1999
0.6688955	1.3311045	0.5025116	2000
0.8143697	1.1856303	0.6868665	2001
0.946711	1.053289	0.8988141	2002
0.689419	1.310581	0.5260407	2003
0.6943903	1.3056097	0.5318514	2004
0.7730016	1.2269984	0.629994	2005
0.8488384	1.1511616	0.7373755	2006
0.8287423	1.1712577	0.7075661	2007
0.7312753	1.2687247	0.5763861	2008
1.0036639	0.9963361	1.0073548	2009
0.8926546	1.1073454	0.8061213	2010

APPENDIX 3: NEWEY MODEL RESULTS

. regress unitpseus ssratio2 incomeratio ef

Source	SS	df	MS			
Model	53509.1673	3	17836.3891	Number of obs =	36	
Residual	76664.8623	32	2395.77695	F(3, 32) =	7.44	
Total	130174.03	35	3719.25799	Prob > F =	0.0006	
				R-squared =	0.4111	
				Adj R-squared =	0.3558	
				Root MSE =	48.947	

unitpseus	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ssratio2	-1.206456	.362597	-3.33	0.002	-1.945042	-.4678699
incomeratio	9.92026	2.968853	3.34	0.002	3.872904	15.96762
ef	-17.79971	20.94493	-0.85	0.402	-60.46314	24.86372
_cons	-172.564	114.8394	-1.50	0.143	-406.4842	61.35621

. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
 Ho: Constant variance
 Variables: fitted values of unitpseus
 chi2(1) = 3.11
 Prob > chi2 = 0.0780

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	8.816	1	0.0030

H0: no serial correlation

. predict res5, r
 (7 missing values generated)

. pac res5

. newey unitpseus ssratio2 incomeratio ef, lag(1)

Regression with Newey-West standard errors
 maximum lag: 1

Number of obs = 36
 F(3, 32) = 4.77
 Prob > F = 0.0073

unitpseus	Coef.	Newey-West Std. Err.	t	P> t	[95% Conf. Interval]	
ssratio2	-1.206456	.3932388	-3.07	0.004	-2.007457	-.4054547
incomeratio	9.92026	4.552955	2.18	0.037	.6461946	19.19433
ef	-17.79971	23.72565	-0.75	0.459	-66.12727	30.52785
_cons	-172.564	94.04514	-1.83	0.076	-364.1277	18.99966

. regress dt ssratio2 incomeratio ef

Source	SS	df	MS			
Model	7424.1751	3	2474.72503	Number of obs =	36	
Residual	11042.7861	32	345.087065	F(3, 32) =	7.17	
Total	18466.9612	35	527.627462	Prob > F =	0.0008	
				R-squared =	0.4020	
				Adj R-squared =	0.3460	
				Root MSE =	18.577	

dt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ssratio2	-.5959434	.1376149	-4.33	0.000	-.8762557	-.3156311
incomeratio	-.4899565	1.126756	-0.43	0.667	-2.785083	1.80517
ef	-13.59012	7.949139	-1.71	0.097	-29.78199	2.601742
_cons	157.284	43.5845	3.61	0.001	68.50524	246.0627

. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
 Ho: Constant variance
 Variables: fitted values of dt
 chi2(1) = 34.53
 Prob > chi2 = 0.0000

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation

lags(ρ)	chi2	df	Prob > chi2
1	1.371	1	0.2416

H0: no serial correlation

. newey dt ssratio2 incomeratio ef, lag(0)

Regression with Newey-West standard errors
maximum lag: 0

Number of obs = 36
F(3, 32) = 4.42
Prob > F = 0.0104

dt	Coef.	Newey-West Std. Err.	t	P> t	[95% Conf. Interval]
ssratio2	-.5959434	.2555335	-2.33	0.026	-1.116448 - .0754388
incomeratio	-.4899565	1.535007	-0.32	0.752	-3.616663 2.63675
ef	-13.59012	9.324535	-1.46	0.155	-32.58358 5.403331
_cons	157.284	50.7983	3.10	0.004	53.81121 260.7567

. regress nrp ssratio2 incomeratio ef

Source	SS	df	MS	Number of obs = 36
Model	217.076414	3	72.3588046	F(3, 32) = 1.47
Residual	1569.89581	32	49.059244	Prob > F = 0.2399
Total	1786.97222	35	51.0563492	R-squared = 0.1215
				Adj R-squared = 0.0391
				Root MSE = 7.0042

nrp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ssratio2	-.0747538	.0518873	-1.44	0.159	-.1804448 .0309373
incomeratio	.4590541	.4248405	1.08	0.288	-.4063178 1.324426
ef	1.914276	2.997203	0.64	0.528	-4.190827 8.01938
_cons	-93.81543	16.43343	-5.71	0.000	-127.2892 -60.34163

. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

H0: Constant variance
Variables: fitted values of nrp

chi2(1) = 6.57
Prob > chi2 = 0.0104

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation

lags(ρ)	chi2	df	Prob > chi2
1	20.273	1	0.0000

H0: no serial correlation

. newey nrp ssratio2 incomeratio ef, lag(1)

Regression with Newey-West standard errors
maximum lag: 1

Number of obs = 36
F(3, 32) = 0.79
Prob > F = 0.5063

nrp	Coef.	Newey-West Std. Err.	t	P> t	[95% Conf. Interval]
ssratio2	-.0747538	.0546891	-1.37	0.181	-.1861518 .0366443
incomeratio	.4590541	.4157733	1.10	0.278	-.3878485 1.305957
ef	1.914276	4.186453	0.46	0.651	-6.61325 10.4418
_cons	-93.81543	19.48308	-4.82	0.000	-133.5012 -54.12969

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. regress unitpseus sizecabinet pci corruption

Source	SS	df	MS			
Model	47789.3752	3	15929.7917	Number of obs =	40	
Residual	107621.971	36	2989.49918	F(3, 36) =	5.33	
Total	155411.346	39	3984.9063	Prob > F =	0.0038	
				R-squared =	0.3075	
				Adj R-squared =	0.2498	
				Root MSE =	54.676	

unitpseus	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sizecabinet	-3.115539	2.404497	-1.30	0.203	-7.992086	1.761007
pci	-4.933899	2.156515	-2.29	0.028	-9.307514	-.5602841
corruption	-64.52064	58.63073	-1.10	0.278	-183.4293	54.38801
_cons	-122.1188	86.31285	-1.41	0.166	-297.1693	52.93179

. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of unitpseus

chi2(1) = 3.00
 Prob > chi2 = 0.0833

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation

lags(ρ)	chi2	df	Prob > chi2
1	16.344	1	0.0001

H0: no serial correlation

. newey unitpseus sizecabinet pci corruption, lag(1)

Regression with Newey-West standard errors
 maximum lag: 1

Number of obs = 40
 F(3, 36) = 5.38
 Prob > F = 0.0037

unitpseus	Coef.	Newey-West Std. Err.	t	P> t	[95% Conf. Interval]	
sizecabinet	-3.115539	2.186182	-1.43	0.163	-7.549321	1.318242
pci	-4.933899	2.039687	-2.42	0.021	-9.070576	-.7972223
corruption	-64.52064	39.10581	-1.65	0.108	-143.8309	14.78962
_cons	-122.1188	71.99358	-1.70	0.098	-268.1285	23.89097

. regress nrp sizecabinet pci corruption

Source	SS	df	MS			
Model	1937.34428	3	645.781428	Number of obs =	39	
Residual	759.886485	35	21.7110424	F(3, 35) =	29.74	
Total	2697.23077	38	70.9797571	Prob > F =	0.0000	
				R-squared =	0.7183	
				Adj R-squared =	0.6941	
				Root MSE =	4.6595	

nrp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sizecabinet	.1033838	.2114089	0.49	0.628	-.3257991	.5325668
pci	-.3004899	.1864362	-1.61	0.116	-.6789754	.0779957
corruption	-15.71106	5.027361	-3.13	0.004	-25.91714	-5.504971
_cons	-86.19148	7.492979	-11.50	0.000	-101.403	-70.97993

. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of nrp

chi2(1) = 18.02
 Prob > chi2 = 0.0000

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation

lags(ρ)	chi2	df	Prob > chi2
1	0.143	1	0.7058

H0: no serial correlation

. newey nrp sizecabinet pci corruption, lag(0)

Regression with Newey-West standard errors
maximum lag: 0

Number of obs = 39
F(3, 35) = 27.99
Prob > F = 0.0000

nrp	Coef.	Newey-West Std. Err.	t	P> t	[95% Conf. Interval]	
sizecabinet	.1033838	.2357587	0.44	0.664	-.3752318	.5819994
pci	-.3004899	.1649012	-1.82	0.077	-.635257	.0342773
corruption	-15.71106	6.208898	-2.53	0.016	-28.31579	-3.106325
_cons	-86.19148	7.25886	-11.87	0.000	-100.9278	-71.45522

. regress dt sizecabinet pci corruption

Source	SS	df	MS	Number of obs =	40
Model	31180.3129	3	10393.4376	F(3, 36) =	8.82
Residual	42441.726	36	1178.93683	Prob > F =	0.0002
Total	73622.0389	39	1887.74459	R-squared =	0.4235
				Adj R-squared =	0.3755
				Root MSE =	34.336

dt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sizecabinet	1.775227	1.509977	1.18	0.247	-1.287148	4.837602
pci	-.7766267	1.354249	-0.57	0.570	-3.523171	1.969918
corruption	24.56191	36.81895	0.67	0.509	-50.11038	99.2342
_cons	11.26666	54.20277	0.21	0.837	-98.66166	121.195

. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

H0: Constant variance
Variables: fitted values of dt

chi2(1) = 25.85
Prob > chi2 = 0.0000

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation

lags(ρ)	chi2	df	Prob > chi2
1	16.121	1	0.0001

H0: no serial correlation

. newey dt sizecabinet pci corruption, lag(1)

Regression with Newey-West standard errors
maximum lag: 1

Number of obs = 40
F(3, 36) = 4.11
Prob > F = 0.0132

dt	Coef.	Newey-West Std. Err.	t	P> t	[95% Conf. Interval]	
sizecabinet	1.775227	2.521582	0.70	0.486	-3.338779	6.889233
pci	-.7766267	2.041719	-0.38	0.706	-4.917425	3.364172
corruption	24.56191	46.82309	0.52	0.603	-70.39972	119.5235
_cons	11.26666	86.38342	0.13	0.897	-163.927	186.4604

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