Issues On The Zambian Economy

Bank *of* Zambia

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Foreword

This is the fifth issue of the Bank of Zambia (BoZ) Reader – Issues on the Zambian Economy, a publication that aims at providing national and international readership with analyses by economists and other social scientists in government, business, international agencies, academia and other research institutions.

Additionally, the BoZ Reader continues to contribute towards the creation of economic literature and exchange of views on theoretical, policy and practical issues on the Zambian economy.

This publication has articles on contemporary issues of current debate in the economy including: Developing Countries and Aid for Trade: Zambian Experiences; Financial Development and Economic Growth Nexus: A Multivariate VAR Analysis of Zambia's Economy; The Impact of Privatisation on Firm Performance in Zambia: Did Privatisation Make a Difference?; Rising Global Oil Prices – Macroeconomic Implications and Policy Responses for Zambia; Financial Innovation and the Importance of Modern Risk Management Systems - A Case of Zambia; and, African Central Bank and Monetary Convergence - An Alternative Perspective.

We sincerely wish to express gratitude to the contributors of these articles to the Reader and it is our hope that this will encourage other economists and social scientists to put their ideas to paper and thereby contribute to the pool of ideas and literature on the Zambian economy through this publication. Additionally, we wish to take this opportune time to invite comments or brief notes on the articles in this Reader. Further, articles are invited from researchers and writers on various topics that are relevant to the Zambian economy. In this regard, all correspondence should be channelled to the Director, Economics Department, Bank of Zambia, P. O. Box, 30080, Lusaka Zambia. Comments and articles can also be sent via e-mail to pr@boz.zm.

The views and interpretations expressed in this Reader are those of the authors and do not necessarily represent the views and policies of the Bank of Zambia.

Caleb M. Fundanga

Governor

Bank of Zambia

CHAPTER ONE

Developing Countries and Aid for Trade: Zambian Experiences

By

Manenga Ndulo, Dale Mudenda, Sylvia Mwamba and Lillian Muchimba

Abstract

This paper examines the importance, relevance and experiences in the operationalisation of the concept of the Aid for Trade in Zambia. The analysis revealed that the growth in the export sector has not been significant enough to push the economy to higher growth rates that can sustain real growth. This has mainly been due to the supply-side constraints that tend to limit export growth. The study also established that although Zambia has received aid from bilateral donors and multilateral institutions, this has not been sufficient to resolve the supply-side constraints. Therefore, additional resources are needed to increase export and GDP growth in order to meet the MDGs by 2015 and resolve its poverty challenges. There is need for Zambia to encourage policies that take ownership of the Aid for Trade initiatives. This will only be achieved if there is a policy to increase the GDP growth rate to more than 7 percent and sustain it at that high level.

I Introduction

The debate on Aid and Trade has done its rounds for sometime in the development literature. The main issue was: What do developing countries need to do to accelerate their growth rates? There were those who argued that what developing countries needed was Aid and not Trade. On the other hand, there were those who argued that what developing countries needed was Trade and not Aid. This debate has now culminated into a consensus that what developing countries need is Aid for Trade, that is the need for Aid to support Trade (WTO, 2006). The purpose of Aid for Trade was to resolve the trade-related capacity constraints that hindered the participation of developing countries in world trade and thereby restricted their growth prospects (WTO, 2006).

During the Uruguay Round, the issue of Aid for Trade was addressed under trade-related technical assistance provided by the various bilateral donors and multilateral institutions. This crystallised into the Aid for Trade discussions during the 2001 Doha World Trade Organisation (WTO) Ministerial Conference. The 2001 Doha Ministerial Declaration put the development concerns of developing countries and their integration into the multilateral trading system at the centre of the negotiations agenda. It was argued that developing countries were not able to implement the Uruguay Round Agreements because of institutional and capacity constraints. The major challenge was, therefore, how to help developing countries overcome their trade-related institutional, human resource and supply-side capacity constraints. This was to enable them be an integral part of the WTO trade negotiations, thereby benefit from trade liberalisation and the WTO agreements.

The 2005 Hong Kong Ministerial Declaration went further and established a Task Force to provide specific recommendations on how to operationalise the concept of Aid for Trade and initiate discussions on appropriate mechanisms to ensure additional financial resources for Aid for Trade. This was to be done through, as much as possible, grants and concessional loans. The Task Force in its 2006 report recommended the framework for understanding issues of Aid for Trade (WTO, 2006).

Aid for Trade can therefore be understood as "aid that finances trade-related technical assistance, trade-related infrastructure and aid to develop productive capacity". It involves the flow of development finance from developed to developing countries for the purpose of enhancing the world trading system (Stiglitz and Charlton, 2006). As per recommendations of the WTO Task Force, Aid for Trade can be defined into several categories. These are Trade-related Technical Assistance and Capacity Building, and Supply-side constraints. Supply-side constraints will include activities in Economic Infrastructure (transport, communications and energy) and activities in Building Productive Capacity (banking and financial services, business and other services, agriculture, industry and mining, and tourism) and Trade-Related Adjustment Assistance. The latter category helps with costs associated with tariff reductions and preference erosion or declining terms of trade. We can, therefore, group the main elements of Aid for Trade in Trade-Related Assistance and Capacity Building, Economic Infrastructure, Building Productive Capacity and Trade-Related Adjustment Assistance.

This paper is an attempt to look at the importance, relevance and experiences in the operationalisation of the concept of the Aid for Trade in Zambia. We first look at the level of export development in section two and present the constraints to further export growth and the global and local experiences in Aid for Trade in section three. Zambia's experience with Aid for Trade is presented in section four. We conclude with some policy recommendation on how to push forward the Aid for Trade agenda in section five.

II The Growth and the Diversification of the Export Sector in Zambia

Zambia's prospects of generating sustainable growth and eradicating poverty depend on, among other things, how it manages and develops its export sector. Copper and other resource materials, such as cobalt and gemstones, dominate the sector. The country's trade policy is to diversify its exports and production pattern so as to reduce the economy's dependence on copper. Policy has, therefore, been directed at increasing output and trade in non-traditional exports.

There has been significant growth in the export sector during the past decade. Total merchandise export earnings grew from US$902 million in 2001 to US$4,226 million in 2007 (see Table 1). The improvement in export performance could be attributed to the increasing prices of metal exports and increased production resulting from increased investment in the mining sector after privatisation and the opening of new mines. Metal exports increased from US$ 590 million in 2001 to US$3,400 million in 2007.

Table 1: Merchandise Trade Performance, 2001- 07 (US $ million)

Year	2001	2002	2003	2004	2005	2006	2007
Exports	902	917	1,084	1,588	2,095	3,841	4,226
Copper and Cobalt	590	560	669	1,103	1,557	3,084	3,400
NTEs*	312	368	415	485	538	757	826
NTE % of Total Exports	35	40	38	31	26	20	20
Growth of NTEs (%)	18	18	13	19	11	29	9

Source: DTI, Zambia Development Agency, Export Board of Zambia
*Non-Traditional Exports

Non-traditional exports (NTEs) have also grown significantly. The total NTEs grew from US$312 million in 2001 to US$826 million in 2007. This is an average growth rate of 16.7 percent per annum. However, despite this growth, the share of NTEs in total merchandise exports has remained about the same, averaging about 30 percent during the period. This can be attributed to the much stronger performance of the mining sector resulting from increasing production and high copper prices. The decrease in the contribution of NTEs to total export earnings was sharper between 2004 and 2007, the period that saw an unprecedented increase in copper prices on the world market and increased investment and production in the copper industry. This declining contribution may reflect the difficulties in diversifying the export base of the Zambian economy.

The growth in the NTEs has come from engineering products, comprising copper cables and rods; primary agricultural products, such as cotton and tobacco; processed and refined foods, mostly sugar and horticulture and floriculture products.

What is of major policy concern is whether or not the export sector is growing significantly enough to drive the overall process of growth and become a strong participant in global trade. This is not so. The sector is faced with major problems and constraints that limit its participation in world trade. Table 2 shows the performance of the sector in real terms. It is clear that export growth is slow and for most of the time lower than the Sub-Saharan Africa average growth rate. This performance is unlikely to push the real growth rate to over 7 percent that is necessary to enable sustainable growth in the economy. Only in the period 2000-2005 did the Zambian export growth rate significantly exceed that of Sub-Saharan African (SAA) countries at 12.7 percent compared to 4.2 percent for SAA. Because of this, Zambia's participation in world trade continues to be low. In 2003, total exports as a percentage of world exports were estimated at 0.014 percent. This is unlikely to have changed significantly. The country, therefore, continues to be unable to draw resources from the export sector to drive its growth process.

Table 2: Overall External Sector Performance, 2000 - 2005 (US $ million in Constant 2000 prices)

Period	2000	2001	2002	2003	2004	2005
Exports	682	880	939	1,034	1,164	1,307
Imports	1,018	1,295	1,219	1,264	1,401	1,689
Period	**1980-89**		**1990-99**		**2000-05**	
Exports [Growth Rate (%)]						
Zambia	-3.0		3.5		12.7	
Sub-Saharan Africa	1.3		4.8		4.2	
Imports [Growth Rate (%)]						
Zambia	-1.7		2.6		8.4	
Sub-Saharan Africa	-4.1		5.8		7.6	

Source: World Bank, African Development Indicators for 2007.

Zambia, therefore, needs to work on the problems and constraints that restrict the full utilisation of its export potential. Most of the constraints have to do with trade capacity and supply-side constraints.

III Constraints to Export Growth and Diversification

Zambia enjoys preferential market access to a number of countries that offer duty and quota free market access to their markets. The major markets are the Southern African Development Community (SADC) and Common Market for Eastern and Southern Africa (COMESA). In addition, Zambia receives non-reciprocal preferential market access through the Least Developed Countries (LDC) Generalised System of Preferences (GSP) to most developed economies, the Cotonou Agreement and Everything but Arms (EBA) Initiative of the EU, and the African Growth and Opportunity Act (AGOA) to the US market, as well as, the Canadian and the Japanese Initiatives.

Despite this large market access potential, the country faces a number of supply-side constraints that are impeding the sustainable growth of the export sector. The major binding constraints are in Trade Capacity, Economic Infrastructure and Productive Capacity in the export sectors. Issues related to Trade-Related Adjustment Assistance are currently unlikely to be of major concern.

Trade Policy Capacity

One of the major constraints to the development of the export sector is lack of local trade policy experts. The country needs to develop its own capacity to formulate and design trade and implement trade policy to suit its own specificities. Furthermore, the understanding of trade issues needs to involve government, private sector and civil society. There has been an effort to do this under Joint Integrated Technical Assistance Programme (JITAP), Integrated Framework for Trade Related Technical Assistance to the LDCs (IF), United Nations Conference on Trade and Development (UNCTAD) and WTO training.

Economic Infrastructure

The major constraints in Economic Infrastructure arise from poor infrastructure. These relate to poor roads, railways, air transport, telecommunications and energy supply and generation. These deficiencies are especially binding for Zambia, being a landlocked country. Exporters have to endure long routes to international ports in South Africa, Tanzania, Namibia and Mozambique. This impacts negatively on the competitiveness of export products (DTIS, 2005). For instance, in 2006, it took an average time of 64 days to ship a 20 feet import container from port to final destination, while an export container took 53 days. This is compared to the Sub-Saharan Africa average of 53 days and 43 days, respectively. In terms of cost, the average cost to ship a 20 feet import container from port to final destination in 2006 was US $2,840 while an export container was US $2,098. This is unfavourably compared to the Sub-Saharan Africa average of US $2,181 and US $1,750, respectively.

Road Network

In 2004 the total road network was estimated at 91,440 kilometres out of which only 22 percent was paved. The percentage of trunk, main and district paved roads in good condition was about 57 percent while the percentage of paved roads in fair condition was 22 percent. The bad condition of the road network is caused by inadequate maintenance. Most of the rural areas have poor or no access roads. In addition, most rural roads become impassable during part of the rainy season. The poor rural road network constrains smallholder participation in the production of high value cash crops, such as vegetables and cut flowers. As a result of the weak road network, non-traditional agricultural exports are primarily concentrated within a 160-km radius of Lusaka and are transported by air.

Railway Network

The railway network consists of two separate rail systems, Zambia Railways Limited (ZRL) and the Tanzania-Zambia Railway (TAZARA) System. The railways account for 40 percent of total foreign trade and transit traffic. An efficient rail system has the potential of reducing the transportation costs and road maintenance costs as the bulk of the heavy mineral exports and machinery imports could be delivered by rail. However, the rail system in Zambia faces a number of challenges. The rail tracks are poorly maintained, both rail systems lack adequate passenger and goods locomotives resulting into inefficiencies and high operating costs.

Air Transport

Air transport is currently the most convenient mode of travel especially for international tourists. Since the liquidation of Zambia Airways in 1994, the industry has been predominantly in private hands but none of the existing carriers has been designated the status of a national carrier. In 2005, there were 6,000 registered carrier departures carrying 54,000 passengers. In terms of trade, commercial airfreight is restricted to the export of cut flowers and fresh vegetable from Lusaka. There is an absence of guaranteed and reliable air cargo capacity available. Existing service providers occasionally divert capacity at short notice to transport more lucrative cargo. The large imbalance between exports and imports increases the transport costs for exporters.

Telecommunications

The Zambian telecommunications sector grew rapidly after the onset of the telecommunications reform in 1995. This has since slowed down because Zambia has failed to push further the reforms. The sector is now faced with limited access and slow growth of telecommunication services. Table 3 shows that while the mobile telephone subsection recorded significant growth between 2001 and 2006, the fixed line sub sector remained static. This is compounded by high international call prices and poor telecommunication services that penalise other sectors of the economy (Matoo and Payton, 2007). Major policies are needed such as increasing competition in the sector and introducing a strategic partner for Zamtel. Table 3 describes the state of the telecommunications sector.

Table 3: Use of Telecommunication Services in Zambia, 2001 - 2006

Year	2001	2002	2003	2004	2005	2006
Fixed-line telephone Subscribers (per 1000)	8.5	8.4	10.0	8.2	8.3	8.1
Mobile Telephone Subscribers	9.7	13.4	19.0	37.3	83.0	143.7
(per 1000)	-		8.5	-	10	-
Personal Computers (per 1000)	-		6.0	-	20	-
Internet users (1000)						

Source: Communications Authority; World Bank, 2008

Energy Supply and Generation

Despite the fact that Zambia has vast water resources and hydro potential, the country faces major problems in the generation and supply of electricity. The problem has been created by the lack of an appropriate institutional framework for the energy sector and investment. There has been very little major investment in the sector since the 1980s. Most of it has been directed at rehabilitation. The resolution of the problem points to the institutional re-structuring of the energy sector to bring investment and efficiency.

Investment in Infrastructure

Despite the constraints in Economic Infrastructure in the transport, energy and telecommunications sectors, there has been little investment in the sectors to resolve the problems. Table 4 shows investment in infrastructure projects in Zambia with private sector participation.

Table 4: Investment in Infrastructure Projects with Private Participation, 1995 - 2005 (US$ million)

Year	1995 - 1999	2000 - 2005
Telecommunications	64.2	208.3
Energy	277.0	12.0
Transport	15.6	-
Total	356.8	220.3

Source: World Bank (2008b)

Building Productive Capacity

There are major constraints in building productive activities in the export enhancing economic sectors exhibited by the financial, business services, agriculture, industry and tourism sectors. This has made the country fail to benefit from market access opportunities in world trade.

The financial sector in Zambia is open and competitive. However, access is limited and unequal. It is bundled with overwhelming regulations and lacks the capacity to provide adequate trade finance (Matoo and Payton, 2007).

The agriculture sector has the potential to lead growth. The major constraints to growth in the agriculture sector are: lack of access to markets, lack of water, limited rural financial services, lack of access to fertiliser, poor rural roads, land titles and security. On other hand, firms in the industrial sector are faced with high cost of finance, uncertainty in government policy and regulation and poor infrastructure and administrative barriers (World Bank, 2004).

The tourism sector is of great potential to export development in Zambia. However, the sector is faced with major management problems like poor environment planning, policy implementation, and co-ordination among government agencies, inadequate marketing of tourism, air transport, safety and hygiene standards, and the lack of health facilities near tourist sites and competitiveness of tourism services (World Bank, 2004).

Sustainable Growth

The effectiveness of Aid for Trade is sustainable in an environment of growth. Zambia's real growth during the past decade, though encouraging, has not been enough to produce a feedback effect between Aid for Trade and the growth process. Aid for Trade by resolving bottlenecks in supply-side constraints and enhancing trade policy formulation and implementation can lead to increased growth rate for the country and at the same time accelerate the process of poverty reduction. Zambia's GDP real growth has averaged about 4.6 percent per annum compared with 4.4 percent for Sub-Saharan Africa during the 2000-2005 period. Similarly, GDP per capita has grown at 2.7 percent per annum compared to 2.1 for Sub-Sahara Africa. The rates are below the 7 percent necessary to push the economy into sustainable growth. Table 5 shows the pattern of Zambian growth rates during the period 2000 to 2005.

Table 5: Patterns of Growth ($ million at 2000 constant prices)

Year	2000	2001	2002	2003	2004	2005	2000 - 05
GDP	3,238	3,396	3,508	3,688	3,887	4,090	
GDP Growth (%)	3.6	4.9	3.3	5.1	5.4	5.2	4.6
GDP per capita (US$)	303	311	316	327	339	351	
GDP capita Growth (%)	1.5	2.9	1.5	3.4	3.7	3.5	2.7

Source: World Bank (2008a) African Development Indicators, 2007

Experience, elsewhere, has shown that in order to create sustainable growth in an economy, such as Zambia's, the country's real growth rate must grow, at least at a minimum of 7 percent over 25 years (Commission on Growth and Development, 2008). The Zambian growth rate is much less than that.

IV Zambian Experiences with Aid for Trade

ODA Commitments on Aid for Trade

Many developing countries have received Aid for Trade from bilateral and multilateral donors. Total global commitments on Aid for Trade totalled US$ 22,773 million in 2004. Total Official Development Assistance (ODA), excluding debt relief, was estimated at US$ 93,480 million. Commitments for Aid for Trade, therefore, hovered around 24 percent. The major support went to Infrastructure Support. Commitments for Trade-Related Assistance and Capacity Building have recently gained ground with an estimated total of US$2,561 million in 2004. Table 6 shows the global distribution of commitments on Aid for Trade between 1994 and 2004.

Table 6: Global Commitments on Aid for Trade, 1994 - 2004 (US$ million, 2003 Constant prices)

	1994	1996	1998	2000	2002	2004
Trade Related Technical Assistance and Capacity Building	-	-	-	-	2,000	2,561
Infrastructure	10,031	11,026	10,123	7,951	8,638	12,911
Productive Capacity Building	7,371	7,896	7,419	7,529	5,483	7,301
Total	17,670	19,004	17,744	15,632	16,211	22,773
	(22.9)*	(25.8)	(24.8)	(20.0)	(21.2)	(24.4)
Total ODA	77,015	73,732	71,508	78,118	76,320	93,480

Source: OECD
* Percentage of ODA. ODA excludes debt relief.

Table 7 shows the commitments on Aid for Trade that Zambia received between 2002 and 2005. This is defined according to the categories of trade capacity building, infrastructure and building productive capacity. There has been insignificant Aid for Trade for capacity building activities. Most of the aid has been directed to building productive capacity. Total commitments were fairly steady and are estimated at an average of US $168.6 million during the 2002 and 2005 period. There were insignificant commitments for trade-related capacity building.

Table 7: ODA Commitments to Zambia: 2002 - 2005 (US $ million, 2004 Constant prices)

Year	2002	2003	2004	2005	2002 - 05 (Average)
Trade Policy and Regulations	-	-	-	-	-
Economic Infrastructure	76.3	6.0	151.1	19.2	63.2
Building Productive Capacity	56.0	152.1	85.0	128.6	105.4
Total	132.3	158.1	236.1	147.9	168.6

Source: OECD/WTO Creditor Reporting System (2007)

Table 8 shows the distribution of ODA commitments to economic infrastructure in Zambia between 2002 and 2005. The major beneficiary was transport and storage. This averaged US $58.7 million. Energy supply and distribution received US $3.8 million and communications received less than US $1.0 million.

Table 8: Distribution of ODA Commitments to Economic Infrastructure for Zambia, 2002 - 2005 (US$ million, 2004 Constant prices)

Year	2002	2003	2004	2005	2002-05 (Average)
Transport and Storage	74.8	4.9	148.3	6,853	58.7
Communications	0.4	0.6	0.7	0.6	0.6
Energy Supply and Generation	1.0	0.5	2.1	11.7	3.8
Total	76.3	6.0	151.1	19.2	63.2

Source: OECD/WTO Creditor Reporting System

Table 9 shows the distribution of ODA commitments to building productive capacity in the economy. Most of the commitments were directed at mineral resources and mining sector. The total commitment in the sector averaged US $44.8 million during the period 2002 to 2005. The amount to the agriculture sector averaged US $35.9 million. This was followed by industry and financial services at US $12.4 million and US $10.4 million, respectively. The tourism sector received insignificant commitments.

Table 9: Distribution of ODA Commitments to Building Productive Capacity, Zambia, (US$ million, 2004 constant prices)

Year	2002	2003	2004	2005	2002 - 05 (Average)
Business Support Services	1.9	-	1.0	4.0	1.7
Banking and Financial Services	11.5	26.4	1.0	0.8	9.9
Agriculture	19.7	24,7	53.5	45.9	35.9
Industry	0.08	1.0	29.2	19.2	12.4
Mineral resources and mining	22.9	97.7	0.04	58.6	44.8
Tourism	-	0.2	0.1	0.1	0.1

Source: OECD/WTO database

Aid for Trade Projects and Programmes

Zambia has received and participated in several activities and programmes by bilateral and multilateral donors and institutions to build trade capacity in the economy. The major programmes are JITAP and Integrated Framework for Trade Related Technical Assistance to the LDCs (IF). JITAP was established to mobilise expertise and support to help African countries participate in the WTO, integrate into the new multilateral trading system and take advantage of new trade opportunities in the global market. JITAP has improved capacity on WTO issues through seminars, workshops and training. JITAP has established reference centres and national enquiry points in Zambia. The programme has also strengthened national dialogue on trade through the establishment of inter-institutional committees bringing together government, private sector and civil society over trade issues.

Zambia became a beneficiary of the IF initiative in 2004. This is supported by International Monetary Fund (IMF), International Trade Centre (ITC), UNCTAD, United Nations Development Programme (UNDP), World Bank and WTO.

So far, several projects have been implemented in trade issues and capacity. The aim of most of the projects is to integrate trade into national development and assist the co-ordinated delivery of trade-related technical assistance in response to identified needs. The mandate of IF has focused on policy advice.

Technical assistance has also been received from multilateral and bilateral donors. These are UNCTAD, ITC, UNDP, United Nations Department of Economic and Social Affairs (UN-DESA) and World Bank. Technical assistance has also been received from Department for International Development (DFID), United States Agency for International Development (USAID), the Commonwealth Secretariat, the European Union (EU) and Frederick Ebert Stiftung (FES). The major bilateral donors involved in trade capacity building technical assistance are Sweden, Netherlands and Norway.

Table 10 shows some of the programmes which have been implemented in Zambia to build and increase trade capacity.

Table 10: Selected Aid for Trade Projects and Programmes

Project	Year/Amount
Rehabilitation of Zimba Road	2008
Livingstone International Airport	-
Sesheke Bridge	-
IF	Since 1994
USAID-MATEP	2006, US $24,000.00
USAID-PROFIT	-
EU Export Development Programme	-
ZAMTIE	2005, US $10,000.00: 2002, US $4,000.00

Source: OECD

Aid for Trade and MDGs

The successful implementation of the Aid for Trade initiatives coupled with increased financial resources should help to resolve the supply-side constraints that have limited the expansion of trade and the fostering of growth. The investments and the consequent expansion of trade will help foster higher growth rates in Zambia and generate additional resources for resolving the issues of poverty and deprivation in Zambia. This will consequently help the country to achieve the Millennium Development Goals (MDGs).

The effective uses of the Aid for Trade resources will expand trade and enable Zambia grow at a sustained level of not less than 7 percent per annum. The consequent real growth, especially if it is sustained, will generate resources to support health, education and other MDGs. A good quality of life with a good education system, a healthy diet, safe water and good health services all require considerable economic resources. It is only when an economy is growing sustainably can it be able to garner resources necessary to meet these developmental challenges.

Poverty is widespread in Zambia and the recent spurt of growth has had little impact on the levels of poverty in the country. There is clear evidence that trade opportunities spur growth. It is postulated that a 1 percent increase in the export growth rate will lead to a 0.15 percent real GDP growth (Stiglitz and Charlton,2006). Trade, therefore, helps reduce poverty by spurring economic growth, the main engine of poverty reduction. There is also a close relationship between poverty reduction and real growth (WTO, 2008, 139). Table 11 shows where Zambia is in terms of the achieving the MDGs by the year 2015, focusing on those that are economic related.

Table 11: Eradicating Poverty and Improving Lives

Depravation Indicators		2006	2015
Eradicate Extreme Poverty	Proportion of population living in extreme poverty (%)	51	29
Eradicate Hunger	Poverty Gap Ratio	34	31
	Prevalence of U5 underweight children	19.7	11
Achieve Universal Primary Education	Proportion of population below min level of dietary energy consumption (%)	51	29
	Net enrolments in primary education (%)	97	100
	Pupils reaching Grade 7 (%)	83	100
Promote Gender Equity	Literacy rates: 15-24 years old (%)	70*	100
	Ratio of girls to boys in primary	0.97	1
	Ratio of girls to boys in secondary	0.73	1
Reduce Child Mortality	Ratio of literate females to males among 15-24 year olds	0.8*	1
	U5 mortality rate	119*	56
Improve Maternal Health	Infant mortality rate	70*	30
	MMR (deaths per 100,000 live births)	449*	162
	Births attended by skilled personnel (%)	46*	-

Source: Ministry of Finance and National Planning (2008) Zambia: Millennium Development Goals, Progress Report for 2008.
* 2007

V Conclusion and Policy Implications

The Zambian export sector has grown considerably during the past decade. The NTEs recorded an average annual growth rate of 16.7 percent. Despite this growth the share of NTEs in total exports has remained static averaging about 30 percent during the period. However, the growth in the export sector has not been significant enough to push the economy to higher growth rates that can sustain real growth. The main problem has been the supply-side constraints that tend to limit export growth. Zambia has received aid from bilateral donors and multilateral institutions. This has not been sufficient to resolve the supply-side constraints. There is need for additional resources. Zambia will need increased export growth and GDP growth in order to resolve its poverty challenges and meet the MDGs by 2015.

The study established that there have been insignificant resources for Aid for Trade such as to resolve the supply-side constraints and trade infrastructure for capacity building. In order to make effective and scale-up the Aid for Trade and promote growth, Zambia needs to encourage policies that take ownership of the Aid for Trade initiatives. Ownership will allow the country to determine its own Aid for Trade plans involving all stakeholders. The country should also encourage national dialogue on the formulation and implementation of trade policy, mainstream Aid for Trade in development and external assistance. The country should form a national committee on Aid for Trade. To support all this, there must be a policy to increase the GDP growth rate to more than 7 percent and sustain it at that high level.

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CHAPTER TWO

Financial Development and Economic Growth Nexus: A Multivariate VAR Analysis of Zambia's Economy

By

Lufeyo Banda

Abstract

The causal relationship between financial development and economic output for Zambia covering the period 1965-2004 is examined. Granger causality testing procedures based on VECM and Toda-Yamamoto are employed for the analysis. The study finds some evidence of both uni-directional and bi-directional causality between financial development and economic output, though the uni-direction causality seem to prevail more. We also find an indirect causal relationship of credit to economic output via growth fixed capital formation. The findings we have disentangled in this paper using the two methods confirms a number of issues some of which are: (1) that in less developed countries like Zambia it is supply-leading hypothesis which features more predominant than demand-following, (2) the indirect causality relationship of credit and economic output seems to confirm one possible explanation and that is we have Credit rationing taking place in the Zambian economy where firms may find it difficult to source working capital from financial intermediaries for investment projects, (3) Furthermore, the empirical results suggest that long-run steady state exists among the model's seven variables and that efficiency of the financial system seem to play a positive role both in the short-run and long-run dynamics thereby pointing to one critical policy framework and that is Zambia needs to continue with the liberalisation of the financial sector.

I Introduction

Historically, the link between financial development and economic growth could be traced to Hamilton (1781) and Schumpeter (1911). These scholars advocated the hypothesis that financial development leads economic growth, which has come to be known as the finance-lead hypothesis. This hypothesis received further impetus from McKinnon (1973) and Shaw (1973), as well as international financial institutions (i.e., World Bank and the IMF). These scholars and institutions argue that a liberalised financial sector mobilises greater volumes of financial saving and allocates capital to the more productive users and thereby improves economic growth. Also argued in the new growth literature (Pagano, 1993), financial development could impact on economic growth by raising the savings rate, the marginal productivity of capital and the proportion of savings devoted to investment.

There are, however, alternatives to the finance-lead hypothesis, in particular the demand-following hypothesis which posits that economic growth induces growth in the financial

sector (Patrick, 1966). This is because the early phases of an economy are characterised by the supply-leading finance, but as the economy matures finance development takes pre-eminence. A feedback relationship between financial development and economic growth has been identified in the literature as early as the 1950s (Lewis, 1955). A number of empirical studies find a two-way causality between finance development and economic growth (see Greenwood and Jovanovic, 1990; Berthelemy and Varouudakis, 1997; and Greenwood and Bruce, 1997).

Despite the vast interest generated in the finance-growth nexus worldwide, most of this work is based on cross-section econometric work (Goldsmith,1983 and Jung, 1986). A useful suggestion spelt out in the existing cross-country work, notably Jung (1986), is that a country-specific study is likely to yield robust and conclusive evidence.

Contributing to the literature, this paper aims at investigating the causal relationship between growth and financial indicators in Zambia. The specific motives are threefold. First, we argue that if national economic policy is to favour a supply-leading experiment in the form of financial restructuring programme, it is necessary that policy makers are able to isolate the relevant financial variables in that economy. Second, despite the vast interest in the finance-growth nexus worldwide as stated above, in the case of the Zambian economy there has only been one study to our knowledge, conducted by Agbetslafa (2003), which made an attempt to investigate the link between financial markets development and economic growth in Sub-Saharan Africa and this included Zambia. This study used co-integrating analysis proposed by Johansen and Juselius (1991). The mode of estimation was based on the bivariate analysis approach and the empirical results obtained support the existence of uni-directional causality running from financial development to growth. Third, we utilise instead a multivariate co-integration framework in that the tests for Granger-causality are between finance, investment and real GDP per capita.

To compliment the VECM results obtained, we also estimated the Toda-Yamamoto system. This framework does not require pre test of the variables. In this way, this paper also provides us with an opportunity to compare results from those which have tested the competing hypotheses of causality (i.e., demand-following and supply-leading). Investment variable is included in the vector since it has been argued that financial development via fixed capital formation responses may play a crucial role in affecting real per capita income and vice versa (see Luintel and Khan, 1999). The study period spans from 1965 to 2004.

The rest of the paper is structured as follows: Section two briefly reviews the process of financial development in Zambia and in particular the reforms. Section three lays out the methodology of Granger-causality based on VECM and Toda-Yamamoto system and gives a brief description on the data. Section four presents the causality results based on both the VECM and Toda-Yamamoto framework. Finally, section five presents the conclusion.

II Financial Sector Developments

The Zambian financial system has undergone reforms over the last decade. The reforms were carried out with the objective of boosting efficiency and productivity of the banking system, among others. The main mechanism of efficiency improvement was to allow competition by limiting state interventions and to enhance the role of market (Kalyalya, 2001). Some of the initial reforms involved the following:

a) Interest rates liberalisation, which entailed complete removal of controls on lending and deposit rates;

b) Removal of exchange controls in 1994, in order to promote efficient external payment system, and the attainment of a sustainable external balance;

c) Introduction of the treasury bills tender system in order to strengthen the open market operations tools;

d) Introduction of the interbank market, which has offered banks greater flexibility in the management of their liquidity;

e) Introduction of the electronic clearing house in 1999, which helped provide an efficient and reliable clearing and payment system for purposes of lubricating the financial system; and

f) Strengthening of the banking laws by enactment of the 1994 Banking and Financial Services Act.

g) As a result of these reforms, the financial sector has registered some improvement (Gelbard and Leite, 1999). In addition, Zambia has been experiencing recovery with positive increases in real incomes since 1999. Per capita GDP has increased by an average of 3.5 percent annually since 2003.

III Econometric Methodology and Data

As illustrated by Engle and Granger (1987), evidence of cointegration among variables rules out the possibility of a 'spurious' relationship. Further, the direction of the Granger (or temporal) causality can be detected through the vector error correction model (VECM).

We exploit the idea that there may exist co-movements between finance and real incomes of Zambia and possibilities that they will trend together in finding a long-run stable equilibrium. With the variables, $x_t = [rgdpc, ngfcf, pvy, spread, uc, \text{int}]$, in this order, the VECM specification takes the form (is a difference operator):

$$\Delta x_t = \mu + \Gamma_1 \Delta x_{t-1} + ... + \Gamma_k \Delta x_{t+k-1} + \Pi x_{t-1} + \omega D_t + v_t, \qquad (1)$$

Where, $\Gamma_1,...,\Gamma_{k-1}$ are short-run parameters, μ = is a constant, Π = cointegrating vector D_t=*dummies* and $v_t, ..., v_T$ are the error terms, $Niid_p(0,\Sigma)$. Assuming x_t is I (1), equation (1) contains a mixture of stationary and non-stationary components and

$$\Pi = \alpha\beta' \qquad (2)$$

has a reduced rank where α and β are $n x r$. Specifically, β gives the cointegration relations and α the loading or adjustment coefficients (that measure the feedback of the cointegration relations into the differenced variables, Δx_t).

We assume all the variables are in log form defined as follows: *rgdpc* is the real per capita income, *gfc* stands for gross fixed capital formation (or investment) as percentage of GDP. This proxy is a very important component of the output equation as it captures the rate of augmentation of physical capital stock throughout the economy. *Pvy* represents credit to the private sector by commercial banks as a percentage of GDP. This proxy of financial intermediation isolates credits issued to the private sector, as opposed to credits issued to the public sector, and it also excludes credit issued by the central bank. The second financial proxy is the *spread,* which represents the difference between interest rate on loans and deposits. It measures the amount of resources absorbed by the banking sector and thereby the efficiency of financial intermediation. *Uc* is defined as the financial uncertainty. *Int* is the short term real interest rates proxied by the 28 days treasury bills rate. Romer (1990) argues that with increase in the interest rates, agents discount future output relative to current output at a higher rate. This results in capital moving from productive resources and consequently the output of the economy declines.

In line with Fedderke (2000), we also considered other variables that might affect gross fixed capital formation. These were financial instability variable *(uc)* and openness of the economy *(open). Uc* is defined as the difference between the local interest and international interest rate (i.e., US $ rate). *Open* is the sum of imports and exports (i.e., total trade) as a percentage of GDP.

With the ordering of the variables in the VECM, the estimated equation (1) was used to test causality from finance to economic output and investment to economic output. Equation (2) was used to test causality from income and credit to gross fixed capital formation. Testing causality from economic output and gross fixed capital formation to credit relied on equation (3). In addition to indicating the direction of causality amongst variables, the VECM approach allows us to distinguish between 'short-run' and 'long-run' Granger-causality. When the variables are co-integrated the short-term deviations will force the movement toward long-run equilibrium through the feedback mechanism. The novelty of the ECM approach to economic modelling and its significance in testing Granger causality, as well as implications for economic theory has been covered extensively in the literature (see Muscatelli and Hurn, 1992; Canova, 1993).

To test for the robustness of the results obtained under VECM we applied the method proposed by Toda and Yamamoto (1995). Toda and Yamamoto developed a simple procedure that involves testing for Granger non-causality in level Vector Autoregressive (VAR) irrespective of whether the variables are integrated, co-integrated or not. For this purpose, a VAR is estimated not with its 'true' lag order k but with lag order of $k + d$, where d is the maximal potential order of integration of the variables. Then, Granger causality is tested by performing hypothesis tests in the VAR ignoring the additional lags $k + 1, \ldots, k + d$. Toda and Yamamoto proved that in such a case linear and non-linear restrictions can be tested using standard asymptotic theory. This method, which like the Autoregressive distributed lag (ARDL) technique avoids the low-power unit root and co-integration pre-tests, has recently been applied in several causality studies.

IV Estimation Results

Unit Root Tests

The data source was mainly the World Development Indicators (WDI) online data set. As expected, prior to testing for cointegration, we investigated the integration properties of the variables. Based on the Augmented Dickey-Fuller (ADF) tests which are presented in Table 1 below (see Dickey and Fuller, 1981), we could not find any significant evidence that all the seven variables included in the VAR were not integrated of order one or I(1).

Table 1: ADF Unit Root Test

	Level	First Difference
rgdp	-1.29	-6.40
gfc	-1.34	-7.03
pvy	-1.42	-4.95
spread	-1.20	-9.52
uc	-1.71	-6.14
open	-2.69	-6.77
Int	-2.91	-8.20

Note: Mackinnon (1991) critical values are -3.50 in levels and -2.92 for the 1st difference.

Cointegration Analysis

Given the common integration properties of these variables, we then proceeded to testing for the presence of co-integration in the vector error correction space *rgdpc, gfc, pvy, spread, uc and open* by using Johansen and Juselius (1988) multivariate Maximum likelihood estimation (MLE) procedure.[2 and 3] Results of Johansen and Juselius's *LR* and trace tests are presented in Table 2. The results tabulated in Table 2 show that both the Maximum eigenvalue (λmax) and the Trace statistics ($\lambda trace$) suggest $r = 2$. The hypothesis $r = 0$ is rejected against $r = 1$, and the hypothesis $r = 1$ is rejected against $r = 2$ but the hypothesis that $r = 2$ cannot be rejected against $r = 3$ etc. Though maximum eigenvalue statistic and the trace test are consistent in this model, our theoretical *apriori* is that there are 3 long-run relationships and this exert a bias in favour of $r = 3$.

Table 2: Johansen estimates

null	Alternative	Alternative	95% CV	90% CV
Co-integration LR test based on maximal Eigenvalue statistics				
R = 0	*R = 1*	67.13	49.32	46.54
r < 1	*r = 2*	49.75	43.61	40.76
r < 2	*r = 3*	30.63	37.86	35.04
r < 3	*r = 4*	18.58	31.79	29.13
r < 4	*r = 5*	15.05	25.42	23.10
Cointegration LR test based on trace statistic				
r = 0	*r = 1*	198.02	147.27	141.82
r < 1	*r = 2*	130.90	115.85	110.60
r < 2	*r = 3*	81.15	87.17	82.88
r < 3	*r = 4*	50.52	63.00	59.16
r < 4	*r = 5*	31.93	42.34	39.34

Order of the VAR=2. List of CVs: lnrgdpc, lngfcf, lnpvy, lnspread, lnuc, lnint, openk, dum75 and dum92.

[2]Detailed discussion of the Johansen procedure can be found in Cuthbertson et al. (1992), and wide-ranging surveys by Clements (1989) and Muscatelli and Hurn (1992).

[3]In addition, I used PSS to unearth the exact variables to normalise on.

Identification of Long Run Model

Identification of the long-run structure basically involves testing hypothesis of financial output nexus in the form of direct and indirect relationship. The over-identified system, which is easily accepted with a $\chi^2(2) = 5.21(0.07)$ is given in equations (3), (4) and (5). This in essence gives rise to the preferred model of long-run relationship between financial development and economic output of Zambia.

$$rgdp_t = \underset{(0.16)}{0.15}gfc_t + \underset{(0.12)}{1.14}pvy_t - \underset{(0.002)}{0.01}int_t + \underset{(0.16)}{0.15}open_t \quad (3)$$

$$gfc_t = \underset{(0.16)}{0.66}rgdp_t + \underset{(0.38)}{1.13}pvy_t + \underset{(0.37)}{1.65}open_t \quad (4)$$

$$pvy_t = \underset{(0.16)}{0.66}rgdp_t + \underset{(0.19)}{0.21}fgdp_t - \underset{(0.03)}{0.05}wedge_t - \underset{(0.11)}{0.35}open_t \quad (5)$$

We note that real per capita income is significantly influenced by *pvy int and open*. While the sign of gross fixed capital is positive, its impact on economic growth is insignificant. We further note the negative effect of interest rates on real per capita income is in agreement with the traditional view of a long-run positive link between growth and capital accumulation and a negative long run link between accumulation and cost of capital (see Mishkin, 1981 and Romer, 1990).

The long-run equation (4) suggests that real per capita income, financial development and openness have a positive and significant impact on capital formation. Equation (5) suggests that private credit is positively and significantly influenced by real per capita income and spreads. However, openness though significant has a wrong sign.

The evidence from these three vectors seems to suggest that in the long run financial development positively affects the economic output and the reverse is true. However, this does not give us the answers to the issue of causality, which of course is the basis for our discussion under the VECM.

Granger Causality Tests

In this section, we determine the direction of long-run and short-run Granger causality and conclude whether or not the finance-led growth or growth-driven finance or both hold true in the case of Zambia. The presence of more than one co-integrating relationship allows us to use Johansen's co-integrating procedure and the error correction model to test for Granger causality.

Conditional on the above long-run estimates, we have the following expressions for the error correction model which depicts both the short-run and long-run dynamics of causality between financial development and economic output of the Zambian economy in Table 3.

Table 3: Granger-Causality Tests on VECM

Sources of causation		Full Model	
	$\Delta rgdp$	Δgfc	Δpvy
$\Delta rgdp$	-	$x^2(1)$ 0.19E-4(0.99)	$x^2(1)$ 0.43(0.51)
Δgfc	$x^2(1)$ 3.52(0.06)	-	$x^2(1)$ 0.83(0.36)
Δpvy	$x^2(1)$ 7.84(0.00)	$x^2(1)$ 0.79(0.37)	-
$\Delta wedge$	$x^2(1)$ 3.40(0.07)	$x^2(1)$ 1.68E-3(0.99)	$x^2(1)$ 0.04(0.84)
	Long-run ECM		
$ecm1_{t-1}$	-2.68 (-0.13)	1.69 (0.51)	0.61 (0.08)
$ecm2_{t-1}$	0.21 (-0.00)	-3.77 (-0.34)	-1.94 (-0.08)
$ecm3_{t-1}$	-4.78 (-0.53)	-0.19 (-0.12)	0.07 (0.02)

In the short run estimates in parenthesis are the p-values while those for the ECM the terms not in parenthesis are the t-values.

Estimates of the parameters show that the error-correction term measuring the long-run disequilibrium is significant in two out of the three equations (i.e., *ecm1 = -0.1, ecm2 = -0.34*) and while *ecm3 = 0.02* was found not to be statistically significant. Thus, concerning the long run causality, the *t*-statistic appears to be significant in only the first and second co-integrating vectors. However, in the credit vector equation none appear to be significant. This implies that all the variables in the cointegration (1) and cointegration (2) have a tendency to restore equilibrium and take the burden of any shock to the system. In this case the *t*-tests for the error-correction terms, at the 1% level of significance, indicate that real per capita income is granger caused by Δpvy.

These results would imply that a long-run causal relationship running from Δpvy to $\Delta rgdp$ exists, although not in the reverse direction, that is, from Δpvy to $\Delta rgdp$ (as $\Delta rgdp$ is not significant in the third VECM equation). Our results therefore do not render support to the claims that there is a long run bi-directional causality taking place in Zambia. Conversely, private credit as a proxy of financial development seems to cause and precede real per capita income.

Regarding the short-run dynamics (Granger-causality in the strict sense) of cointegration (1), it is suggested that real output is affected by changes in gross fixed capital formation, private credit Δpvy and spread between lending and borrowing rates. This finding is based on the significance of the *p*-values of these variables at 10, 5 and 1 percent, respectively. The short-run dynamics of cointegrating equations (3) and (4) indicate that there is no causality existing between variables of interest. This means that only a uni-directional relationship exists from private credit and spread to real per capita income. This of course is in addition to the causal inference running from gross fixed capital formation to economic output as mentioned earlier.

To complete our analysis of the causal relationship in our multivariate framework, it is useful to compare these results with those generated by another method. Hence, in the next section we discuss the causality relationship between finance and output in levels using the Toda and Yamamoto framework. It must be pointed out that this only involves the long-run dynamics.

Toda and Yamamota Levels VAR Results

Results from the VAR estimated using the procedure developed by Toda-Yamamoto (1995) are presented in Table 4. Although the lag order chosen by Akaike Information Criterion and Schwartz Bayesian Criterion was 2, a $(k + 1 = 3)$ order VAR was estimated with restrictions placed on lagged terms up to the k^{th} lag. Since all the variables are in levels, no short-run causality flows exists, as was the case with the VECM. Rather, the results provide information about the long-run causal relationship among variables in the system.

The results obtained in Table 4 seem to indirectly render support to the supply-leading hypothesis found in VECM approach. In this case, we found *pvy* to Granger-cause *gfc* and in turn *gfc* to Granger-cause *rgdp*.

Furthermore, we found that *rgdp* is Granger-caused by *spread* and *pvy* Granger-caused by *rgdp*. This slightly contrasts with the results obtained under the VECM where only the supply-leading hypothesis seems to be supported by the results. However, in both models (i.e., VECM and Toda-Yamamoto) we have indirect support for supply-leading hypothesis from *pvy* to *rgdpc* via *gfc*.

Two issues come out from this modelling: first is the support in both models for the indirect causality relationship running from log of private credit to log of real GDP per capita income via log of gross fixed capital formation. Second is the support of the direct causal relationship running from log of wedge to log of real GDP per capita income and also log of real GDP per capita income causing log of private credit. With regard to the rest of the hypotheses, we found that we could not reject the hypothesis of "Granger no-causality" even at 10 percent level of significance (for more details see *p*-values in Table 4).

Table 4: Results of long-run causality test based on Toda-Yamamoto

Variables	Order of VAR Model	Source of causation			
		$rgdp$	gfc	pvy	$wedge$
$rgdp$	3	-	$\chi^2(1)=4.23$ [0.04]	$\chi^2(1)=0.37$ [0.54]	$\chi^2(1)=12.17$ [0.00]
gfc	3	$\chi^2(1)=0.09$ [0.77]	-	$\chi^2(1)=3.94$ [0.05]	$\chi^2(1)=0.04$ [0.84]
pvy	3	$\chi^2(1)=3.91$ [0.04]	$\chi^2(1)=0.47$ [0.49]	-	$\chi^2(1)=1.19$ [0.27]
$wedge$	3	$\chi^2(1)=0.02$ [0.89]	$\chi^2(1)=0.82$ [0.37]	$\chi^2(1)=0.05$ [0.83]	-

Optimal lag length is determined by AIC and SC. VAR order = k+dmax were k s the lag length used in the system and dmax is the maximum order of integration in the system. Here, it is I (1) and k=1.

V Conclusions

The purpose of this paper was to examine the causality issue between real income and financial development in a multivariate context bringing in the gross fixed capital formation as a third variable in Zambia. In so doing, various recently developed time-series techniques such as unit root testing, multivariate cointegration and procedures in vector error-correction modelling were introduced and illustrated both with respect to exposing additional channels of causation to emerge and economic intuition of long-run relationships. Furthermore, a procedure such as Toda Yamamoto was applied in order to compliment the VECM results obtained.

Finally, although in both models we seem to have at least one measure of the financial system (credit or wedge) affecting per capita output directly, we also had indirect causal relationship of credit via the gross fixed capital formation rate to real per capita income. Credit extension was found to have both *direct and indirect* influence on the real sector. One possible explanation for the in*direct* association between financial intermediation and the real sector may be attributed to the presence of credit rationing within the Zambian economy. Furthermore, from the results of the various financial policy reforms which have been undertaken so far, they seem to suggest that progress has been achieved in improving and modernising the financial systems. However, much remains to be done, for instance by properly sequencing and completing the reform process, Zambia could benefit more from the efficient pulling and allocation of resources. In view of this, the government needs to continue with the financial policies they have started.

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CHAPTER THREE

The Impact of Privatisation on Firm Performance in Zambia: Did Privatisation Make a Difference?

By

Caesar Cheelo[y] and Themba Munalula[§]

Abstract

Premised on the basic assumption that privately owned and privately run firms operate more efficiently than comparable state owned enterprises, privatisation efforts were initiated in many sub-Saharan African countries in the 1990s, including Zambia. This study empirically determines the impact of privatisation on firm output, profitability and labour employment decisions in Zambia. The study employs panel data regression analysis to estimate the impacts of privatisation, utilizing a combination of firm survey data and official data for the period 1993 to 2002. Broadly, the study finds evidence of significant positive impacts of privatisation on firm output and profitability and a significant negative impact on labour employment. It is observed that privatisation impacts, though significant, are not as strong as influences associated with liberalising the economic environment in which firms operate. Privatisation is likely to significantly increase the chance of improved performance for firms that survive the transitional period of economic reform, but with negative employment effects in the interim, which require mitigating.

I Introduction

Privately owned and privately run firms are often said to operate more efficiently than comparable state owned enterprises. The basis of this argument is that in general, the transfer of property from the public sector to private hands leads to a different structure of management incentives, causing changes in managerial behaviour, company performance, and quality of services. Ultimately, private firms perform better than state owned ones, at least in theory (Perevalov et al, 2001; La Porta and López-de-Silanes, 1999). In Zambia, this was part of the rationale for privatisation.

On the other hand, Laffont and Tirole (1993) argue that theory alone is unlikely to be conclusive with respect to adequately exposing the impact of privatisation. Empirical assessment is essential for providing an understanding of the changes in firm performance ascribable to privatisation, controlling for confounding factors and giving insight into programme effectiveness.

Following privatisation efforts in Zambia for over a decade, there is surprisingly little empirical evidence of the impact of privatisation on firm performance. This study seeks to address this gap. The study aims to explain the impact of privatisation on firms in Zambia during 1993 to 2002, controlling for other factors that influence firm performance. It employs panel data regression analysis to establish the empirical relationships between

[y]Lecturer and Research Economist, Economics Department, University of Zambia (ccheelo@yahoo.com)
[§]Working with COMESA (tmunalula@hotmail.com)

measures of firm performance and key explanatory variables. It draws on a combination of firm-level survey data and official data from the Central Statistical Office (CSO) for the period 1993 to 2002.

The rest of the paper is arranged as follows: Section two explains the historical context of privatisation in Zambia; Section three reviews relevant literature on privatisation; Section four describes the methodology and data; Section five presents and discusses the results of the study; Section six explains some of the limitations of the study; and Section seven offers the conclusion.

II Privatisation in Zambia

During the early years after independence (1964-68), Zambia followed a capitalist economic orientation with little public sector participation in the national economy. This period was accompanied by booming economic prospects for the country. Supported by favourable copper prices, Zambia earned over 90 percent of its export revenue from copper.

In 1968, radical economic reforms were initiated and the capitalist orientation that had been adopted at independence was reversed with emphasis being placed instead on self-reliance, nationalisation and attempts at industrialisation via import substitution. Nationalisation saw the expansion of the public sector's share of capital investments from US$ 180.4 million (or 42.3 percent) during 1954-64 to US$ 281.8 million (or 67.7 percent) in 1966-70. Ultimately, 80 percent of the economy came under the control of state owned companies (Andersson and Kayizzi-Mugerwa, 1993).

Since 1973, Zambia has experienced many episodes of external and internal shocks including deterioration in the terms of trade, collapsing copper prices, soaring oil prices, lack of capital investment, domestic policy failure and internal mismanagement (Bigsten and Kayizzi-Mugerwa, 2000). The situation was further aggravated by frequently recurring droughts. Throughout the period, the Zambian authorities assumed the shocks were temporary and in response undertook huge external borrowings. By 1990, external debt was over US$ 6.9 billion (IMF and IDA 2003; World Bank, 2003). In the interim, from 1985 to 1989 public enterprise losses were estimated at US$ 455 million per annum. Ultimately, Zambia's economic position deteriorated to the extent that the country was unable to service its internal and external debt obligations. It was also incapable of sustaining its ailing domestic industries. Domestic policy failure and economic misalignment only served to reinforce the adverse effects of the persistent external shocks (Bigsten and Kayizzi-Mugerwa, 2000).

Following almost two decades of economic misfortune and state participation with overly intrusive controls, Zambia finally committed to extensive and deep economic reforms (including liberalisation and structural adjustments) from the end of 1991. By this time, external debt had risen to US$ 7.2 billion, private investment had remained depressed and Zambia had experienced decades of steady declines in per capita income (from US$ 900 in 1970 to US$ 380 in 1990) (Aron and Elbadawi, 1992; Ministry of Finance, 1996).

A keystone tenet of the 1991 reforms was the initiation of an ambitious privatisation programme. The Zambian privatisation programme was actively initiated in 1992 with the establishment of the Zambia Privatisation Agency (ZPA). At inception, the stated objectives of the programme included the following:

a) To scale down Government's direct involvement in the operations of enterprises;

b) To reduce the administrative load associated with this direct involvement;

c) To minimise state bureaucracy in enterprise operations;

d) To reduce the costs of capital expenditure and subsidies from public funds;

e) To promote competition and improve efficiency of enterprise operations;

f) To encourage wide ownership of shares;

g) To promote the growth of capital markets;

h) To stimulate both local and foreign investment;

i) To promote new capital investment; and

j) To derive capital income for the Treasury.

Given that the main rationale for privatisation was to foster structural changes in privatised firms, the lacking focus on firm outcomes was perhaps a crucial oversight[1].

Because the privatisation programme was initiated at just about the same time as the broader liberalisation reforms, its impact on firm performance is difficult to isolate in view of price and exchange decontrols, trade liberalisation, marketing deregulation and many other structural reforms. This ushered in the debate about the impact of privatisation on the economy.

III Literature Review

Price Waterhouse (1996) evaluated the impact of the Zambia Privatisation Programme over the period 1994-1996. The evaluation included examination of macroeconomic revenues over the period, levels of government subsidies to state owned enterprises (SOEs) and the performance of a selection of privatised companies. About three years later, Management Systems/Devcorp (1999) reviewed, among other things, the performance of 40 privatised enterprises in a cross section of economic sectors, company size and structure, for the period 1992 to 1997. The main conclusion in both studies was that insufficient time had elapsed between the commencement of implementing the privatisation process and conducting the studies to attribute any definable impact at either macroeconomic or company level to the privatisation process itself.

A review by the World Bank (2002) aimed to clarify the facts about the privatisation results up until 2002, towards understanding achievements, criticisms and the validity of observed relationships. The study drew lessons for the future from a review of Zambia's privatisation programme, including the extent of stakeholder consultations, experiences with policy- and decision-making, and outcomes in implementation and monitoring. The World Bank report found evidence that there was a great deal of disappointment among key Zambian stakeholders concerning the results of Zambia's privatisation programme, mainly due to lack of adequate information about why Zambia's privatisation took place and about the

[1]For instance, many anecdotal and official reports from ZPA indicate that a considerable number of privatised firms suffered the same mismanagement they had experienced before privatisation. This was often to the extent that firms closed down within a short period. It is very likely that the main underlying reason for such failure was the lack of support or mitigating mechanisms once firms were transferred to private hands. Without such mechanisms, the rapidly liberalising economic environment made it very hard for firms to understand how to operate in the new environment and survive the transition.

results of privatisation. The study however asserted that the privatisation programme achieved an important measure of "damage control" for almost all of the companies privatised after the establishment of the Zambia Privatisation Agency (ZPA) in 1992. In addition, backward linkages had been extended to several hundred thousand small farmers significantly increasing their income.

The above studies all had various shortcomings: the first two studies were largely inconclusive due to various data constraints while all three studies were less rigorous than would be expected in establishing the impact of privatisation on the various parameters considered. Torero (2003) and La Porta and Lopez-de-Silanes (1999) applied similar approaches to the analysis of privatisation, collecting information on nearly the entire population of firms in Peru and Mexico, respectively, in order to evaluate the impact of privatisation in those countries. They compared the performance of privatised firms with the remaining SOEs and, where possible, with industry-matched private firms. Through their respective methodological specifications, the impact of privatisation on profitability ratios, operating efficiency ratios, labor indicators, capital deepening and other indicators was analyzed. Both studies separately found evidence that although the effect of change in ownership was important, the competitive and regulatory environment in which a given firm operated, the degree of market competition and the effectiveness of regulatory policy were also important. These latter factors were found to have statistically more significant effects on performance than change of ownership.

IV Theoretical Framework

Firm theory suggests that firms are motivated by output (sale turnover) or profit maximization behaviour (i.e., a firm's main objective can either be to maximise output or profits) (Laffont and Tirole, 1993). Firms also make important decisions about hiring, maintaining or letting go of labour, depending on the internal and external circumstances facing them. The outcomes on these factors during firm operation are important indicators of performance and decision making.

Partly in view of these theoretical underpinnings, three performance indicators were chosen as the preferred dependent variables for testing the hypotheses highlighted earlier. The depended variables were identified as *LRTurnover*, *LRProfit* and *LTWorkers* as defined earlier.

The analysis aims to empirically test the broad hypothesis that privatisation has promoted performance improvements; although these improvements have been confounded by the transitional influences of the liberalisation processes. More specifically, the analysis checks the following hypotheses about privatisation, among others:

a) Privatisation has a positive impact on a firm's ability to generate real sales turnover (or revenue);

b) Privatisation leads to an increase in profitability;

c) Privatisation leads to reduction in employment over the short to medium-term; and

d) The performance of firms is subject to the influence of liberalisation, which is different from the influence of privatisation *per se*.

Panel data on firm performance before and after privatisation are used to capture the effect of ownership changes. Because the panel structure of the sample includes firms that have always been private entities and state-owned enterprises along with the privatised firms, the panel gives the opportunity to control for firm-specific and group-specific effects.

Random-effects and fixed-effects models were deemed appropriate for the analysis (Green, 1997; Wooldridge, 2003). The general notion in estimating fixed-effects (within/between) and random-effects (mixed) models on both balanced and unbalanced panel data is:

$$\pi_{[i,t]} = X_{[i,t]} * a + u_{[i]} + v_{[i,t]} \quad (1)$$

Where π is the value of the dependent (performance) variable for the cross-sectional unit (the firm) i at time t; X is the matrix of the values of the explanatory variables for unit i at time t; a is a matrix of coefficients. $u[i]$ is the fixed or random effect and $v[i,t]$ is the pure residual.

The fixed-effects and random-effects models provided estimation of the influence of privatisation. In such models, time effects are often viewed as "transitions" or discrete changes of state (Green, 1997). This permitted the division of the privatisation effect, specific to the change of ownership, and the transition effect, reflecting the significant influence that liberalisation processes have on individual units (firms) during the observation period. That is, it is possible to account for the fact that privatisation fundamentally changes the structure of those firms that change ownership status while liberalisation had a more general fundamental impact on firms, changing the whole environment in which they operate.

To ensure that as far as possible the theoretical assertions that marginal change in the firm performance ascribable to privatisation *per se* are isolated from those that are ascribable to liberalisation, equation (1) was given more empirical structure. The specification of the regression equation for estimating the fixed-effects and random-effects models was therefore given as:

$$\pi = \beta_0 + \sum_{i=1}^{m}\sum_{t=1}^{T}\alpha_{[i,t]}X_{[i,t]} + \sum_{j=1}^{n}\sum_{t=1}^{T}\delta_{[j,t]}Y_{[j,t]} + u_{[i]} + v_{[i,t]} \quad (2)$$

Where[2]:

As before, π is a measure of firm performance or firm outcomes such as real turnover (*LRTurnover*), real net profit (*LRProfit*), or total labour employment (*LTWorkers*). Note that the specification of three dependent variables meant that three separate models were estimated, one for each outcome (performance) indicator.

X is a vector of firms-specific characteristics through which the influence of privatisation is exerted, e.g., the number of years a firm has been in private hands (denoted *YPrvtzn*); the amount of real working capital or liquidity available to the firm, *LRWCapt*; *LTWorkers*[3]; and *FirmType*, capturing the privatisation history of the firm.

Y is a vector of control variables included to account for other characteristics that are not entirely firm-specific (e.g., the firm's market share in its sector of operation, *LMktShare* and the economic sector to which the firm belongs, *EconSect*).

[2]The full operational definitions of the variables are presented in Annex 1.

[3]Which, consistent with the above, was expect to serve as a dependent and explanatory variable depending on the specific model under consideration

The influence of liberalisation was measured through *MktShare* and *EconSect*, because these variables would be expected to change fundamentally due to liberalisation not due to privatisation *per se*. The variables *X* were of interest as they capture the impact of privatisation on firm performance. Important among them was *YPrvtzn*, the number of years a firm had been in private hands, which revealed the influence of privatisation *per se*.

Three separate equations of firm behaviour were estimated following the empirical specification of equation (2). The performance equations were all estimated using the panel of survey data and using the STATA software package. In all cases, unless explicitly stated, the analysis was done at the 5 percent level of significance.

For each estimation equation, two competing models were estimated, a fixed-effects model and a counterpart random-effects model. Due to certain data limitations and some amount of data trimming, the estimations were based on 259 observations (in the final dataset) and were all arranged with the *FirmType* variable defining the three groups of firms in the data.

To determine the preferred model between the competing random-effects and fixed-effects models, the Hausman specification test was utilized (see Section VI for results). In principle, the Hausman specification test is such that if the random-effects model is correctly specified and *u* is uncorrelated with *X*, then the subset of the coefficients estimated by the fixed-effects estimator and the same coefficients estimated by the random-effects estimator do not differ, statistically; hence, the random-effects model is chosen. Otherwise, the fixed-effects model is chosen.

V Data Analysis

The study used data from a mix of primary and secondary sources. Primary data were collected through a firm survey of 48 companies, including 32 privatised firms, 9 always private firms and 7 state owned enterprises. For each firm, data on the variable were collected for the period 1993-2002, implying a ten year time series for each firm. This meant a panel of approximately 480 sample observations on each variable.

Another important data issue was that the sample firms did not all respond in the same way to the different questions in the survey. This imposed an unbalanced panel, and meant that the data had to be "trimmed" considerably. This further reduced the total sample size to 259 observations. Moreover, some of the data cleaning led the study to eliminate variables instead of data points, particularly in cases where non-responses on given questions were widespread. This constrained the range of choice variables available to the study. Therefore, the study ultimately only makes modest generalizations about the impact of privatisation on firm performance.

The criteria for firm selection[4] were worked out in consultation with ZPA. Within the constraints of the original study, all the major sectors in the economy were given reasonable representation in the firm sample.

Secondary data collection was done by conducting data-source evaluations of the ZPA, Central Statistical Office (CSO), Zambia Revenue Authority (ZRA) and the Registrar of Companies to determine the availability of relevant data on the selected firms. A rigorous validation of the secondary data was also done[5]. Ultimately, only CSO data were deemed useful.

[4]Not repeated here as details are presented in Kane Consult et al (2005).
[5]Not reported here. See, Kane Consult et al (2005) for details

As a standard data management process, where relevant, variables were converted to a natural logarithmic form to normalise them, and were deflated to constant 1994 prices using the CPI (1994=100) to capture real effects. The results of statistical analysis are presented in Section VI. The depth of the statistical assessment was affected by the availability of pre- and post-privatisation time-series on the indicators[6].

As a precursor to the regression analysis, univariate assessment of the impact of privatisation on privatised firms was done using selected performance indicators. The rationale was that each time-series data should show statistical differences between the pre- and post-privatisation periods. Essentially, the sub-analysis was motivated by anecdotal observations about such differences in the actual data series. The statistical analysis was also important for guiding the selection of variables to be used in the regression estimations since the statistical analysis was done prior to the regression exercise.

The firm performance measures that could, to some extent, be assessed were employment, capital investment, operating efficiency (productivity) and output. Table 1 shows the details on the proxies and predicted relationships for the above indicators.

The proxies listed above all exhibited anecdotal differences between the pre- and post-privatisation period, which were obvious even from casual observation. Naturally, an important question that arose was: where the observed differences statistically significant? Thus, the study incorporated the univariate statistical analysis of performance variables for each company that provided relevant data for the pre- and post-privatisation periods[7].

Table 1: Indicators and Proxies of Pre- and Post-Privatisation Performance

Performance Indicator	Proxies	Predicted Relationship
Operating efficiency/productivity	Turnover/Number of employees	Post < Pre
Capital Investment	Investment in land and building	Pre < Post
	Investment in plant and machinery	Pre < Post
Output	Turnover	Pre < Post
Employment	Total Employment	Pre > Post

After obtaining the means for each firm in the two time periods, a significance test for the difference between means was undertaken (Leslie, 1986). The results of the tests are presented and discussed in section VI. The Student t-test rests on the assumption of a normal distribution for the population from which the sample data is obtained (Leslie, 1986; Green, 1997). Therefore, for small samples such as the pre- and post-privatisation data above, it was imperative to test this assumption.

In the event of rejection of the normality assumption, it was anticipated that a non-parametric test, the Kolmogorov-Smirnov statistic would be used to formally test the equality of the empirical hazard (or density) functions (EFD) of the different pre- and post-privatisation performance indicators (Stephens, 1974).

[6]The availability of complete time-series was in turn dependent on company responses to the survey.
[7]An indication of the proportions of firms that supplied the relevant data is presented in Annex 2.

VI Results

Statistical Univariate Analysis

To test the assumption of normality, the Shapiro-Wilk statistics were computed for the performance indicators and in all instances except for the total employment indicator the hypothesis of a normal distribution was rejected.

Therefore, Kolmogorov-Smirnov statistic was used to test the statistical significance of the differences of means between the pre- and post-privatisation performance indicators. Table 2 indicates that for all performance indicators the null hypothesis that the pre- and post-privatisation period are equal is rejected at the 5 percent significance level, implying significant difference in the means in the two periods.

Table 2: Statistical Differences in Pre- and Post-Privatisation Indicators

	Difference in pre- and post-privatisation means			
Performance Indicator	**Shapiro-Wilk Statistic**		**Kolmogorov-Smirnov Statistic**	
	Statistic	P-value	Statistic	P-value
Output				
Turnover	0.528451	0.0001	0.384953	0.0100
Capital Investment				
Plant and Machinery	0.594359	0.0100	0.375579	0.0100
Land and Buildings	0.523943	0.0001	0.35949	0.0100
Operating Efficiency				
Turnover/Employment	0.688961	0.0017	0.357554	0.0100

For the employment indicator, the hypothesis of a normal distribution could not be rejected and hence the student's t-test was used to test for significance in the difference of employment means in the pre- and post-privatisation periods. Using the student t-test, the hypothesis of equality in the means of the employment indicator for the pre- and post-privatisation periods was rejected at the 5 percent significance level (see Table 3).

Table 3: Statistical Differences in the Pre- and Post-Privatisation Employment Indicator

Performance Indicator	**Shapiro-Wilk Statistic**		**Student t-test**	
	Statistic	P-value	Statistic	P-value
Employment				
Total Employment	0.870389	0.0784	-4.00951	0.0025

In summary, the above tests indicate statistically significant differences in indicators between the pre- and post- privatisation periods. Except on employment, the differences were signified by increases in the values of performance indicators after privatisation, perhaps implying the process had positive impacts on them.

Regression Results

The preferred models (Section IV) were all estimated as fixed-effects models that capture temporary constant firm-level (individual) effects. This was because for all "competing" equations that were estimated as random-effects and then fixed-effects model, the Hausman specification test consistently implied rejecting the hypothesis that the individual-level effects were adequately modelled by a random-effects model.

The results of the three estimation equations are presented and discussed in turn below. In each case, results for both the general (starting-point) and specific (plausible/preferred) estimations are presented, although unless otherwise stated, only the results of the preferred models are discussed in detail.

The results of the (fixed-effects) panel estimates of the real turnover equation are presented in Table 4. Real turnover (*LRTurnover*) was, over the observation period (1993-2002) found to be significantly and positively influenced by the total number of years a firm had been in private hands (*YPrvtzn*), at the 5 percent level of significance. Real turnover had a privatisation semi-elasticity of 0.16, suggesting that a firm being in private hands is likely to have its real turnover increased by about 16 percent. This was a fairly large impact of privatisation on firm performance. The observation is consistent with theoretical expectations of the direction of influence between real turnover performance and privatisation. This validates the hypothesis that Privatisation has a positive impact on a firm's ability to generate real sales turnover (or revenue).

Secondly, real turnover was significantly and positively influenced by the amount of real working capital available to the firm (*LRWCapt*). It was found that a percentage increase in working capital, during the observation period, led to a 4 percent increase in real turnover, at the 5 percent significance level. The direction of the impact was also consistent with theoretical expectations about this relationship.

Table 4: Results of Real Output (Turnover) Equation

Dependent Variable: *LRTurnover* (Natural logarithm of real turnover)				
	General		Specific	
Variable	Coefficient	T-statistic	Coefficient	T-statistic
Constant	16.4	50.36	16.6	54.4
YPrvtnz	0.17	6.31	0.16	6.13
LRWCapt	0.04	2.63	0.04	2.85
LMktShare	0.83	50.17	0.83	50.32
EconSect	0.22	14.32	0.22	14.22
LTWorkers	0.03*	1.47	-	-
No. of observ.	259		259	
R-Squared	0.40		0.46	
sigma_e	1.33		1.32	

**Only significant at the 10% level*

Perhaps the most profound finding was on the influence of a firm's market share on its real turnover performance. It was estimated that, between 1993 and 2002, a firm experiencing a percentage increase in market share increased its turnover by 83 percent. This suggests that firms that managed to improve their sales performance must have had a strategic ability to capture larger portions of their respective sectoral markets. Increasing the market share was therefore an important strategy for firms to improve their real (sales) turnover performance.

The analysis found that the characteristics of the specific economic sector where a firm operated had a significant, positive influence on the firm's real turnover performance. That is, between 1993 and 2002, operating in a given sector accounted for a 22 percent increase in real turnover, at the 5 percent level of significance. The finding is consistent with theoretical expectations that due to the effects of liberalisation (whereby more firms were allowed to enter the market and compete with or complement each other) sectors took on specific

features that made them more conducive for firms to operate in (hence the positive relationship). As earlier argued, the environment in which firms operate is fundamentally (and significantly) changed through the liberalisation process. This is perhaps one of the positive aspects of liberalisation. The finding validates the hypothesis that the performance of enterprises in Zambia is subject to the influence of liberalisation, which is separate from the influence of privatisation *per se*.

At the 5 percent significance level, the influence of the total number of workers was found to be statistically non-significant in influencing real turnover. This relationship was only significant at the 10 percent (significance) level and the magnitude of the total labour's impact on turnover was relatively small, with a percentage change in the total number of workers causing a 3 percent change in turnover. The direction of the impact of labour on firm turnover performance was found to be consistent with theoretical expectations.

The second set of results applies to the estimate on the real profit equation. These results are presented in Table 5. In this case, some of the intermediate results are also presented for expository purposes.

Table 5: Results of Real Profit Equation

Dependent Variable: *LRProfit* (Natural logarithm of real net profit)						
	General		**Intermediate**		**Specific**	
Variable	Coefficient	T-statistic	Coefficient	T-statistic	Coefficient	T-statistic
Constant	10.59	11.07	10.05	11.17	10.30	13.89
YPrvtnz	0.08**	0.10	0.04**	0.51	-	-
LRWCapt	0.34	7.79	0.33	7.62	0.33	7.62
LMktShare	0.46	9.41	0.45	9.28	0.46	9.35
EconSect	0.15	3.32	0.16	3.45	0.16	3.42
LTWorkers	-0.09*	-1.63	-	-	-	-
No. of observ.	259		259		259	
R-Squared	0.59		0.61		0.62	
sigma_e	1.38		1.38		1.41	

**Only significant at the 10 percent level*
***Not significant*

At both the 5 percent and 10 percent levels of significance, the influence of the total number of years a firm has been in private hands (*YPrvtzn*) on real net profit (*LRProfit*) was found to be statistically non-significant and was therefore excluded from the preferred (specific) model results. Indications from the general and intermediate model results suggest that the magnitude of the impact of privatisation on real profit would have been small over the reference period, accounting for 4 to 8 percent of variations in profit. The direction of the impact was found consistent with theoretical expectations. The results suggest that the hypothesis that privatisation leads to higher profitability was somewhat valid, though not conclusively so since the relationship was not statistically supported.

The amount of real working capital available to the firm (*LRWCapt*) had a significant and direct influence on real profits. It was found that a percentage increase in working capital, during the observation period, led to a 34 percent increase in real profit, at the 5 percent significance level. This was consistent with theory expectations, and when compared to the counterpart results (in the real turnover equation), these results suggested that working capital had a more prominent role in determining profits than in determining turnover during the observation period.

Although a firm's market share was found to have the most significant influence on real profit, the significance had a relatively smaller magnitude than that observed in the counterpart "real turnover" results. It was estimated that, between 1993 and 2002, the percentage increase in a firm's market share accounted for a 46 percent increase in real profit. This suggested that strategies of capturing sectoral markets had a bigger impact on real (sales) turnover performance than on real profit outturns.

Similarly, the influence of the firm's economic sector on profits was less than its influence on turnover. The analysis found that, over the observation period, operating in a particular sector accounted for a 16 percent increases in real profit, at the 5 percent level of significance. The finding was consistent with theoretical expectations about the directional impact and the indirect influence of liberalisation on performance. This lent further support to validate the hypothesis that the performance of Zambian firms was influenced by liberalisation, separate from the influence of privatisation *per se*.

The influence of the total number of workers on real profit was found to be only marginally significant, i.e., only significant at the 10 percent significance level. It was estimated that the total labour's impact on profit was, over the reference period, such that a percentage increase in the total number of workers caused a 9 percent decline in profits. The direction of the impact of labour on firm profit performance seems counterintuitive, but within the context of the Zambian economy, this observation is plausible and unsurprising. This is because, in the sample firms, the majority were either state-owned during the firm survey or had been state-owned during some part of the observation period. The economic history of state-owned and formally state owned firms was such that they typically over-employed, maintaining large labour force pools due to social and political pressures. By implication, the inappropriate (technically inefficient) mix of labour and capital negatively affected profits in these firms. As a result, increased labour uptake would further reduce profit performance, and conversely, reductions in total workers increase profitability. This argument was empirically supported by the above regression results and the statistical analysis where it was observed that employment in the pre-privatisation period was higher for privatized firms than in the post-privatisation period.

Finally, the results of the (fixed-effects) panel estimates of the labour demand (total number of workers) equation are presented in Table 6.

Table 6: Results of Labour Equation

Dependent Variable: *LTWorkers (*Natural logarithm of total number of workers)				
	General		Specific	
Variable	Coefficient	T-statistic	Coefficient	T-statistic
Constant	5.66	5.94	4.51	6.30
YPrvtnz	-0.32	-3.90	-0.30	-3.69
LRWCapt	0.10	2.17	0.14	4.07
LMktShare	0.06*	1.25	-	-
EconSect	-0.06*	-1.23	-	-
No. of Observ.	259		259	
R-Squared	0.37		0.37	
sigma_e	1.47		1.48	

**Only significant at the 10% level*

The total number of workers hired by the firm (*LTWorkers*) was, over 1993 to 2002, found to be significantly and inversely influenced by the total number of years a firm had been in private hands (*YPrvtzn*), at the 5 percent level of significance. It was found that a firm being in private hands for an additional year reduced its total labour uptake by 30 percent. This supported the previous assertions that once privatised, firms that had previously been over-employing begun to lay off workers as they restructured and redefined themselves. It was possible that this adjustment might be short- to medium-term or permanent (i.e., longer-term). Because the observation period (of 10 years is rather short), longer term effects of privatisation on labour demand could not be explored. This could be an area of further research after the lifelines of privatized firms in Zambia have become long enough to do longer-term analysis. Nonetheless, the results validate the hypothesis that privatisation leads to reduction in employment and further reinforces the results of the statistical analysis. In the Zambian case, privatisation has a negative impact on employment, at least in the short-term.

At the 5 percent level of significance, a positive relationship was found between the total number of workers and the amount of working capital available to the firm. It was observed that, over the reference period, a percentage increase in working capital accounted for a 10 percent increase in labour uptake. This supported the widely held microeconomic view that capital and labour are complementary of each other.

The economic sector and market share variables were, over the observation period, found to be statistically non-significant in influencing the total number of workers hired by the firms, at the 5% level of significance. This perhaps suggests that the influence of liberalisation *per se* was not very important in determining firms' decisions to increase, maintain or reduce labour employment levels. This shows that there is no confusing the negative employment effects ascribable to privatisation with any effects coming from the liberalisation process. That is, liberalisation does not directly lead to unemployment, privatisation does. In principle, this is a plausible observation because, after all, it is the strategic business decisions of firms that result in the hiring and firing of workers. These business decisions are underpinned not by some moral or social obligations on firms (which implore them to inefficiently maintain redundant labour), but by profit and sales maximisation business objectives (which often call for labour force reduction as firms adjust towards more efficient technical mixes of "easily variable" labour and relatively fixed amounts of capital).

An obvious weakness of the above labour demand function is that it does not include a proxy that captures the influence of wages on labour demand. In the field survey, an effort was made to include such a proxy variable through attempts to collect information on worker remunerations. However, the appropriate wage variable could not be generated from the survey information. This was due to many missing observations from the firm responses. It is likely that the reluctance of firms to provide this information came from perceptions that the information could expose them to tax scrutiny because allowances, which are typically not part of the general wage bill (and are therefore not used in income tax calculations), may show up in general remuneration information.

VI Limitations

Broadly, the limitations of this study included the following:

The sample obtained for the study's firm survey did not capture firms that were liquidated and closed down after successfully being privatised nor did it capture "always private" firms that similarly closed down during the transitional period of liberalisation. This data was not

included simply because firm history was lost once firms closed down and the study had no way of recovering information on liquidated firm. Nevertheless, the inability of the study to account for liquidated firms most likely overestimated the true impacts of privatisation and liberalisation.

Data limitations were imposed on the study due to poor firm responses on certain important variables (e.g., wages). Originally, it was intended that out of the 259 privatized (formally state owned) enterprises 38 (15 percent) would be sampled while 12 firms that have always operated as privately owned and privately run entities and 7 enterprises that have remained stated owned (or parastatal) to date were sampled. This would have meant a sample size of 57 firms and a total sample size of 570 observations. Unfortunately, the firm response rate was only about 84 percent of what was targeted.

The poor responses to some of the questions and the resulting need to severely trim the data led to the omission of variables in some cases, which limited the range of choice in variables that could be explored in the modelling.

There was relatively low statistical representation (of only 12 percent) of privatised firms compared to the total number of privatised firms. Similarly, relatively few "always private" firms were captured when compared to the total population of always private firms in Zambia. Although no statistics are available, it is likely that there were over 300 firms that could be defined as "always private", so that capturing a total of 9 of these meant only about 3 percent sample representation, which was rather insufficient[8]. This implied that strong generalisation about the impact of privatisation could not be extended to the larger population of Zambian firms; hence, the study only made modest generalisations.

There was limited theory about liberalisation to guide the selection of variables that were ascribable exclusively to liberalisation (e.g., theoretically it is plausible that market share can be ascribable to wider effects as well as firms specific (decision-making) characteristics that come with change of firm ownership).

The limitations notwithstanding, important insights and lessons were drawn from the study.

VII Conclusion

Overall, a number of empirical observations are made about the impact of privatisation in Zambia during 1993 to 2002. From these observations, a few key learning lessons are discussed:

Firstly, there were significant differences in the performance of privatised firms between their pre- and post-privatisation periods. These differences were in terms of improvements in operating efficiency (or productivity), capital investment (investment in land and building, and investment in plant and machinery) and output, and a decline in total employment among the privatised firms. This means, during 1993-2002, privatisation in Zambia had a positive impact on all the above factors apart from employment and in the main, achieved some of its intended goals.

Secondly, although the influences of the liberalisation and privatisation processes are difficult to isolate, the study suggests that the influences of liberalisation were arguably more important in determining turnover and profitability performance than change of

[8]For the state owned enterprises, representation was relatively good because the sample captured nearly all state owned enterprises existing at the time of the survey.

ownership (i.e., privatisation). This lends support to the commonly held view that the ability of transitional economies to foster improvements in firm performance depends on the extent of economic adherence to both liberalisation and privatisation programmes.

Privatisation also has a significant, negative impact on firm employment levels, at least in the short-term. It is therefore important for the authorities to put in place or expand safety measures (such as social welfare schemes) for mitigating the adverse employment effects of privatisation. This will be of particular importance when considering privatising the remaining state owned enterprises, most of which are very large employers.

The study did not capture firms that did not survive the transition period of privatisation and liberalisation. This potentially imposed an upward bias on the findings of this study. This meant the study could only make modest claims about the general importance of privatisation and liberalisation in Zambia. Despite this and other limitations presented in the paper, this work has clearly established an empirical basis. It has been empirically posited that privatisation of public enterprises can yield positive returns in real turnover (output) and real profits in the short- to medium-term, but concurrently, can have negative effects on employment over the same time horizon. Precautious privatisation that at the same time ensures the mitigation of the adverse employment effects is therefore recommended.

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Appendix 1: Full Variable Definitions

The full list of possible variables contained in the field survey dataset was tested for completeness and reliability using standard statistical checks, including the statistical analysis discussed in Section 5. This delivered the following "shortlist" of firm-level variables that could plausibly be used in regression analysis:

LRTurnover:	the natural logarithm of real turnover, measured as the natural logarithm of total annual gross turnover deflated to real terms using the consumer price index (CPI, 1994=100)
LRProfit:	the natural logarithm of real net profits, measured as natural logarithm of total annual net profit deflated using the CPI
LMktShare:	the natural logarithm of the firm's market share in total sectoral output (calculated as the real sales turnover as a percentage of total sectoral GDP)
LTWorkers:	the natural logarithm of the total number of workers employed by the firm
LRWCapt:	the natural logarithm of real working capital, measured as the natural logarithm of total annual working capital deflated using the CPI (it captured the amount of liquidity of the firm and its ability to finance operations)
EconSect:	a discrete variable capturing the respective economic sector to which the firm belongs; assuming assigned values of either 1,2,…or 7, depending on the respective sector classification (out of the 7 sectors in the economy).
FirmType:	a discrete variable measuring the privatisation history of the firm (captured as 1 if the firm was privatized, 2 if it was always private and 3 if it was always state owned during the reference period)
YPrvtzn:	the total number of years of privatisation of a firm. This is the main variable used in explaining the impact of privatisation on firm performance. For state-owned Enterprises, the total number of years of being in "private hands" was obviously estimated as 0. For firms that have always been private, this was estimated as 10 years

Appendix 2: Anecdotal Difference in Pre- and Post-Privatisation Indicators

As seen in the main text, the possible indicators of firm performance all exhibited anecdotal differences between the pre- and post-privatisation period. And the sample data for most firms that supplied information on the above indicators suggested a rightward shift in some indicators except for employment. Due to variation and gaps in the way firms supplied the data, the study highlights the comparison between the pre- and post-privatisation periods on an indicator-by-indicator basis.

Starting with the output indicator, 21 firms supplied data on turnover for both the pre- and post-privatisation periods. Of these, 15 firms showed a greater value in turnover in the post-privatisation period. The positive impact of privatisation on output at 1994 prices is clearly seen in these numbers.

The privatisation impact on the level of capital investment was another key indicator collected in the survey. Capital investment was broken down into investment in plant and machinery and investment in land and building. Seventeen firms provided data on investment in land and buildings, with all but one indicating larger investment in the post-privatisation period. For investment in plant and machinery, 19 firms supplied data, with 16 indicating a higher figure in the post-privatisation era.

Total employment figures were supplied by 10 firms, for the pre- and post-privatisation period. Eight firms indicated lower employment in the post privatisation period.

Turnover divided by employment was used as an indicator of operating efficiency or labour productivity. For this indicator, most firms that supplied data had higher figures in the post-privatisation period. This clearly indicated an improvement in operating efficiency, which was attributed to recovery in sales across firms.

Consideration of whether the differences in indicators were statistically significant is given in the main text (see, Section VI)

CHAPTER FOUR

Zambian Fiscal Performance, 2002 - 2007

By

Alan Whitworth

Abstract

This paper shows how the combination of reduced fiscal deficits since 2004 and accelerated economic growth has enabled the Government to bring down the domestic debt-to-GDP ratio. This was achieved by reviewing trends in Zambian fiscal and debt data from 2002 to 2007, which also included the 2008 Budget estimates, along with Poverty Reduction and Growth Facility (PRGF) projections for 2009 and 2010. The paper demonstrates that the Zambian Government's fiscal situation was transformed between 2002 and 2007, when the fiscal deficit fell to a healthy 1.3% in 2007 from 5.1% of GDP in 2002. This improvement was largely due to improved fiscal management that enabled Government to reduce its domestic borrowing; relief on foreign debt, which led to a reduction in interest cost; rapid economic growth that reduced the 'pain' required to bring down both the debt-to-GDP and deficit-to-GDP ratios; and the copper price boom that increased mining taxes from virtually zero to 1.4% of GDP. While the paper focused on the fiscal situation, it also established that the above developments also contributed to Zambia's economic recovery in other ways. In particular, the reduction in Government domestic debt (and interest rates) reduced both inflationary pressures and the crowding out of private borrowing.

I Introduction

After decades of poor economic management, during which per capita income fell substantially, fiscal deficits and debt reached unsustainable levels and Zambia frequently failed to meet a number of International Monetary Fund (IMF) requirements, the Government elected in 2001 made macro-economic stability a central objective of its economic policy. This was to be achieved partially through fiscal discipline, lower fiscal deficits and a reduction in debt.

This paper shows how the combination of reduced fiscal deficits since 2004 and accelerated economic growth has enabled the Government to bring down the domestic debt-to-GDP ratio. Along with debt relief on external debt under the Highly Indebted Poor Countries (HIPC) and Multilateral Debt Relief (MDR) Initiatives and falling interest rates, this has facilitated a substantial reduction in the Government interest bill. This has not only increased the fiscal space available to the Government, but also facilitated increased private sector borrowing by reducing crowding out. Crowding out is the reduction in the supply of finance to the private sector and an increase in the interest rate thereof as a result of domestic borrowing by Government.

The paper reviews trends in Zambian fiscal and debt data from 2002 to 2007 and also

includes the 2008 Budget estimates, along with Poverty Reduction and Growth Facility (PRGF) projections for 2009 and 2010 in order to assess progress towards the above objectives. The data is mainly taken from the Zambian Government's PRGF programme, 2008 to 2010, which was approved by the IMF Board in June 2008 (IMF 2008a). Additional data for 2002 to 2004 was provided by the IMF[1].

The paper is organised as follows: Section two presents an interpretation of the data and conclusion comes up in section three. The appendix contains data on Zambia's fiscal trends since 2002.

II Interpretation of the Data

It is important to note that Zambia experienced rapid economic growth throughout the period under review. Real gross domestic product (GDP) grew at an average annual rate of 5.2% between 2002 and 2007(see Table 1). This means that GDP was 35% larger in 2007 than in 2002 (and was projected in the PRGF to be 62% larger by 2010).

Table 1: Recent Zambian Debt Trends

	2002	2003	2004	2005	2006	2007	Proj. 2008	Proj. 2009	Proj. 2010
GRZ External Debt									
Debt stock	29,053	32,108	32,904	27,916	3,459	4,545	5,211	6,044	6,992
Interest bill (external)	210	229	152	133	60	54	48	33	25
GRZ Domestic Debt									
a) Stock of domestic govt. securities (PRGF)	3,408	4,481	4,693	5,271	6,242	6,966	7,820	8,212	8,642
Net Claims on Govt (Securities less Deposits)	1,744	2,709	2,513	2,387	2,374	1,894			
Credit to Parastatals	94	116	200	230	224	379			
Non-bank public holdings of Govt Securities		591	787	1,501	2,241	2,636			
b) Total GRZ Domestic Credit	*1,838*	*3,416*	*3,500*	*4,118*	*4,839*	*4,909*			
Treasury Bill Yield (weighted average), %	35.8	31.9	12.5	16.4	10.4	12.2			
Interest bill (domestic)	450	563	746	731	689	721	651	704	694
Credit to the Private Sector	1,019	1,390	2,054	2,437	3,760	5,377			
Nominal GDP	16,260	20,479	25,997	32,456	39,223	45,482	50,716	56,051	61,432
GDP Growth, % (constant prices)	3.3	5.1	5.4	5.2	6.2	6	6.2	6.3	6.5
Consumer Price Inflation, %	26.7	17.2	17.5	15.9	8.2	8.9	7.0	5.0	5.0

Fiscal Deficit

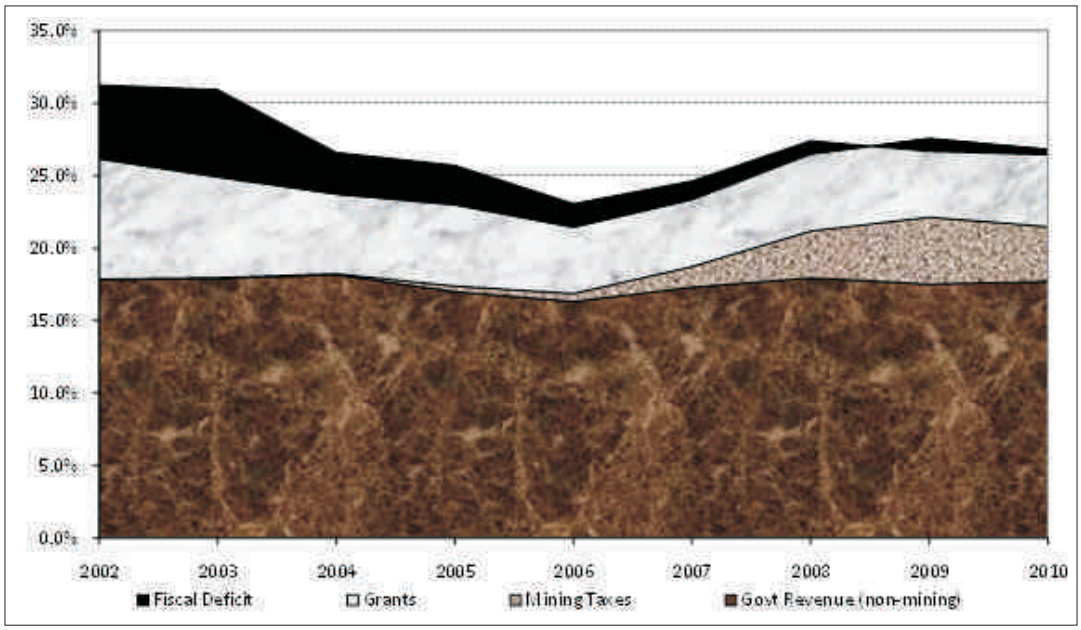
The difference between total revenue and total expenditure is the *Fiscal Deficit* (after grants). Chart 1 below shows that the deficit was 5.1% of GDP in 2002 and 6.0% in 2003, an unsustainable level[2]. In 2004, it was halved to 2.9% of GDP and continued to decline thereafter, reaching a healthy 1.3% of GDP in 2007[3]. The reduction in the fiscal deficit can be attributed to the following factors:

[1]The data is presented in Table 1 of the Appendix
[2]During the 1990s the deficit sometimes exceeded 8% of GDP.
[3]The 2007 deficit was smaller than budgeted, reflecting the inability of ministries to spend increased appropriations - particularly on capital projects.

(i) Domestic expenditure

The top line of Chart 1 shows trends in total expenditure, including donor funded capital expenditure. This fell sharply from 31.3% of GDP in 2002 to 23.1% in 2006, before rebounding to 24.6% in 2007. Most of this is accounted for by a striking reduction in recorded donor funded capital expenditure from 9.3% of GDP to 1.7% over the period under review. It is difficult to believe that project aid fell so rapidly and there is a suspicion that this partly reflects inconsistent recording of aid disbursements as the Ministry of Finance & National Planning may not have a system for regular compilation of comprehensive aid disbursement data.

Chart 1: Revenue, Expenditure & Fiscal Deficit (after grants) as % of GDP



Note: The 'one off' HIPC / MDRI Debt reduction grants received in 2006 have been omitted to avoid distorting the chart.

A better indicator of Government fiscal performance is trends in Total Domestic Expenditure, since this excludes project aid and only refers to resources fully controlled by the Government. In view of this, total domestic expenditure fell from 22.0% of GDP in 2002 to 20.2% in 2004 (see Appendix, Table 3). This reflects a serious effort to reduce expenditure and the deficit. This level of expenditure was sustained until 2007, when it increased to 23.0% of GDP. By then, the fiscal deficit had been brought down to sustainable levels.

(ii) Total Revenue and Grants

The second line in chart 1 shows total revenue and grants, which is made up of grant aid, mining taxes and non-mining revenue. Non-mining Government tax and other revenue was relatively stable between 2002 and 2007 (between 16% and 18% of GDP) and was` projected to remain at that level. On the other hand, mining taxes were insignificant until 2005, when they represented 0.4% of GDP. They increased to 1.4% of GDP by 2007. With continuing

high copper prices, the exhaustion of most accelerated depreciation allowances and the new mining tax regime introduced in the 2008 Budget, mining taxes were projected to increase substantially; the PRGF projected revenue equivalent to 4.6% of GDP in 2009 (see Appendix, Table 3).

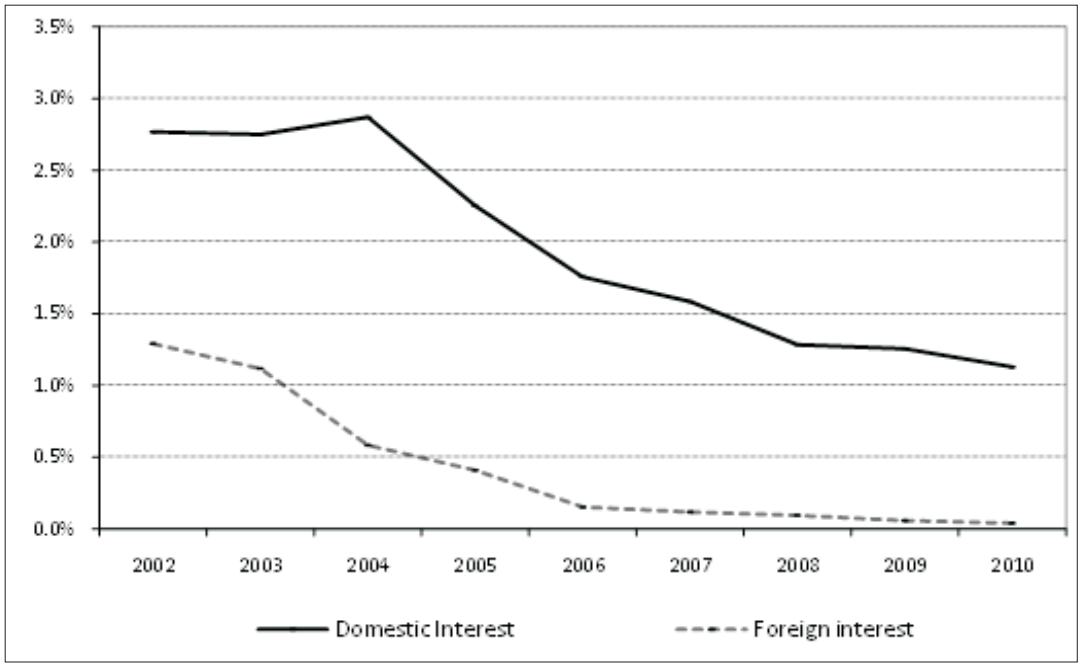
Grants declined from 8.3% of GDP in 2002 to 5.5% in 2004 and were projected to remain in the range 4.6% - 5.6% thereafter. Most of the reduction was in 'project grants', which explains part of the above reduction in donor funded capital expenditure.

The foregoing has shown that the Government succeeded in turning an unsustainable deficit into a healthy one within only three years. Moreover, the PRGF projects that with rapidly increasing mining taxes the deficit will turn into a modest *surplus* in 2009, despite significantly increased expenditure (Table 3). An important factor to consider was the impact of that reduced foreign interest had on the deficit as discussed below.

Domestic and Foreign Interest Bills

While public attention has focused on the reduction in foreign debt as a result of Zambia reaching HIPC Completion Point in 2005, Chart 2 below shows that: (a) domestic interest has been much larger than foreign interest throughout the period; and (b) developments in domestic debt have been equally important in cutting the Government's interest bill.

Chart 2: Domestic & Foreign Interest as % of GDP



Foreign interest bill fell from 1.3% of GDP in 2002 to 0.1% in 2007, a saving of 1.2% of GDP. Domestic interest bill fell from 2.8% of GDP in 2002 to 1.6% in 2007, the same absolute saving as for foreign interest. It was projected to fall by a further 0.5% of GDP to 1.1% in 2010. The reductions in the two categories of interest had different explanations.

As regards foreign debt, Table 2 show that the stock of foreign debt in 2002 (K29.1 trillion, or 179% of GDP) dwarfed the domestic debt stock (K3.4 trillion, or 21% of GDP). When Zambia reached the enhanced HIPC Completion Point in 2005, most of its foreign debt was forgiven and the debt stock reduced dramatically from K27.9 trillion (86% of GDP) in 2005 to K3.5 trillion (9% of GDP) in 2006. At current levels, foreign debt has negligible fiscal significance.

Table 2: Recent Zambian Debt Trends as Percentage of GDP

	2002	2003	2004	2005	2006	2007	Proj. 2008	Proj. 2009	Proj. 2010
GRZ External Debt									
Debt stock	178.7%	156.8%	126.6%	86.0%	8.8%	10.0%	10.3%	10.8%	11.4%
Interest bill (external)	1.3%	1.1%	0.6%	0.4%	0.2%	0.1%	0.1%	0.1%	0.0%
GRZ Domestic Debt									
a) Stock of domestic govt. securities (PRGF)	21.0%	21.9%	18.1%	16.2%	15.9%	15.3%	15.4%	14.7%	14.1%
Net Claims on Govt (Securities less Deposits)	10.7%	13.2%	9.7%	7.4%	6.1%	4.2%	0.0%	0.0%	0.0%
Credit to Parastatals	0.6%	0.6%	0.8%	0.7%	0.6%	0.8%			
Non-bank public holdings of Govt Securities	0.0%	2.9%	3.0%	4.6%	5.7%	5.8%			
b) Total GRZ Domestic Credit	11.3%	16.7%	13.5%	12.7%	12.3%	10.8%			
Treasury Bill Yield (weighted average), %	2.8%	2.7%	2.9%	2.3%	1.8%	1.6%	1.3%	1.3%	1.1%
Interest bill (domestic)									
Credit to the Private Sector	6.3%	6.8%	7.9%	7.5%	9.6%	11.8%			

However, even before the Completion Point was reached the cost of foreign debt was much lower than for domestic debt because interest rates on foreign debt were much lower. Nearly all the foreign debt was highly concessional, with interest rates in the order of 1 - 2%, whereas domestic interest rates (Treasury bill yield) ranged from 10.4% to 35.8% (see Table 1).

The reduction in foreign interest following Completion Point was much less striking than that of the debt stock. This was because Zambia began to benefit from 'interim' debt relief as soon as it joined the HIPC scheme (termed 'Decision Point') in 2000 (IMF 2008b). Much of the reduction in interest occurred then. The main significance of Completion Point was that interim debt relief became irrevocable and most foreign debt was formally forgiven.

As regards, domestic debt, while the reduction in foreign interest was almost entirely attributable to debt relief (by foreigners), domestic interest savings were due to three quite different factors: (i) lower borrowing, due to improved fiscal management[4]; (ii) growth; and (iii) falling interest rates.

The reduction in the fiscal deficit since 2004 enabled the Government to reduce its level of domestic borrowing. Table 1 shows the 'stock of domestic Government securities' increasing steadily in nominal terms between 2002 and 2007. However, after adjusting for inflation there was a real reduction of about 30% over the period.

[4]This also contributed to foreign debt relief because successful implementation of an IMF programme for at least a year was a condition for reaching Completion Point.

The impact of lower Government borrowing was magnified by increased economic growth. As earlier alluded to, GDP growth averaged 5.2% per annum between 2002 and 2007. The combined effect of relatively rapid growth and a real reduction in the debt stock was a reduction in the domestic debt-to- GDP ratio from 21.0% to 15.3%[5] over the period[6].

If interest rates were constant, this reduction in the debt-to-GDP ratio would have cut the domestic interest bill (as a share of GDP) by 27%. However, Table 2 shows that the interest bill actually fell from 2.8% of GDP in 2002 to 1.6% in 2007, a 43% reduction. The difference is explained by the reduction in interest rates over the period.

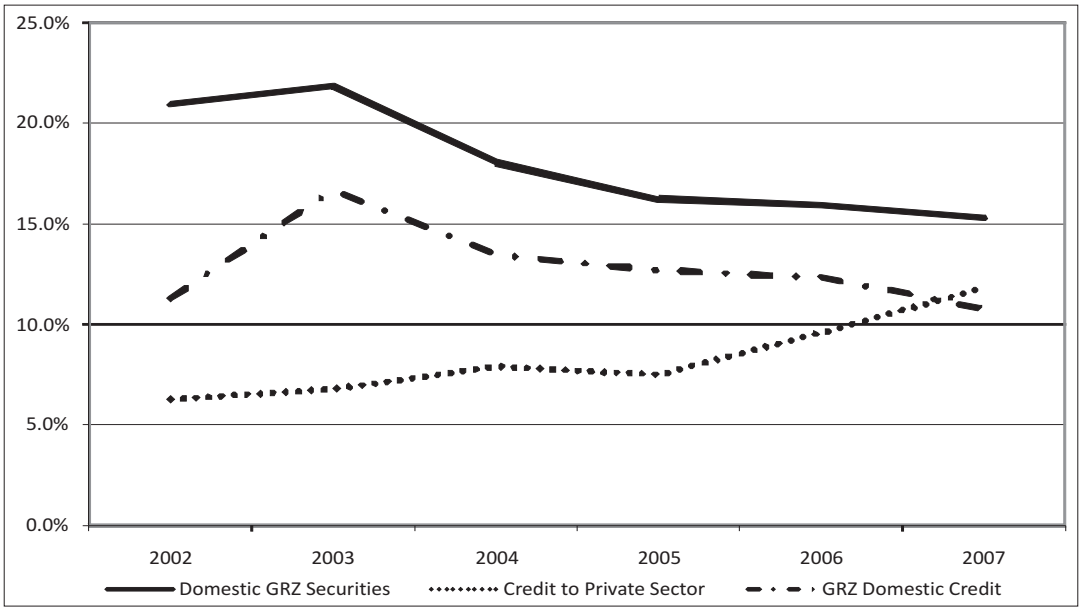
Ceteris paribus, lower Government borrowing may contribute to reduction of inflationary pressure. The reduction in borrowing by the Government may have contributed to the significant fall in inflation from 26.7% in 2002 to 8.9% in 2007 (see Table 1). Along with the general improvement in macro-economic stability, this facilitated a reduction in interest rates. Government borrowing takes a number of forms and there is no single interest rate applicable to all domestic debt. Table 1 presents time series data for the weighted average Treasury bill yield, probably the best indicator of trends in domestic interest rates. It can be seen that yields dropped from 35.8% in 2002 to 12.2% in 2007.

Therefore, the reduction in the domestic interest bill reflects the combined effects of both a lower debt stock and falling interest rates[7]. Since 2004, Zambia has experienced a 'virtuous circle' of lower borrowing facilitating lower interest rates, leading to a reduction in the interest bill which in turn facilitates further reductions in borrowing, inflation and interest rates, and so on.

Another important benefit of reduced Government borrowing is that it leads to less 'crowding out'. Figures for Credit to the Private Sector in Table 2 are consistent with the hypothesis that crowding out has been decreasing in Zambia. Interestingly, Treasury bill yields started falling (from 35.8% in 2002 to 31.9% in 2003) and credit to the private sector started increasing *before* Government domestic borrowing started to decrease in 2004. This is not surprising since Government borrowing is not the only factor influencing yields and private borrowing; factors such as inflation and growth in the mining sector respectively are also important. Nevertheless, the fact that credit to the private sector increased from 6.3% of GDP in 2002 to 11.8% in 2007 while net Government borrowing as a percentage of GDP declined from 16.7% in 2003 to 10.8% in 2007, strongly suggests that improved fiscal management has helped reduce crowding out of the private sector as illustrated in Chart 3.

[5]The PRGF projects a further reduction to 14.1% in 2010.
[6]Growth also magnified the reduction in the foreign debt / GDP ratio.
[7]Interest rates changes are not always reflected in the interest bill for the year in which they occur because payment for Treasury Bills is only made upon maturity.

Chart 3: Government and Private Sector Debt as % of GDP

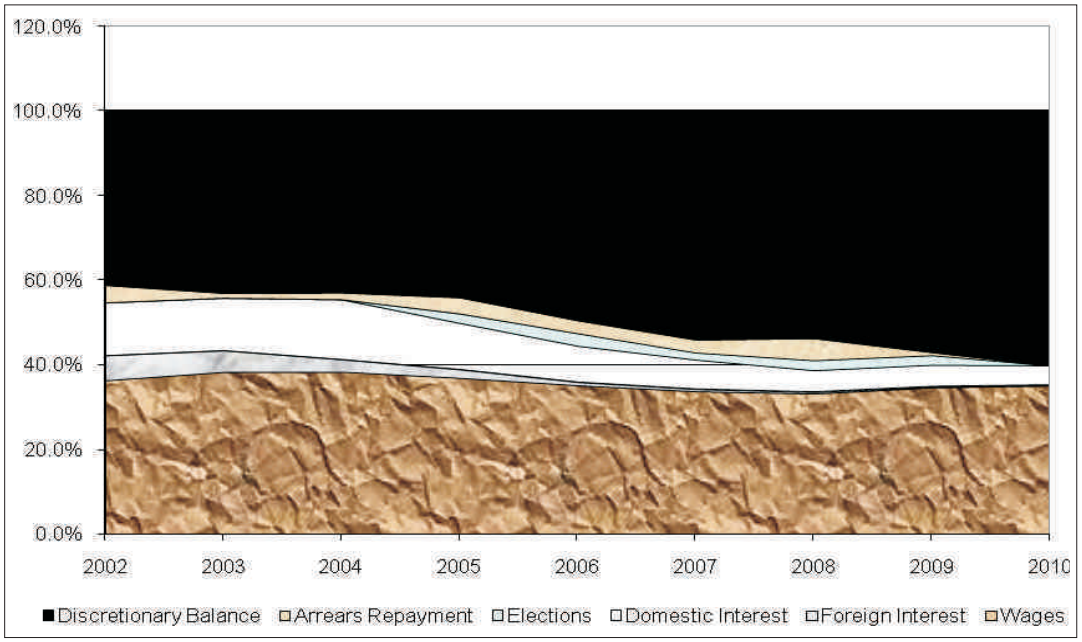


Domestic Expenditure

The impact of the reduction in the Government interest bill on the pattern of Government expenditure is illustrated in Charts 4 and 5. Chart 4 shows trends in certain expenditure categories expressed as percentages of Government Domestic Expenditure, ie total expenditure minus donor funded projects. In particular, it illustrates the increase in Government 'discretionary' expenditure over the period i.e. that part of the budget over which the Government can exercise direct control[8]. This is more meaningful than changes in total expenditure.

[8]The concept is similar to that of 'fiscal space'.

Chart 4: Breakdown of Domestic Expenditure (%)



To understand the concept of discretionary, it is easiest to look at what is 'non-discretionary'. Certain categories of expenditure, such as interest cost, elections and the salaries of constitutional office holders, are 'constitutional'; they have to be paid under the Constitution and are not subject to the normal budget process. Where legislation provides that a proportion of fuel taxes shall be earmarked for road maintenance, this is also non-discretionary. Arguably, the public service wage bill can also be considered non-discretionary. While Governments have a degree of control over the number of public servants and wage rates over the long term, in the short term it is very difficult to cut the wage bill.

There is no single agreed definition of discretionary expenditure and, in any case, data is not readily available for all non-discretionary items (e.g. road fund transfers). However, precision is not required here. As long as the chosen definition is applied consistently, it can be used to highlight key trends. For present purposes, the following expenditure categories are treated as non-discretionary: wages, interest, elections and Constitutional Review, and repayment of arrears.

The public service wage bill was the largest single category of GRZ expenditure. Chart 4 shows that it declined from 38.3% of domestic expenditure in 2003 to 33.8% in 2007 (with the PRGF projecting a partial recovery to 35.1% in 2010).

Domestic and foreign interest costs declined from 12.6% and 5.9% of domestic expenditure in 2002 to 6.9% and 0.5%, respectively in 2007. By 2010, they were projected to represent 4.6% and 0.2%, respectively; if the projections are borne out, the combined interest bill would have declined from 18.5% to 4.8% of total expenditure over the period. This represents a substantial release of resources from debt service to more productive purposes.

Expenditure on *elections* and the Constitutional Review accounted for between 1.7% and 3.0% of total expenditure between 2005 and 2009, respectively.

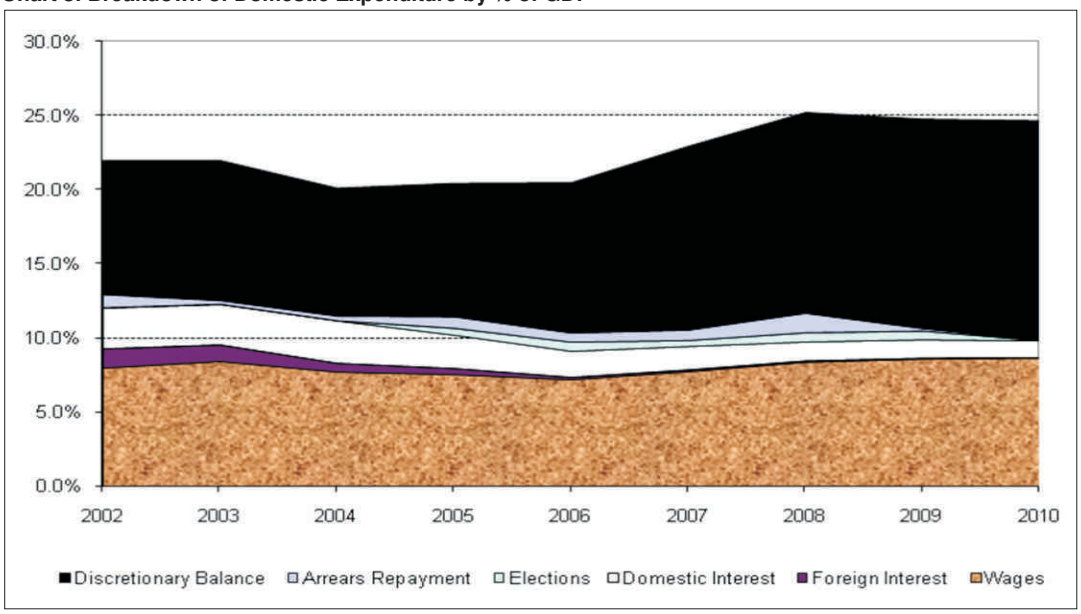
[4]This implies unsterilized purchases of the excess foreign exchange supply.

As well as large fiscal deficits, fiscal indiscipline is frequently associated with the accumulation of *arrears*. Repayment of arrears represented between 1.2% and 4.1% of total expenditure between 2002 and 2007. In the 2008-2010 Medium Term Expenditure Framework, Government made an assiduous attempt to clear the backlog of arrears, increasing the provision to 5.2% of expenditure in 2008 with a 'final' provision of 0.7% in 2009.

Deducting the above expenditure categories from the total leaves the '*discretionary balance*'. It can be seen that the balance increased from 41.1% of domestic expenditure in 2002 to 54.0% in 2007 (and was projected to increase further to 60.1% by 2010). While the measure of the discretionary balance adopted here should not be taken too literally, Chart 4 shows that the Government had significantly more control over its expenditure in 2008 than it had in 2002, and that this trend was expected to continue.

Chart 5 shows trends in total domestic expenditure as a share of GDP, broken down as in Chart 4. Two features stand out. Firstly, total expenditure reduced from 22.0% of GDP in 2003 to 20.2% in 2004 as the Government took measures to cut the fiscal deficit[9]. Secondly, with the deficit now under control and increased discretionary resources, Chart 5 highlights the significant increase in total domestic expenditure from 20.5% of GDP in 2006 to 23.0% in 2007 - and was projected to further increase to 25.2% in the 2008 Budget[10]. The projected increase in 2008 was expected to be largely financed by increased mining taxes (up by 2.6% of GDP since 2006) and additional non-mining revenue (1.7%).

Chart 5: Breakdown of Domestic Expenditure by % of GDP



III Conclusions

The time series data presented here demonstrate that the Zambian Government's fiscal situation was transformed between 2002 and 2007. The fiscal deficit fell from 5.1% of GDP in 2002 to a healthy 1.3% in 2007. This improvement is largely explained by three distinct

[9]The expenditure reduction was about 1% in *real* terms. Most of the reduction in the ratio reflected GDP growth.
[10]Note that expenditure outturns have been well below approved budgets in recent years.

developments. Firstly, improved fiscal management enabled GRZ to reduce its domestic borrowing; together with HIPC/MDRI relief on foreign debt, this led to a reduction in interest by 2.4% of GDP over the period. Secondly, by increasing the value of the numerator, rapid economic growth reduced the 'pain' required to bring down both the debt-to-GDP and deficit-to-GDP ratios. Thirdly, the copper price boom meant that mining taxes increased from virtually zero to 1.4% of GDP.

While this paper has focused on the fiscal situation, the above developments have also contributed to Zambia's economic recovery in other ways. In particular, the reduction in Government domestic debt (and interest rates) has reduced both inflationary pressure and the crowding out of private borrowing.

Appendix

TABLE 1: ZAMBIAN ACTUAL FISCAL TRENDS DATA

				**(Kwacha billion)			proj	proj	proj
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Total Revenue & Grants	4,256	5,104	6,173	7,467	8,415	10,626	13,445	15,452	16,477
(Excluding HIPC Debt Reduction)									
Revenue	2,906	3,680	4,740	5,642	6,618	8,522	10,746	12,411	13,205
Tax revenue (excl. mining)	2,838	3,536	4,527	5,387	6,098	7,534	8,411	9,336	10,359
Mining Taxes	8	12	19	125	219	650	1,640	2,589	2,327
Non-tax revenue	60	132	194	130	301	338	695	486	519
(Non-mining revenue)	2,898	3,668	4,721	5,517	6,399	7,872	9,106	9,822	10,878
Grants	1,350	1,424	1,433	1,825	1,797	2,104	2,699	3,041	3,272
Budget Support	324	229	258	543	423	582	620	744	827
Project	1,026	1,195	1,175	1,282	1,374	1,522	2,079	2,297	2,445
HIPC / MDRI Debt Reduction*					8,410				
Total Expenditure (& net lending)	5,086	6,336	6,920	8,348	9,051	11,210	13,908	14,956	16,250
Donor Funded Capital Expenditure	1,508	1,828	1,681	1,702	1,002	760	1,103	1,055	1,080
Total Domestic Expenditure	3,578	4,508	5,239	6,646	8,049	10,450	12,805	13,901	15,170
Of which, Non-discretionary									
Interest (domestic)	*450*	*563*	*746*	*731*	*689*	*721*	*651*	*704*	*694*
Interest (foreign)	*210*	*229*	*152*	*133*	*60*	*54*	*48*	*33*	*25*
Wages	*1,301*	*1,728*	*2,012*	*2,455*	*2,833*	*3,531*	*4,256*	*4,822*	*5,329*
Constitutional Review / Elections				*149*	*242*	*182*	*313*	*326*	*4*
Arrears Repayment	*147*	*52*	*84*	*254*	*247*	*322*	*669*	*101*	
Total Non-Discretionary (incl.wages)	2,108	2,572	2,994	3,722	4,071	4,810	5,937	5,986	6,052
Discretionary Balance (excl. wages)	1,470	1,936	2,245	2,924	3,978	5,640	6,868	7,915	9,118
Overall Fiscal Balance	-830	-1,233	-746	-882	-636	-584	-462	494	228
(incl. grants, excl. HIPC debt reduction)									
Nominal GDP	16,260	20,479	25,997	32,456	39,223	45,482	50,716	56,051	61,432

Note:
* Excluded from total and deficit to avoid distortion of trends
**Figures are not directly comparable as they are in actual, current prices
Source: IMF (2008a)

Table 2: ZAMBIAN FISCAL TRENDS DATA AS A PERCENTAGE OF DOMESTIC EXPENDITURE

	As % of Total Domestic Expenditure						proj	proj	proj
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Total Revenue & Grants	118.9%	113.2%	117.8%	112.4%	104.5%	101.7%	105.0%	111.2%	108.6%
(excluding HIPC Debt Reduction)									
Revenue	81.2%	81.6%	90.5%	84.9%	82.2%	81.6%	83.9%	89.3%	87.0%
ax revenue (excl. Mining)	79.3%	78.4%	86.4%	81.1%	75.8%	72.1%	65.7%	67.2%	68.3%
Mining Taxes	0.2%	0.3%	0.4%	1.9%	2.7%	6.2%	12.8%	18.6%	15.3%
Non-tax revenue	1.7%	2.9%	3.7%	2.0%	3.7%	3.2%	5.4%	3.5%	3.4%
(Non-mining revenue)	81.0%	81.4%	90.1%	83.0%	79.5%	75.3%	71.1%	70.7%	71.7%
Grants	37.7%	31.6%	27.4%	27.5%	22.3%	20.1%	21.1%	21.9%	21.6%
Budget Support	9.1%	5.1%	4.9%	8.2%	5.3%	5.6%	4.8%	5.4%	5.5%
Project	28.7%	26.5%	22.4%	19.3%	17.1%	14.6%	16.2%	16.5%	16.1%
HIPC / MDRI Debt Reduction*					104.5%				
Total Expenditure (& net lending)									
Donor Funded Capital Expenditure									
Total Domestic Expenditure	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Of which, Non-discretionary									
Interest (domestic)	12.6%	12.5%	14.2%	11.0%	8.6%	6.9%	5.1%	5.1%	4.6%
Interest (foreign)	5.9%	5.1%	2.9%	2.0%	0.7%	0.5%	0.4%	0.2%	0.2%
Wages	36.4%	38.3%	38.4%	36.9%	35.2%	33.8%	33.2%	34.7%	35.1%
Constitutional Review / Elections				2.2%	3.0%	1.7%	2.4%	2.3%	0.0%
Arrears Repayment	4.1%	1.2%	1.6%	3.8%	3.1%	3.1%	5.2%	0.7%	
Total Non-Discretionary (incl.wages)	58.9%	57.1%	57.1%	56.0%	50.6%	46.0%	46.4%	43.1%	39.9%
Discretionary Balance (excl. Wages)	41.1%	42.9%	42.9%	44.0%	49.4%	54.0%	53.6%	56.9%	60.1%
Overall Fiscal Balance									
(incl. grants, excl. HIPC debt reduction)									
Nominal GDP									

Source: IMF (2008a)
Note:
* Excluded from total and deficit to avoid distortion of trends
**Figures from different years are directly comparable as they abstruct from inflation
Inverse Fiscal Deficit

Table 3: ZAMBIAN FISCAL TREND DATA AS A PERCENTAGE OF GDP

	As % of GDP						proj	proj	proj
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Total Revenue & Grants	26.2%	24.9%	23.7%	23.0%	21.5%	23.4%	26.5%	27.6%	26.8%
(excluding HIPC Debt Reduction)									
Revenue	17.9%	18.0%	18.2%	17.4%	16.9%	18.7%	21.2%	22.1%	21.5%
Tax revenue (excl. mining)	17.5%	17.3%	17.4%	16.6%	15.5%	16.6%	16.6%	16.7%	16.9%
Mining Taxes	0.0%	0.1%	0.1%	0.4%	0.6%	1.4%	3.2%	4.6%	3.8%
Non-tax revenue	0.4%	0.6%	0.7%	0.4%	0.8%	0.7%	1.4%	0.9%	0.8%
(Non-mining revenue)	17.8%	17.9%	18.2%	17.0%	16.3%	17.3%	18.0%	17.5%	17.7%
Grants	8.3%	7.0%	5.5%	5.6%	4.6%	4.6%	5.3%	5.4%	5.3%
Budget Support	2.0%	1.1%	1.0%	1.7%	1.1%	1.3%	1.2%	1.3%	1.3%
Project	6.3%	5.8%	4.5%	3.9%	3.5%	3.3%	4.1%	4.1%	4.0%
HIPC / MDRI Debt Reduction*					21.4%				
Total Expenditure (& net lending)	31.3%	30.9%	26.6%	25.7%	23.1%	24.6%	27.4%	26.7%	26.5%
Donor Funded Capital Expenditure	9.3%	8.9%	6.5%	5.2%	2.6%	1.7%	2.2%	1.9%	1.8%
Total Domestic Expenditure	22.0%	22.0%	20.2%	20.5%	20.5%	23.0%	25.2%	24.8%	24.7%
Of which, Non-discretionary									
Interest (domestic)	2.8%	2.7%	2.9%	2.3%	1.8%	1.6%	1.3%	1.3%	1.1%
Interest (foreign)	1.3%	1.1%	0.6%	0.4%	0.2%	0.1%	0.1%	0.1%	0.0%
Wages	8.0%	8.4%	7.7%	7.6%	7.2%	7.8%	8.4%	8.6%	8.7%
Constitutional Review / Elections				0.5%	0.6%	0.4%	0.6%	0.6%	0.0%
Arrears Repayment	0.9%	0.3%	0.3%	0.8%	0.6%	0.7%	1.3%	0.2%	
Total Non-Discretionary (incl.wages)	13.0%	12.6%	11.5%	11.5%	10.4%	10.6%	11.7%	10.7%	9.9%
Discretionary Balance (excl. Wages)	9.0%	9.5%	8.6%	9.0%	10.1%	12.4%	13.5%	14.1%	14.8%
Overall Fiscal Balance	-5.1%	-6.0%	-2.9%	-2.7%	-1.6%	-1.3%	-0.9%	0.9%	0.4%
(incl. grants, excl. HIPC debt reduction)									
Nominal GDP									

Source: IMF (2008a)
Note:
* Excluded from total and deficit to avoid distortion of trends
**Total domestic expenditure excludes donor funded projects
Inverse Fiscal Deficit5.1%

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CHAPTER FIVE

Rising Global Oil Prices: Macroeconomic Implications and Policy Responses for Zambia

By

Nambula Wamulungwe and Ivan Zyuulu

Abstract

This paper reviews the effects of oil prices on the Zambian economy during the period, 2002 - 2008 and assesses the extent to which the country remains vulnerable to a sustained period of high oil prices. An analysis of the correlation between fuel prices and various economic parameters was used to make an inference on the likely effects of fuel prices on the economy. The study suggests that some macro-economic parameters, such as inflation and the exchange rate, appear to be relatively sensitive to oil price shocks while others such as GDP and balance of payments do not show a strong link. The study attributes the apparent weak correlation between fuel prices and some macro-economic variables to positive shocks of the opposite sign that have coincided with the oil price shocks, improved monetary policy management by the central bank and lack of full cost reflectivity of fuel prices. The study further recommends appropriate policy responses to safeguard price stability and minimise recessionary pressures in the Zambian economy during future oil crises.

I Introduction

A global energy crisis set in following the phenomenal increase in international crude oil prices, between 2005 and 2008. This was manifested in a steep rise in international oil prices to an all time record high of US $148 per barrel at the beginning of July, 2008.

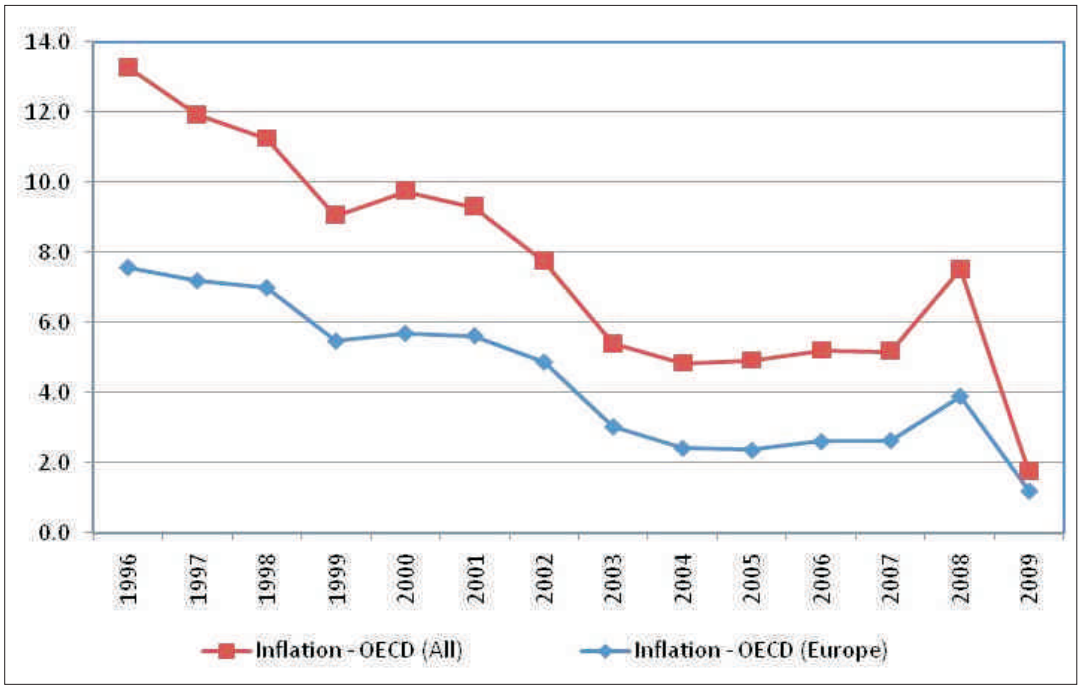
Industries highly sensitive to fuel prices, such as the airline industry, suffered massive losses and were forced to scale down on operations and down-size their labour forces in response to the crisis. Strong economies such as those in the Euro Zone, that in the past absorbed earlier oil shocks, registered record high inflation levels, largely attributed to the high and volatile global oil (and food) prices (see Chart 1).

World economic history suggests that sustained high oil prices potentially provide a huge challenge to global and national economies, as was experienced during the oil shocks of the seventies and eighties. The economic downturn of 2000 and 2001 was also partly attributed to high oil prices since 1999 (International Energy Agency). Some economic analysts have observed that if oil prices are sustained above US $60 per barrel, the global economy could slump into a recession[1]. Other concerns include the adverse impact of increasing oil prices on inflation, terms of trade, exchange rates and in some cases, the financial sector. At the time of rising oil prices, the World Bank observed that rising energy prices were going to have devastating implications for global poverty and food security (World bank, 2008).

[1]Morgan Stanley Economists (www.morganstanley.com)

Further, the Bank observed that rising oil prices created a highly volatile environment that adversely affected developing countries, resulting in challenges in maintaining their growth momentum.

Chart 1: Inflation in Developed Countries (OECD), 1996-2009



This paper analyses the macro-economic effects of the increases in oil prices on the Zambian economy, for the period 2002 to 2008, with particular emphasis on inflation, balance of payments and output. Given the improved performance of the Zambian economy and the attainment of macro-economic stability over the past few years, the possibility of a major adverse external shock in the form of increased oil prices could pose a challenge to the country's economic prospects. Appropriate and timely policy interventions would therefore need to be considered to avert adverse ramifications on Zambia's macro economy. The study uses correlation analysis to investigate the strength of linkages between oil prices and some given macro-economic parameters.

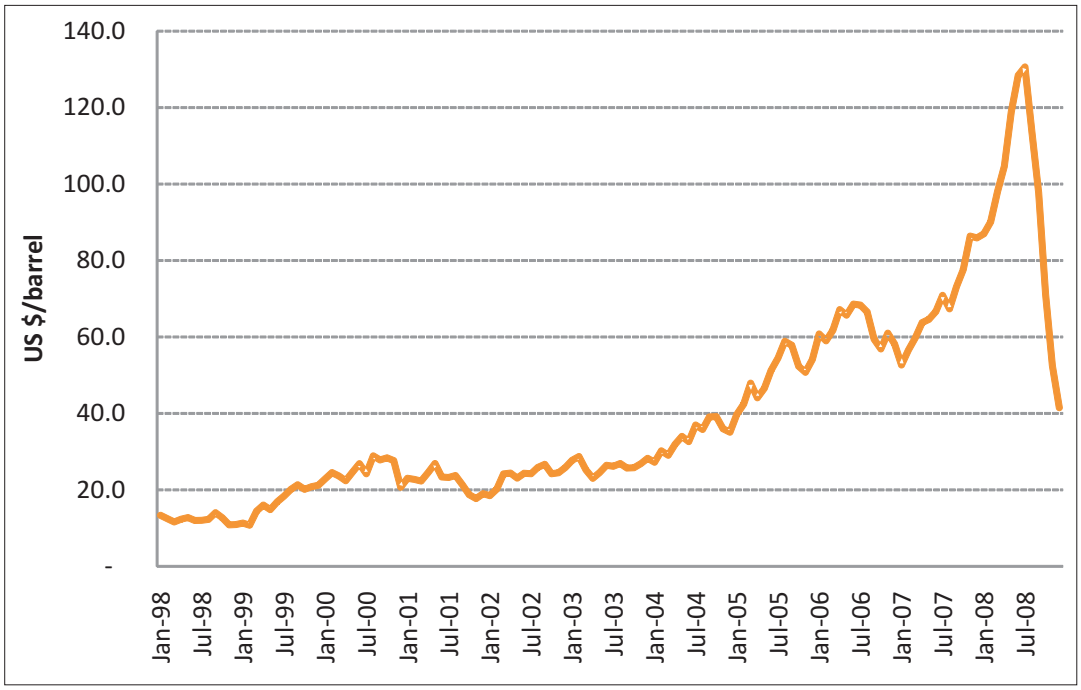
The paper is organised as follows: Section two looks at trends in international and domestic oil prices; Section three provides a conceptual framework for the analysis, while Section four discusses the measurement of the impact of oil prices in Zambia. Section five discusses limitations to the study, while Sections six and seven conclude and provide policy recommendations, respectively.

II Trends and Determinants of International and Domestic Oil Prices

Trends and Determinants of International Oil Prices

Global oil prices exhibited a steady upward trend over the period 2005 to 2008. In January 2005, crude oil prices rose from US $35 per barrel to US $58 per barrel by the end of the year. In 2006, crude oil prices rose to US $70, and a further increase of 28.6 % was recorded in 2007 to US $90 per barrel. Crude oil prices continued to increase in 2008, reaching a record high of US $148 per barrel at the beginning of July 2008 (see Chart 2)

Chart 2: Trends in Global Oil Prices (Dubai), 1998 - 2008



The trends in global oil prices mainly reflect the interplay between the fundamentals of production, stocks and consumption. However, several other factors can be isolated to explain the sharp increases in global oil prices as detailed below.

(a) *Rising global economic activity:* Rising global economic activity, driven in part by emerging economies such as China and India, resulted in higher demand for fuel around the world. This, coupled with tighter supply conditions, exerted upward pressure on world fuel prices.

(b) *Geo-political tensions:* There have been three major oil shocks over the past 30 years, all stemming from geo-political disturbances in the Middle-East (the Arab-Israeli War of 1973 and the subsequent oil embargo, the Iranian Revolution and related events in 1979, and the Iraqi invasion of Kuwaiti in 1990). Even in much recent times, geo-political tensions in major oil producing regions have often led to higher oil prices on the basis of expectations of supply disruptions. The market responds very quickly to fears of terror attacks and supply disruptions in the Middle East, Russia, Nigeria and other oil producing regions of the world.

(c) *OPEC[2] Cartel Behaviour:* OPEC's oligopolistic behaviour of controlling output often results in artificially high prices.

(d) *Speculation:* Most analysts attributed the unprecedented increases in oil prices to market speculation, geo-political tensions and the weakening of the US dollar. With the dollar reaching an all time low against the euro coupled with the mortgage market-led financial crisis that hit the US, investors preferred to pour their resources into oil and other assets (commodities) to hedge against dollar weakness[3].

The World Bank observed that unlike the previous oil shocks which were largely supply induced, high prices reflected growing energy demand in emerging markets especially China and India, and international capital flows seeking investment opportunities in the face of a declining dollar[4].

(e) *Under investment in exploration and refining:* Due to the increased technological and economic challenges of oil production, levels of investment in refinery capacity and new exploration have been quite low over the past years, thereby contributing to supply constraints.

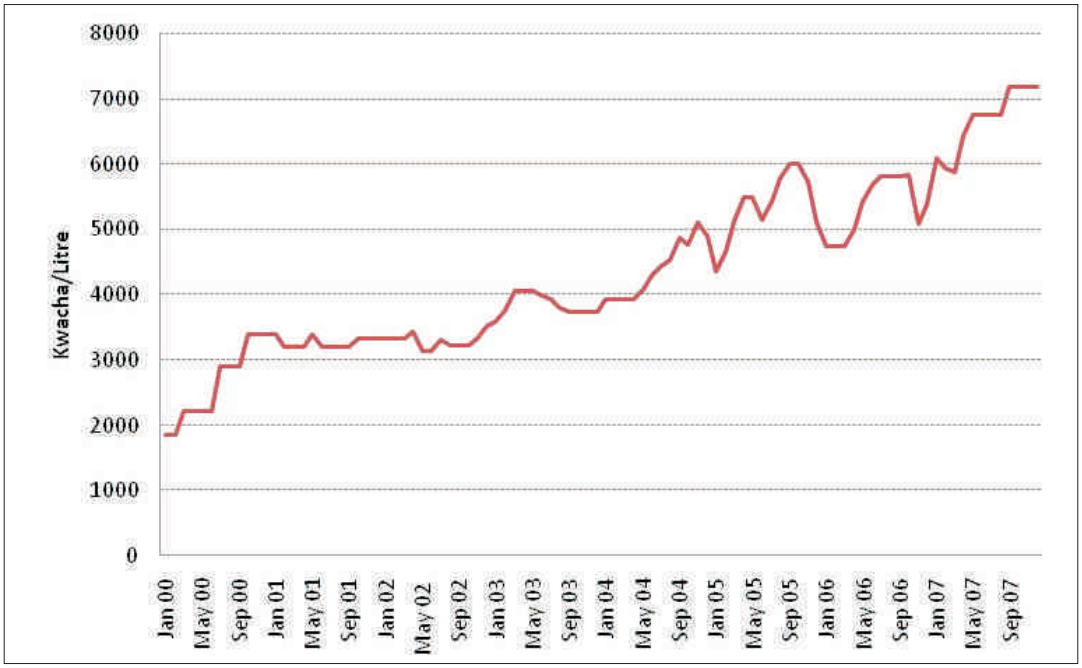
(f) *Shrinking buffers:* Inventories of oil in OECD countries were declining during the period, normally characterised by a build-up. This led to increased price pressure as markets anticipated future shortages.

Trends and Determinants of Fuel Prices in Zambia

Between 2000 and 2007, fuel prices in Zambia generally exhibited an upward trend, broadly in line with developments in global crude oil prices (see Chart 3). However, due to the regulation of domestic fuel prices in Zambia, the volatility in pump prices has usually been much less pronounced relative to the global oil market. As reflected in Chart 3, fuel prices have normally moved in steps, particularly between 2000 and 2004. However, between 2005 and 2007, the volatility of domestic fuel prices increased. This is largely as a result of the Energy Regulation Board (ERB)'s adoption of a more market based pricing methodology, the import parity pricing mechanism (IPP).

[2]Organisation of Petroleum Exporting Countries
[3]CNNMoney.COM
[4]Statement by World Bank Managing Director at a forum to address oil price volatility and its economic impact - USA, March, 2008.

Chart 3: Petrol Pump Prices in Zambia (2000 - 2007)



Zambia is vulnerable to high global oil prices as it imports all its oil requirements. The bulk of Zambia's fuel is imported as crude, transported through the 1,710 kilometer long Tanzania Zambia Mafuta (Tazama) pipeline and refined into finished product (diesel, petrol, kerosene, jet A-1, etc) at Indeni Refinery. A small portion of finished product is imported, unless the refinery is out of production.

The pricing of petroleum products in Zambia is regulated by the Energy Regulation Board. The Board utilises market-based pricing mechanisms in line with the Government's broader policy framework of price liberalisation.

The key determinants in the pricing of fuel (whether imported as crude or as finished product) are the international oil price and the exchange rate of the Kwacha against the US dollar. Thus, given the propensity of the two variables to be volatile, the price of fuel in Zambia normally tends to be volatile in roughly the same direction as the net effect of the changes in the two variables. During the period under study, the adverse impact of increasing prices on the international markets was reasonably cushioned by the appreciation of the Kwacha. For instance, fuel prices were not revised between June and August 2007, despite increase in international oil prices, on account of the compensating effect of the appreciation of the Kwacha. Additionally, the prices were further cushioned through the use of government subsidies. For example, fuel prices had not been reviewed upwards between September 2007 and April, 2008 despite sharp rises of the international oil prices as the government provided a corresponding subsidy.

Other key determinants of the level of the domestic price of fuel in Zambia are international freight charges and the various taxes and statutory levies and fees. Unlike the first category of parameters, these are much less variable; however, they are important in understanding the *level* of prices but not the *volatility*.

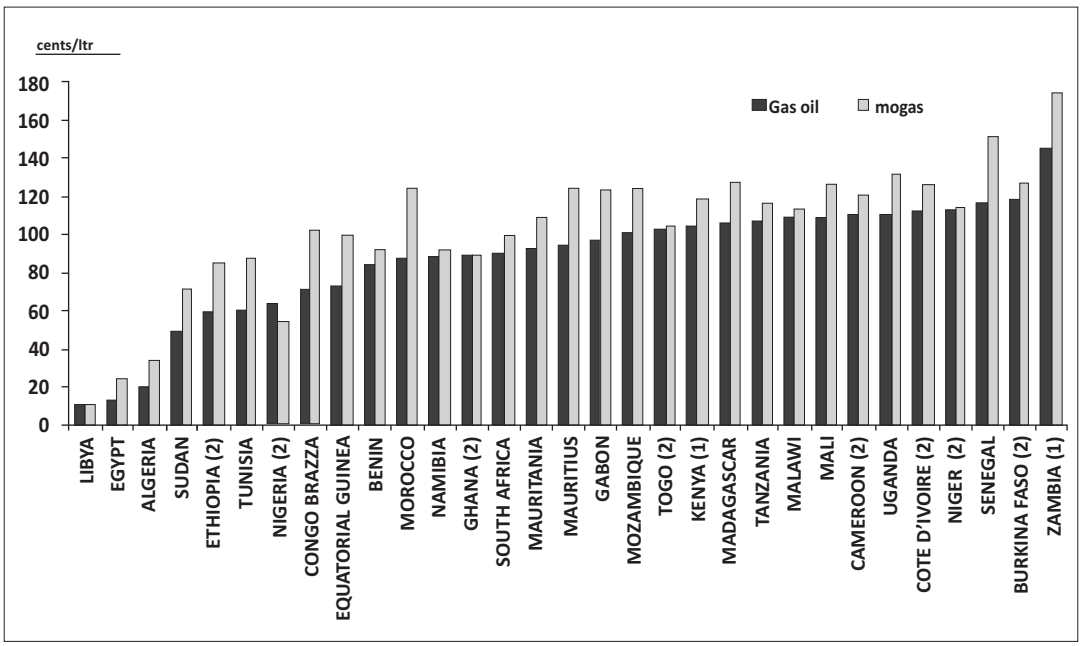
(a) Price of Fuel in Zambia and Regional Comparisons

The 2007 Energy Market Report[5] rated the price of petroleum products in Zambia as the highest in Africa as a whole (see Chart 4).

The high fuel prices in Zambia have an adverse impact on the cost of doing business and invariably on Zambia's competitiveness. An estimate by the Zambia Business Forum (ZBF), for instance, suggested that the cost of transport alone accounted for between 45 - 56% of some companies' operating costs (Energy Regulation Board, *Energy Sector Report, 2006)*.

Nevertheless, consumption of petroleum products in Zambia has been steadily growing over the past few years in line with the growth in the economy, averaging at least 5.0% in the past five years. For instance, diesel consumption doubled between 2002 and 2008. Chart 5 illustrates the trend in consumption of diesel over the past six years. In Zambia, diesel is the major fuel driving most industrial processes, with the transport and mining sectors being the largest consumers. In 2006, the transport sector consumed 52% of diesel followed by mining with 26.8%.

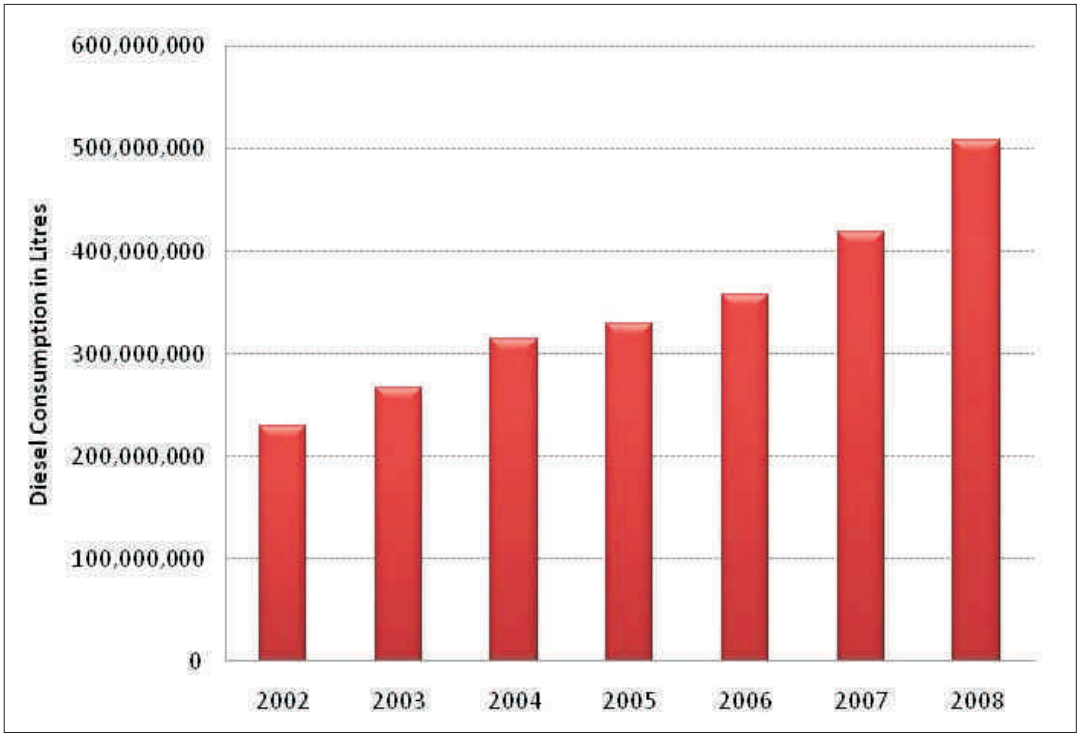
Chart 4: Comparison of African Retail Pump Prices of Petrol and Diesel - July 2007



Source: Sub-Saharan Africa Energy Market Report 2007
Note: The terms Mogas and Gasoil in the chart refer to petrol and diesel respectively.

[5] 3rd Quarter Sub-Saharan Africa Energy Market Report 2007; pg 17

Chart 5: Trend in Annual Diesel Consumption in Zambia (2002 - 2008)



Fuel Taxes in Zambia and Regional Comparisons

There are four types of taxes imposed on petroleum products in Zambia, namely: Import Duty, Excise Duty, Road Levy and Value Added tax (VAT). On average, these taxes make up 43% of the pump price for petrol, 33% for diesel, and 13% for kerosene. Table 1 gives a break - down of the main taxes and levies and their respective applicable rates.

Table 1: Fuel Tax Regime in Zambia[6]

DESCRIPTION	Petrol	Diesel	Kerosene	Jet A-1	HFO	Lubricants
Import Duty	5%	5%	5%	5%	5%	25%
Excise Duty	45%	15%	0%	0%	0%	0%
Vat	17.5%	17.5%	0%	0%	17.5%	17.5%

Source: Energy Regulation Board

A regional comparison of taxes shows that the Zambian taxes on the three products petrol, diesel and kerosene rank the highest in the region. As outlined earlier, this forms a critical component in the price of fuel. In the following illustrations, Zambia's fuel taxes are compared to the regional average taxes and the average taxes for the two land locked countries in the region namely, Malawi and Botswana. It is also observed that the taxes in Zambia are higher than what is obtaining in the region and this could partly explain the high fuel price in Zambia compared to other countries in the region (see Charts 6 and 7).

[6]In June, 2008, the Minister of Finance and National Planning announced a reduction in rates of excise duty on Diesel, Petrol and Kerosene from 30% to 15%, 60% to 45% and 15% to zero, respectively. Excise duty rates in Zambia currently include road levy which has been at 15%.

Chart 6: Regional Tax Comparison Petrol

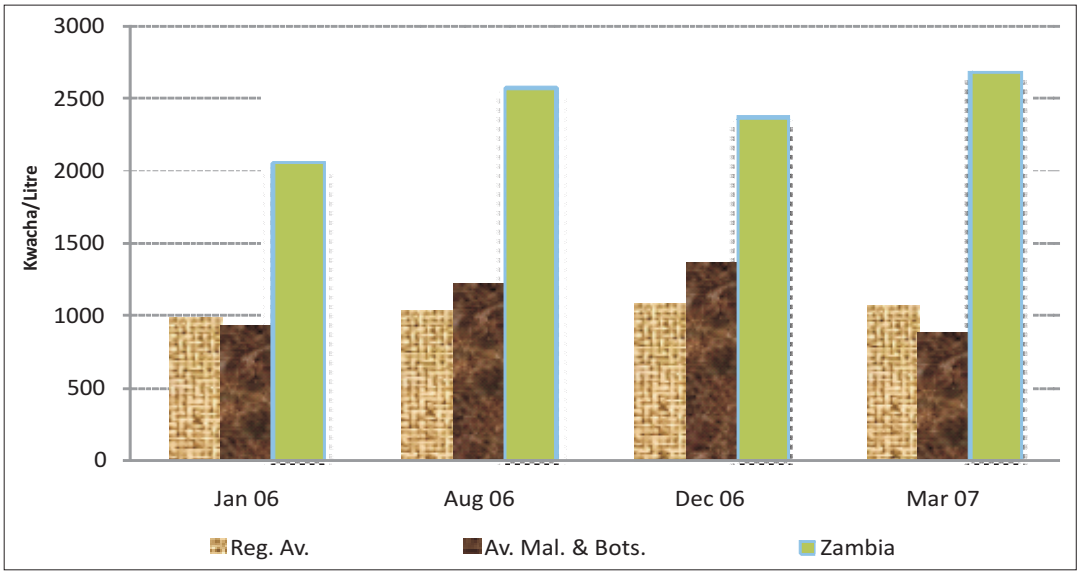
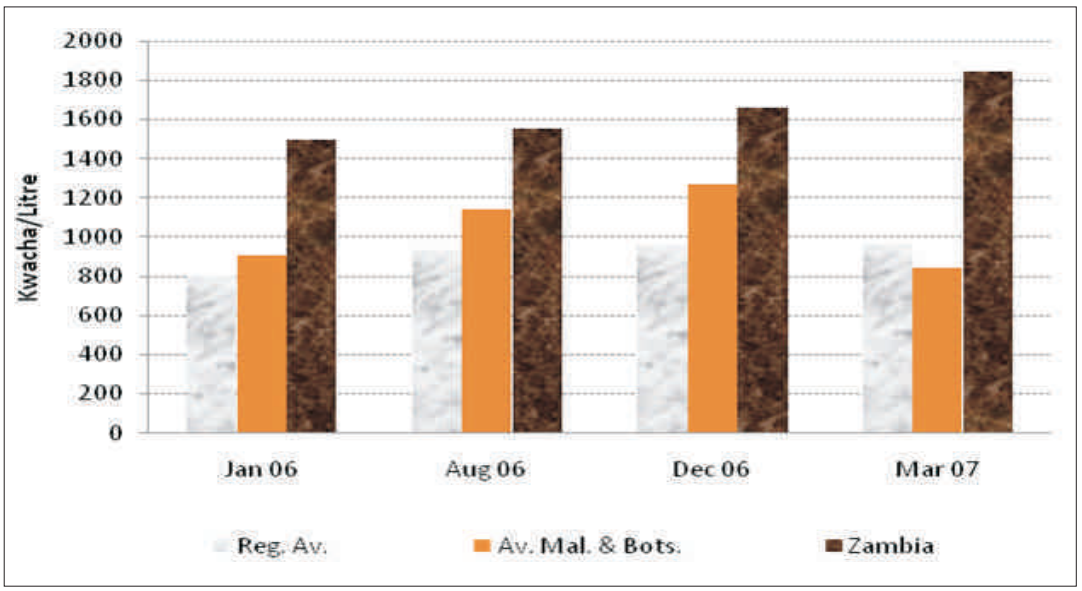


Chart 7: Regional Tax Comparison - Diesel



III Literature Review

Several studies have recently been done to simulate the impact of oil prices on the macro-economy. One of these studies was undertaken by an IMF research team[7] and a similar one by the OECD[8]. In the IMF study of 2000, several simulations of a sustained $5 per barrel (20 percent) increase in the price of oil were run using MULTIMOD[9], focusing on the

[7]IMF Research Department, December 8, 2000
[8]Joint team of the IAE, IMF and OECD in 2004
[9]MULTIMOD is a modern dynamic multi-country macro model of the world economy designed to study the transmission of shocks across countries

implications for real GDP, inflation, and monetary policy. In these simulations, it is assumed that the monetary authorities in advanced countries target expected core inflation, while fiscal policy is passive, allowing automatic stabilizers to operate. The results reported indicated that a $5 per barrel increase in the price of oil would reduce the level of global output by around ¼ percentage point over the first 4 years, after which the output losses slowly fade away.

The study also simulated the impact on the balance of payments. For an oil importing country such as Belarus, the oil price hike would add to the current account deficit by about 1.6 percent of GDP. Mali, an example of a Heavily Indebted Poor Countries (HIPC) that was running a current account deficit of almost 15 percent of GDP, had the oil price increase add to its current account deficit by 1¼ percent. A number of countries, with limited access to capital markets, were observed to also face additional pressures from weak non-oil commodity prices further increasing the adverse impact on domestic absorption.

While the HIPC and transition economies account for only a small share of global GDP, the IMF study showed that many of them were among the most seriously affected by higher oil prices. A majority of HIPC and Commonwealth of Independent States (CIS) countries are net oil importers. Most of these countries have very low per capita incomes, high level of oil imports relative to GDP, large current account deficits, high external debt, and very limited access to global capital markets. In the absence of international assistance, the lack of access to private capital markets further makes the impact of higher oil prices on output relatively large, as it has to be met primarily through a reduction in domestic demand.

The *largest* first-round adverse impact on the current account for the emerging market economies was 0.5 percent (the Philippines), while the *average* impact for the oil-importing HIPC and CIS economies was expected to be 0.8 percent and 1.7 percent, respectively. All of the CIS and several HIPC countries were expected to be seriously affected, with trade balance deteriorating by more than 1 percent of GDP. With essentially no access to international capital markets, this was expected to lead to a sharp contraction in domestic demand.

Various literature also suggests that oil prices significantly affect inflation and financial markets. However, the magnitude of the effect of high oil prices on an economy depends on several factors including:

(a) The share of cost of oil in national income;

(b) The degree of dependence on imported oil; and

(c) The ability of end users to reduce their consumption and switch away from oil.

In a net oil importing country such as Zambia, higher oil prices are expected to lead to increased input costs and inflation. In the OECD study of 2004, a clear correlation was found between oil price movements and short-term changes in the inflation rate. Due to soaring food and oil prices, inflation in the 15-nation euro-zone reached a record high of 4.0 percent in June 2008, well above the European Central Bank's (ECB) expectation of less than 2.0 percent (International Energy Agency, 2004). Net oil importing countries also experience deterioration in their balance of payments, putting downward pressure on exchange rates. The impact on currencies (exchange rates) has been observed to be more prominent for industry-intensive countries that tend to use a lot of oil, Japan being the biggest and best example.

An increase in the oil price, by affecting economic activity, corporate earnings, inflation and monetary policy is expected to have implications for asset prices and financial markets. The impact on financial markets in turn provides additional channels through which the oil

price increase would affect economic variables. However, given cyclical developments in the world economy, it is unclear to what extent an increase in the oil price is directly responsible for the turbulence in advanced country's financial markets. In the case of oil importing emerging markets, however, there have been noticeable adverse effects across a range of financial and currency markets, which appear directly linked to oil market developments (International Energy Agency, 2004).

Actual as well as anticipated changes in economic activity, corporate earnings, inflation, and monetary policy following the oil price increases were observed to affect equity and bond valuations and currency exchange rates. As a response to high inflation partly induced by soaring oil prices the ECB raised its main interest rate in July 2008 in order to contain inflation.

The vulnerability of oil importing countries to higher oil prices varies significantly depending on the degree to which they are net importers as well as the oil intensity of their economies. According to a 2004 study by the International Energy Agency (IEA),[10] it was estimated that a sustained $10 per barrel increase in oil prices would result in the OECD region as a whole losing about 0.4% of GDP, inflation rising by about 0.5% and unemployment would also increase.

The study further notes that the adverse economic impact of higher oil prices on oil importing developing countries is more severe than for OECD countries. The study attributes this to the developing countries' higher dependence on imported oil, their energy intensity and higher inefficiency in use of energy. On average, energy importing developing countries are said to use more than twice as much oil to produce a unit of economic output as do OECD countries.

It is further observed that developing countries have a lower capacity to weather the financial turmoil resulting from higher oil import costs. It is estimated that the loss of GDP averages 0.8% in Asia and 1.6% in the very poor highly indebted countries (IEA, 2004).

Lessons from the global oil shocks indicate that there have been varied responses by Governments. On the fiscal front, responses have included reduction in fuel taxes, expansion in universal subsidies and transfer programmes, and public-sector wage increases. In the IMF (2008) survey[11] half of the countries surveyed reported a net increase in fiscal cost of about 0.6% of GDP as a result of these measures. However, it is proposed that policy measures need to reflect each country's macroeconomic situation and capacity to create fiscal space.

In terms of monetary and exchange rate policies, the IMF (2008) indicated that many countries allowed the pass-through of the first round effects of food and fuel price increases. However, the impact on inflation became an increasing concern although many countries tightened monetary policy. It was therefore, proposed that monetary policy should seek to avoid spill over into more generalised inflation. Furthermore, given that most of the adjustment to the oil price hike would need to come from a reduction in domestic demand relative to output, it was also proposed that exchange rate policies that accommodate depreciation in the real exchange rate may need to be considered.

However, other recent studies have exhibited a declining impact of oil prices on macro-economic variables. For example, a recent study by the National Bureau of Economic Research[12] calls in question the relevance of oil price changes as a significant source of

[10]International Energy Agency (IEA) in collaboration with the OECD Economics Department and the IMF Research Team
[11]IMF, 'Food and Fuel Prices-Recent Developments, Macroeconomic Impact and Policy Responses', June, 2008
[12]NBER paper of September, 2007 entitled, 'The Macro-economic effects of Oil shocks: Why are the 2000s so different from the 1970s?

economic fluctuations. This study further observes that since the late 1990s, the global economy has experienced two oil shocks of sign and magnitude comparable to those of the 1970s but, in contrast with the latter episodes, GDP and inflation have remained relatively stable in much of the industrialised world.

The NBER paper suggests three plausible explanations for the relatively weak impact of fuel prices on the economies of most countries;

a) That the effects of the increase in the price of oil have been similar across episodes, but have coincided in time with large shocks of a very different nature (e.g. large rises in other commodity prices in the 1970s, high productivity growth and world demand in the 2000s). That coincidence could, therefore, significantly distort any assessment of the impact of oil shocks based on a simple observation of the movements in aggregate variables around each episode.

b) Second, changes in the way monetary policy is conducted may be responsible for the differential response of the economy to the oil shocks. In particular, the stronger commitment by central banks to maintaining a low and stable rate of inflation, reflected in the widespread adoption of more or less explicit inflation targeting strategies may have led to a smaller impact of a given oil price increase on both inflation and output simultaneously.

c) Third, the share of oil in the economy may have declined sufficiently since the 1970s to account for the decrease in the effects of its price changes.

Several other papers on this phenomenon confirm that pass-through from oil to prices has become negligible since the early eighties (IMF).

IV Measurement of the Relationships between Oil Prices and Macroeconomic Variables in Zambia

The methodological approach in this study has been to analyse the correlation between fuel prices in Zambia and various economic parameters.

Effect on Inflation

A correlation analysis was used to investigate the relationships between fuel prices and inflation in Zambia. This was done by comparing the trends between fuel price and both average annual inflation and non-food inflation.

Charts 8 and 9 below indicate the resultant trend between the price of fuel and inflation in Zambia. This is based on monthly data for the period 1993 to 2008. The charts show that overall, the two trends are strongly correlated. Petrol prices and non-food inflation exhibited a correlation co-efficient, r, of 0.86 while against average annual inflation, the value of r was 0.84. Similarly, diesel prices and both non-food and average annual inflation resulted in strong positive correlation coefficients of 0.89 and 0.88, respectively. This is generally consistent with the *apriori* expectations of a positive relationship between fuel prices and inflation.

Chart 8: Petrol Price and Inflation Trend, Jan 1993 - Dec 2008

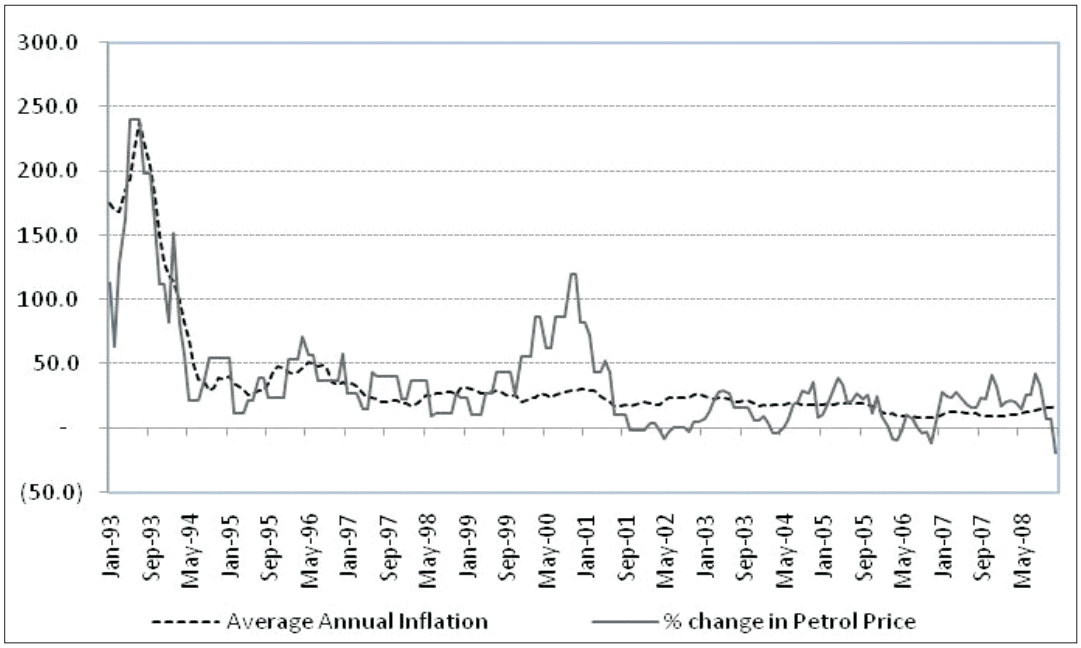
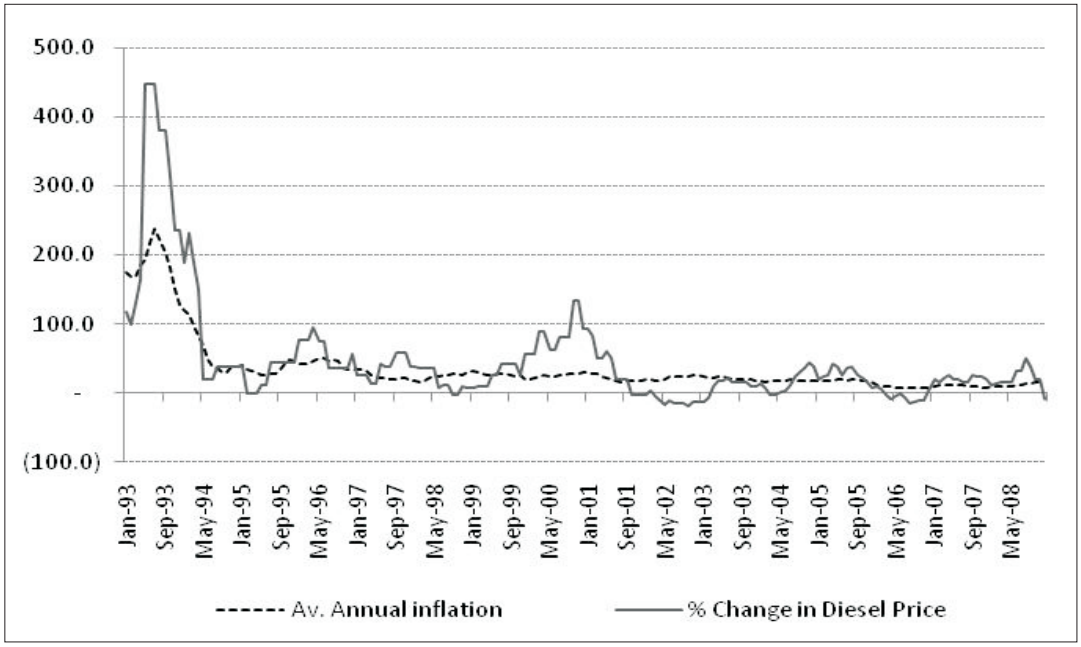


Chart 9: Diesel Price and Inflation Trend, Jan 1993 - Dec 2008



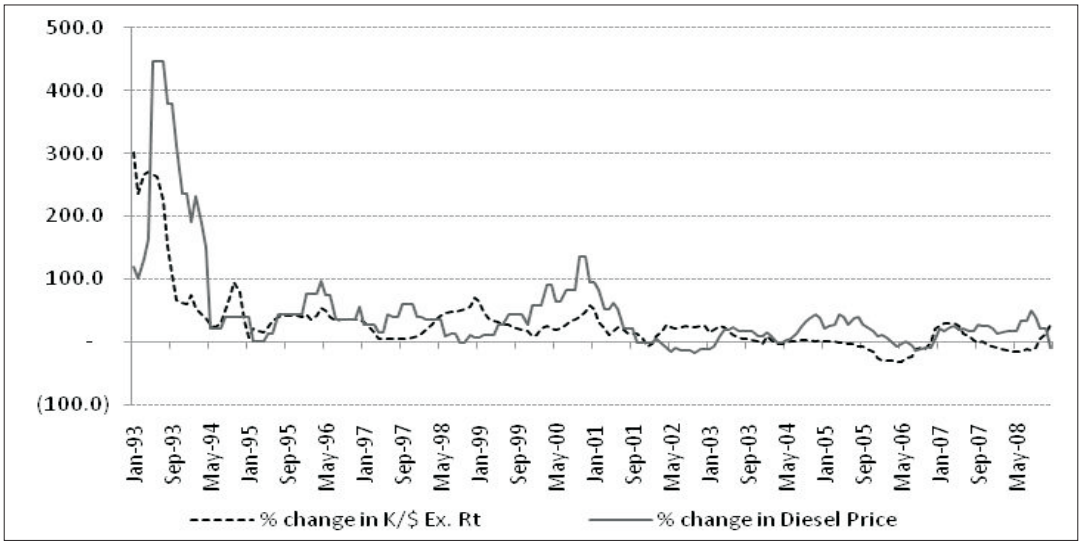
Effect on the Exchange Rate

As observed above, the exchange rate is one of the major determinants of the price of fuel in Zambia. On the other hand, higher prices of fuel could also be expected to result in increased demand for foreign exchange to meet the enhanced import bill. This in turn could

exert pressure on the exchange rate. The results based on Zambian data suggest that the relationship between the exchange rate and the prices of fuel is generally positive, with a correlation coefficient of 0.73 for petrol and 0.68 for diesel for the period 2003 to 2008 (see Chart 10).

Therefore, as expected, fuel prices in Zambia appear to have a direct relationship with the exchange rate. Hence, a sharp rise in fuel prices could be expected to result in a depreciation of the Kwacha against major currencies.

Chart 10: Fuel Prices (Diesel) and the Exchange Rate



Relationship with the External Sector

The impact of fuel prices on Zambia's external sector position is not definite from empirical data during the period under review. Despite the steady rise in fuel prices between 2002 and 2008, Zambia's external sector position has also steadily improved, as exhibited by the improved terms of trade and current account performance (Table 2). Despite the growing import bill for petroleum products, the overall trade and current account balances as well as the terms of trade positions have been improving on account of several factors. Some of these include the improved export earnings resulting from increased mining production and improved copper prices, the reduced external debt servicing obligations (post HIPC) and increased portfolio and foreign direct investments.

Table 2: Fuel Price, Terms of Trade (ToT) and Current Account (CA) Positions (2002 - 2008)

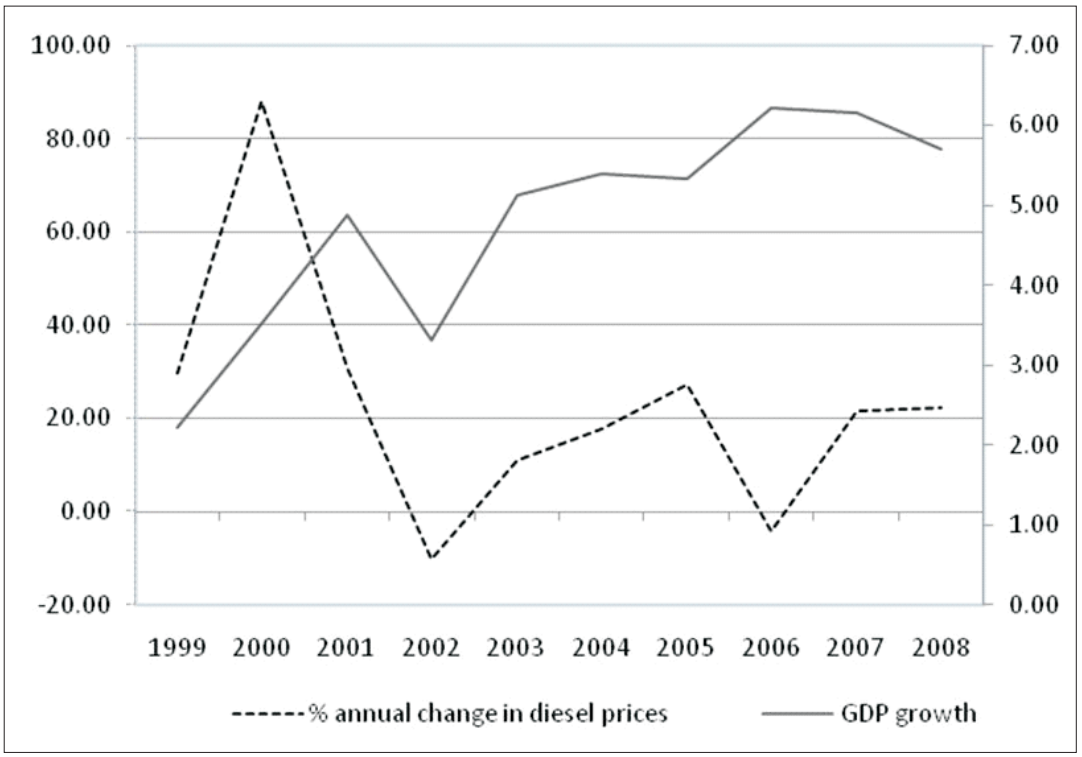
Year	% Change in average Oil Price	% change in Terms of Trade	Current Account Deficit/Surplus (% of GDP)
2002	7.2		-17.9
2003	10.5		-16.3
2004	28.9	31.6	-12.2
2005	47.5	10.4	-10.4
2006	25.6	55.2	-1.6
2007	9.6	8.4	-7.1
2008	37.4	-17.1	-5.6

Source: BoZ Annual Reports, various

Impact on Output

As is the case with the external sector position, empirical data does not validate the expectation that rising fuel prices have significantly slowed down Zambia's economic performance. During the period 2002 - 2008, the country exhibited its best performance in a very long time, with stable GDP growth at an average of about 5% per annum. Chart 11 indicates a weak link between annual change in fuel prices (diesel) and GDP growth with a correlation coefficient of -0.3. However, it is known that as with other input prices, rising fuel prices tend to have an adverse impact on production costs resulting in the lowering of both output and incomes. Therefore, despite recording increased growth rates in the period under review, the Zambian economy could have performed even better at lower costs of production. As a case in point, it is noted for instance, that the power utility, ZESCO, reduced its generation, from diesel generation stations, during the year 2006 due to increased cost of diesel[13]. This reduction in power production represents a cost to the economy in terms of lost output from unserved energy.

Chart 11: Fuel Price and GDP Growth Trends



V Conclusion

High fuel prices are associated with serious macroeconomic effects throughout the global economy. These include adverse effects on growth and inflation and large swings in the terms of trade with significant balance of payments repercussions.

[13]The ERB Energy Sector Report, 2006

Results of this study indicate a strong association between domestic fuel prices and inflation and the exchange rate. However, it is observed that the occasional subsidisation of fuel prices in Zambia, coupled with the application of appropriate monetary policy, has tended to weaken this link. The application of tight monetary policy in recent years has helped minimise the second round effects of fuel price increases.

On the other hand, the study suggests a weak link between fuel prices and the external sector and GDP. This could largely be attributed to other positive factors arising from improved copper prices and subsequent increased mining investment. In addition, enhanced portfolio and foreign direct investment flows resulting from an improved macro-economic environment further strengthened the country's external sector and real sector performance. These developments in turn enhanced the country's resilience to the adverse effects of the oil shock by buttressing the country's terms of trade, foreign exchange stability and helping as an anchor against inflation.

VI Limitations of the Study

Unlike the IMF and OECD studies referred to, this study did not use a macro-economic model to isolate the impact of a shock in fuel prices on other variables in the economy. Correlation analysis, though useful in general fails to hold other factors constant.

VII Policy Implications and Recommendations for Zambia

Whereas government policy cannot altogether eliminate the adverse impacts of high oil prices discussed in this paper, appropriate economic and energy policy responses to a combination of higher inflation, higher unemployment, exchange rate depreciation and lower real output can minimise the overall impact on the economy over the long term.

The following policy recommendations are hereby suggested for Zambia in dealing with future oil crises:

I. In order to ensure that there is only a price effect and not a continuing impact on the rate of inflation, the Bank of Zambia should continue employing appropriate monetary policies to dampen the second round effects;

II. Consideration should be given to the re-designing of the current Advalorem tax structure on fuel products to a Specific tax of an amount of Kwacha per litre. This will help avoid the cascading effect of taxation when fuel prices rise, and in turn, will reduce the inflationary impact;

III. The level of fuel taxes in Zambia remains largely uncompetitive in the region. Serious consideration should be given to further reduction in tax levels, particularly excise duty, on petroleum products. This will reduce production costs and help the country remain competitive in regional trade;

IV. As a long term measure, government should maintain the current momentum to explore cheaper supply options for Zambia, including efforts at prospecting for oil deposits in North-Western Zambia, improving crude oil procurement systems, development of bio fuels and reconfiguring the Indeni refinery by investing in a hydro cracker[14]. In August, 2008, Government announced plans to invest in the hydrocracker unit and another unit to minimise the sulphur content of Zambian fuel.

[14]The hydro cracker unit will facilitate processing of pure crude which is cheaper and can be sourced from nearby Angola further reducing freight charges.

V. In view of the recent oil shock, the Zambian economy needs a strong anchor to manage inflationary pressure. Increase in productivity in key sectors such as agriculture could help reduce inflationary pressures. Furthermore, the country should sustain the strong external sector performance in order to safeguard exchange rate stability which is also an important anchor against inflation during oil crises.

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CHAPTER SIX

Financial Innovation and the Importance of Modern RiskManagement Systems A Case of Zambia[1]

By

Mankolo Beyani and Raphael Kasonde

Abstract

The main objective of the paper is to propose that there is an urgent need for the Zambian banks to invest in modern risk management tools. These are the tools that will promote long term and sustainable financial performance and greater efficiency in the pricing of risks and the allocation of capital. The current banking environment in Zambia has become relatively competitive as banks scramble for the share of the deposit base on the liability side as well as good quality credit on the asset side. This has resulted in a downward pressure on their net interest margins and overall profitability. In order for banks to protect and maintain their profits, they have often turned to financial innovation but without necessarily enhancing their risk management practices to bring them in line with the current financial landscape.

I Introduction

The current banking environment in Zambia has become relatively competitive as banks scramble for a share of the customer deposits on the liability side and good quality credit on the asset side of their balance sheets. In light of this and the need by banks to maintain their profitability, Zambia has witnessed considerable change in the financial landscape.

By December 2009 for example, five new banks were granted banking licences bringing the total number of players to 18 from 13 banks as at end-December 2007. The granting of new licences was a significant development following the numerous bank closures that were experienced between 1995 and 2000. Further the commercial banks' branch and agency network increased by 22.3% to 247 as at end-December 2009 from 202 in 2007; while the number of automated teller machines (ATM) installations increased by 131.7% to 431 from 186 machines in 2007. In addition to the ATM expansion, the number of electronic cards issued increased by 102.6% to 879,189 as at end-December 2009 from 433,866 as at end-December 2007. These developments were anchored on the banking sector's asset growth of 34.4% between 2007 and 2009 and of which loans and advances accounted for about 50.0% of the growth[2]. The rapid rate of change in the financial sector calls for an assessment of the efficacy of risk management systems of financial institutions on one hand and devising appropriate regulatory responses to the challenges that these changes may pose, on the other. Despite this financial innovation[3], most of the banks did not have adequate risk management frameworks and therefore exposing the entire banking sector to financial risks.

[1]Prepared for the IFC conference on 'Measuring financial innovations and their impact' Bank for International Settlements, Basel August 26-27, 2008.

[2]These and other statistics can be found on the Bank of Zambia website: www.boz.zm.

[3]Financial innovations can be grouped as new products (e.g., adjustable rate mortgages; exchange-traded index funds); new services (e.g., on-line securities trading; Internet banking); new "production" processes (e.g., electronic record-keeping for securities; credit scoring); or new organizational forms (e.g., a new type of electronic exchange for trading securities; Internet-only banks) (Frame and White (2002): see Section 3 for a detailed discussion on financial innovation).

Such a state of affairs can be compared to what was observed during the recent global market turmoil where financial institutions (especially in advanced economies) with weak and ineffective risk management systems incurred huge losses and pushed entire economies in disarray. In this paper, our proposition is that time has come for the Zambian banking sector to learn from the recent global market turmoil. It is important that all banks in Zambia fully embrace modern risk management practices. This is because it is much easier to take corrective action in times of relative financial stability, as the situation in Zambia is currently, than in stressed market conditions.

According to Greuning and Bratanovic (2009), "effective risk management, especially for larger banks and for banks operating in deregulated and competitive markets, requires a formal process. In developing economies, especially those in transition, unstable, economically volatile, and shallow market environments significantly expand the range and magnitude of exposure to financial risk. Such conditions render risk management even more complex and make the need for an effective risk management process even more acute."

The rest of the paper is structured as follows: Section two, shows how the banking sector in Zambia has evolved over the years while section three reviews some theoretical literature on financial innovation and risk management systems. Section 4 concludes.

II Overview of Zambia's Banking Sector Activities and Performance

Historical Overview

At the time of independence in 1964, the financial system in Zambia comprised of foreign commercial banks namely, Standard Chartered Bank (established in 1906), Barclays Bank (1918) and Grindlays Bank (1956, now Stanbic Bank since 1992). Following the introduction of the nationalisation policy in 1968, Government took control of a substantial segment of the financial system. At the centre of policies introduced were the creation of various state-owned financial institutions and the introduction of administrative controls over the foreign exchange market, interest rates and to a limited extent, credit allocation (Beyani, 2006). This was in line with Government's economic strategy of nationalisation and import substitution industrialisation adopted in 1968. The Government envisioned a financial system that would finance its development plans in line with its economic strategy and provide long term finance for investment and funding for domestic firms.

Despite the good intentions of the Government policies and programmes, the financial system remained small and undiversified. Overall, government involvement in the financial sector, coupled with deteriorating macroeconomic conditions, resulted in an inefficient system. Consequently, profit margins were depressed and the banking business was not lucrative resulting in only a few private banks entering the market between 1970 and 1990 (Maimbo & Mavrotas, 2003).

Following the change of Government in 1991, major financial reforms were undertaken which brought about radical market-oriented economic reforms. The most significant reforms were the liberalisation of the foreign exchange markets and interest rates in 1992/3, restructuring and liquidation of some government-owned financial institutions. Other reforms were in the area of prudential regulation and supervision system of the Bank of Zambia in 1994 (Ibid).

The liberalisation of the financial system led to a proliferation of both foreign and private domestic financial institutions in the sector. Between 1991 and 1995, nine local private

banks entered the banking sector. Banking became very attractive mainly because prospects for profitability increased. Banks could earn super normal profits, mainly from foreign exchange dealings and investment of their funds in government paper. However, by mid-1990s, it became increasingly difficult to maintain the high levels of profitability because inflation began to decline and stabilise (Ibid). To maintain their earnings, banks resorted to riskier banking activities. This, coupled with failure to meet prudential requirements, resulted in the closure of ten banks between 1995 and 2000.

Activities and Performance

The financial system in Zambia, as at end-2008, was dominated by the banking sector, and accounted for 31% of GDP in asset size. There were fourteen commercial banks; eight were subsidiaries of foreign banks, four were private indigenous banks, one a jointly owned bank by the Governments of Zambia and India while another was jointly owned by the Government of Zambia and Rabo Financial Institutions Development of the Netherlands. The banking sector was highly concentrated in that it was dominated by five large banks.

Prior to 2005, the banking industry's balance sheet was significantly concentrated in government securities. This was because government securities offered highly attractive yield rates compared to other asset types. The move by Government to reduce borrowing, among other things, led to a significant fall in government securities yield rates. This, coupled with stability in the foreign exchange markets, made it increasingly difficult for banks to sustain their profitability. In order to remain profitable, banks have had to become innovative and resorted to increased lending to the private sector. This resulted in a shift in the asset structures of most banks from predominantly government securities holdings to an expanding loan portfolio which offered a higher return (see Table 1).

Table 1: Asset Types and Average Interest Rates

Asset Type (% of Total Assets)	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Government Securities	22.4	26.2	20.5	24.5	20.0	17.2	13.2
Net Loans and Advances	19.1	23.3	27.0	29.7	33.8	38.7	44.3
Average Interest Rates (%)							
Government Securities Weighted Yield Rates	38.5	22.1	19.4	19.6	10.9	14.6	16.0
Weighted Lending Rates	50.1	43.8	37.1	33.9	27.9	24.4	26.9

Source: Bank of Zambia

We argue that while banks resorted to financial innovation, most of them had limited knowledge of the potential risks that were associated with the new products and services. This assertion is supported by the survey, which is discussed in Section 4. The introduction of new services and products, particularly the expansion of the total loan book and loan-type products, brought in a myriad of new risks associated with the new lending activities. A number of banks, particularly the smaller local banks, did not have adequate risk management structures to adequately evaluate and monitor the risks and challenges associated with those products and services[4].

As noted by Frame and White (2002), "profit-seeking enterprises and individuals are constantly seeking new and improved products, processes and organisational structures that will not only give them greater profits, but reduce their costs of production and better

[4]In 2005, the Bank of Zambia conducted a Risk Management Survey to gauge the extent to which banks had put in place risk management frameworks for identifying, measuring, monitoring and controlling or mitigation risk and to what extent the frameworks address risk. The survey found out that a number of the local banks did not have adequate frameworks in place.

satisfy their customer demands". Whereas the need for better risk management has been the main driving force behind the recent wave in innovation in more advanced markets, this has not been the case in Zambia. The drive towards financial innovation in Zambia can largely be attributed to the need to maintain profitability. However, rapid growth not commensurate with improvements in risk management systems can pose a threat to financial system stability. Overall, lack of effective and/or failure of risk management systems by the large banks or a number of smaller ones would threaten not only the solvency of the concerned institutions but also the health of the whole system (Bernanke, 2007).

Greuning and Bratanovic (2003) argue that regulators should concentrate on creating an environment in which the quality and effectiveness of risk management can be optimized and should oversee the risk-management process exercised by the boards and management personnel of individual banking institutions. They point out that regulation may either take a prescriptive or market-oriented approach; and that in practice, regulations in most major countries combine both approaches, leaning one way or another, depending on individual circumstances. A prescriptive approach usually limits the scope of activities of financial institutions and often results in attempts to promulgate regulations for all risks known to the regulators. The danger of such an approach is that regulations quickly become outdated and cannot address the risks stemming from financial innovation. In contrast, a market-oriented regulatory approach is premised on the belief that markets, by definition, function effectively and are capable of managing financial risks and should therefore be allowed to operate as freely as possible. The role of the regulator should be focused on the improvement of risk management. In Zambia, because of the stage of market development which is still in its infancy, the approach taken leans more towards a prescriptive (prudential) approach.

The role of a bank's supervisory authority is moving away from the monitoring of compliance with banking laws and old-style prudential regulations. In this regard, a more appropriate mission statement for supervisory authorities today would be: "*To create a regulatory and legal environment in which the quality and effectiveness of bank risk management can be optimized in order to contribute to a sound and reliable banking system*" (Ibid).

III Literature Review on Financial Innovation and Risk Management

According to Mathews and Thompson (2008), 'financial innovation' refers to any change in the scale, scope and delivery of financial services. Akhtar (1983) has defined financial innovation as to include new or altered financial instruments as well as issues of securities in money and capital markets. This also includes changes in the market structure and institutions. In this regard, Akhtar (1983) has listed five broad categories of financial changes which seem to reflect the major long-term trends in the financial systems of industrial countries. These categories are:

a) The increasing use of interest sensitive funds by banks and other financial institutions;

b) The variable rate lending or borrowing and maturity shortening;

c) The growth of financial markets and of marketable financial instrument;

d) The changing shape of retail banking; and

e) The diversification of sources of financial services.

As pointed out by Frame and White (2002), financial innovation is clearly an important phenomenon of any modern economy. Improvements in the financial sector can have

positive direct ramifications throughout the economy. Successful financial innovation must reduce costs and risks or provide improved services to users. This notwithstanding, certain aspects of financial innovation may pose significant risks which should not be taken lightly.

By opening their doors to new products and activities, banks also let in a myriad of new risks (Mathews and Thompson, 2008). The rapid rate of innovation in the financial sector no doubt calls for an assessment of the efficacy of risk management systems of financial institutions on one hand and devising appropriate regulatory responses to the challenges that financial innovation may pose, on the other. It is important that risk management systems should keep pace with the financial innovations that take place. According to Greuning and Bratanovic (2003), risk rises exponentially with the pace of change, but bankers are slow to adjust their perception of risk. In practical terms, this implies that the market's ability to innovate is in most circumstances greater than its ability to understand and properly accommodate the accompanying risk (ibid).

Dowd (2005) attributes the emergence of financial risk management, as a discipline, to the following factors:

a) Phenomenal growth in trading activity;

b) Massive increases in the range of instruments traded and trading volumes over the past two or three decades;

c) The huge growth of financial derivatives activity; and,

d) The rapid advance in the state of information technology.

Financial risks mainly relate to the management of a banks' balance sheet and have broadly been categorised as credit risk, liquidity risk and interest rate risk. As a result of the introduction of sophisticated products such as derivatives and structured products, banks have also become increasingly exposed to other equally important risks such as market risk and operational risk. In response, risk management systems have also been evolving and as a result, the current trend has been the integration of the management of the various financial risks. According to Gallati (2003), the concept of total risk management is "the development and implementation of an enterprise-wide risk management system that spans markets, products and processes and requires the successful integration of analytics, management and technology."

The benefits of financial risk management cannot be underestimated. This has been highlighted by observations made by Dowd (2005) that:

i. Risk management helps to increase the value of the firm in the presence of bankruptcy costs, because it makes bankruptcy less likely;

ii. The presence of information asymmetries means that external finance is more costly than internal finance, and good investment opportunities can be lost. Risk management helps alleviate these problems by reducing the variability of the corporate cash flow; and

iii. Risk management helps investors achieve a better allocation of risks because the firm would typically have better access to capital markets.

Moles (2004) suggests that risk management follows a logical process. At its simplest it involves three steps: an awareness of the risks being taken by the firm; measurement of the risks to determine their impact and materiality; and risk adjustment through the adoption of policies or a course of action to manage or reduce the risks. A major challenge, however, to any risk management framework is the measurement of risk. As financial products and

institutions evolve, the measurement of risk has also become more sophisticated. Accurate measurement of risk is the essential first step for effective risk management (Allen et al, 2004).

Risk measurement has been the subject of many academic studies and a number of models have been advanced. By mid-1990s, the Value at Risk (VaR) had already established itself as the dominant measure of financial risk. The model was extended to cover more types of instruments and the methodology itself was extended to deal with other types of risks such as credit risk, liquidity risk and operational risk (Dowd, 2005).

The major attractions for VaR-based risk measurement approaches over traditional risk measurement approaches such as gap analysis, duration-convexity analysis, probability of default and credit expert systems for example are mainly that:

i. VaR provides a common measure of risk across different positions and risk factors (for instance, risk associated with a fixed-income position can be compared to risk associated with an equity position);

ii. VaR can aggregate the risks of sub-positions into an overall measure of portfolio risk and in so doing, take account of the ways in which different risk factors correlate with each other;

iii. VaR is holistic in that it takes full account of all driving risk factors whereas many traditional approaches either only look at risk factors one at a time and also focus assessment on a complete portfolio, often at the firm-wide level;

iv. VaR is probabilistic and gives a risk manager useful information on the probabilities associated with specified loss amounts; and

v. VaR is expressed in the simplest and most easily understood unit of measure namely, 'lost money' (Ibid).

Despite being a popular risk measurement tool, the VaR has also been heavily criticised, mainly on grounds of the validity of the statistical and other assumptions underlying its use. The most questionable assumption is that of normality (Allen et al, 2004). The normal distribution ignores the fat tail phenomenon of distribution of returns (known as kurtosis risk) which has empirically been proven to exist. Historical analysis of markets shows that returns have fat tails where extreme market movements occur far more frequently than the normal distribution would suggest (Gallati, 2003).

In order to overcome some of the weaknesses of the model, the common practice to any VaR risk measurement model is to combine it with stress testing, as this gives a more comprehensive picture of risk (Ibid). Stress testing is used as a tool by risk managers to understand the firm's risk profile and to conduct contingent planning in times of market stress and allocation of capital. Stress testing analyses the effect of extreme price movements and tests the capacity of the bank to withstand the impact of plausible but unusual market conditions. Stress tests at the portfolio level are designed, in part, to examine potential vulnerabilities faced by the firm that may not be revealed by quantitative risk management models (Mathews & Thompson, 2008). Stress testing is also a requirement under the Basel Committee's 'Amendment to the Capital Accord to incorporate Market Risks' which was introduced in 1996 and updated in 1998, 2005 and 2009. Banks that seek to have their capital requirements based on their internal models are required to have in place a rigorous and comprehensive stress testing programme. The stress-testing-based analysis typically proceeds in one of two ways: (1) it examines a series of historical stress events (historical scenarios) and (2) it analyses a list of predetermined stress scenarios (hypothetical scenarios) (Allen et al, 2004).

IV Financial Innovation and Risk Management:

A Case of the Zambian Banking Sector

The current prudential supervisory approach in Zambia has largely been the capital-adequacy approach, which focuses on minimum quantitative capital requirements. This assertion can be supported by the gravity of supervisory sanctions that a bank with deficient capital may be subjected to[5]. Supervisory sanctions for failure to meet capital adequacy requirements include directives to the bank to either increase its capital or reduce its assets and off-balance sheet exposures within a period of three months. Additional sanctions include the suspension of branch network expansion and all capital expenditure, suspension of the lending privilege, and the suspension of a bank's directors. However, there are no such express sanctions given in case of risk management deficiency. This is in contrast to a consistent principles-based and risk-focussed approach, which takes account of not only the benefits of financial innovation but also the accompanying risks.

Without downplaying the important role that capital plays in fostering financial stability, it is important to note that over-reliance on the quantitative measure of capital has some shortcomings. High levels of regulatory capital cannot be a substitute for proper risk management, but rather adequate capital and effective risk management should complement one another.

The above assertion can be supported by a study undertaken by the Senior Supervisors Group (2008) to assess risk management practices during the recent market distress and turmoil, which began in the second half of 2007. The study which involved major financial services organisations noted that the sample organisations and firms entered the turmoil in relatively sound financial conditions and with capital well above regulatory requirements. The study observed that despite these institutions having capital well above regulatory requirements which was able to absorb significant losses, the prolonged disruption in market liquidity put a lot of pressure on their liquidity and capital. It also revealed that institutions without proper and adequate risk management systems were not able to recognise and mitigate future risks on time. This threatened their capital reserves and solvency. According to the study, institutions with more comprehensive systems were able to deal more successfully with the turmoil (Ibid). They were able to use developed information systems to adjust their business strategies, risk management practices and exposures promptly and proactively in response to changing market conditions. In contrast, those institutions that had not established rigorous systems faced significant challenges. It must be understood and appreciated that the issue is not just about having a risk management system in place; but more importantly, that the system in place must be comprehensive, adequate and ideal for the risk profile of the institution. Experience in other countries has also shown that despite having extensive risk management frameworks in place, the recent market strains can be attributed to gaps in the design or implementation by major institutions. In other cases, overly aggressive risk-taking decisions appear to have been made despite having sound risk-management inputs (Institute of International Finance, 2008).

In making decisions about the amount of capital to hold, banks must be aware of the benefits and costs squarely. The benefit of holding higher capital is that it reduces the likelihood of bankruptcy, hence secures the investment of the owners of the bank. Holding high capital reserves, however, has a number of weaknesses. For instance, it is costly to maintain higher levels of capital as higher levels of capital entail lower return on equity for a given return on assets (Mishkin, 2006). According to Allen *et al* (2004), among other short comings of the

[5]Statutory Instrument No. 184 (Capital Adequacy) which can be accessed from: www.boz.zm

BIS capital requirements was the neglect of diversification benefits in measuring a bank's risk exposure. Thus, regulatory capital requirements tended to be higher than economically necessary, thereby undermining commercial banks competitive positions vis-à-vis largely unregulated investment banks. This is true for the Zambian banking sector where some banks, especially those with ineffective risk management frameworks, had very high capital adequacy ratios (see case study and survey results).

During the 1990s, Zambia experienced a number of bank failures mainly due to weak corporate governance and risk management structures. For example in 1995 alone, the Zambian banking sector experienced a turbulent period with three commercial banks failing. None of these failures was attributable to capital deficiency. According to the Financial System Supervision Annual Report (1995), the major causes of the bank failures were; (1) insider abuse by the shareholders and related parties, (2) incompetent management coupled by ineffective Board of Directors; and (3) foreign exchange exposure risk.

The importance of risk management should also be seen from a macro perspective in terms of the overall financial system stability. This has largely been defined in terms of preconditions and one such definition is that financial system stability is said to exist when all financial risks are adequately identified, allocated, priced and managed (Orr, 2006).

Case: Scenario from the Zambian Banking Sector

The analysis below, based on a case of a Zambian bank illustrates that the adequacy of a bank's regulatory capital should be premised on a sound risk management framework.

According to published financial statements of one bank in Zambia, its overall financial performance and condition has been marginal over the last four years, in particular its earnings performance and profitability. Its profitability had been fluctuating between losses and marginal profits during this period. The poor performance had been attributed mainly to lack of a robust risk control and management framework. During this period, the bank had invested in lending structures that were more risky than anticipated. The bank, whose balance sheet had been dominated by investments in government securities, grew its loan book without having in place an effective credit monitoring and appraisal system to assist in monitoring and evaluating its credit risk. This resulted in a large non-performing loan portfolio, warranting for high loan loss provisions which impacted negatively on the bank's profitability and hence its capital adequacy position (see Exhibit 1). Further, the bank relied heavily on expensive deposit liabilities and borrowings from the inter-bank market to meet its liquidity needs. This resulted in high interest expenses which affected the bank's profitability as well. Despite these weaknesses, the bank had maintained above average industry capital adequacy ratios (CAR) except in 2009 when the bank posted significant losses (partly due to the adverse impact of the global financial crisis on the Zambian banking sector) and its CAR fell below the industry average for the first time in three years. However, the bank's ROE was consistently lower than the industry's average.

Exhibit 1: Financial Performance Indicators

	2006		2007		2008		2009	
	Bank	Industry	Bank	Industry	Bank	Industry	Bank	Industry
Return on Assets (ROA)	1.8	5.1	0.1	4.7	-1.8	3.6	-7.7	2.1
Return on Equity (ROE)	8.4	30.6	0.4	35.1	-12.3	20.8	-92.8	9.4
Capital Adequacy Ratio (CAR)	26.8	20.4	32.8	18.6	24.5	18.6	12.2	22.3

This example is consistent with the study findings of the Senior Supervisors Group that institutions that had weaker controls over their potential balance sheet growth and liquidity tended to have greater problems during times of turmoil.

Empirical Study done

The Bank of Zambia risk management survey which was conducted in August 2005, as part of the process to the issuance of the Risk Management Guidelines in 2008, revealed that a number of banks did not have a comprehensive approach to risk management. Further, these banks did not have adequate risk management policies and procedures and lacked the requisite expertise to develop and implement the desired risk management practices. This is

a clear indication that risk management systems have not kept pace with the financial innovations that have taken place.

For purposes of this paper, the thirteen banks[6] in the industry surveyed have been grouped into two categories. Category 1 banks comprised four banks with superior risk management systems while Category 2 banks was the remainder of the nine banks with weak or poor risk management systems. The outcomes from this survey are summarised in Tables 2 and 3. Table 2 gives a summary of responses to some of the key areas of the questionnaire, while Table 3 provides a summary of the variability in the annualized monthly return on assets (ROA) and capital adequacy ratios (CAR) for the Category 1 and Category 2 banks, covering a period of thirty six months from January 2005 to December 2007.

Table 2 reveals that out of the 13 banks, only 30.8% were using an advanced risk measurement tool, the Value-at-Risk model and all these banks, which were foreign owned, belonged to Category 1. On the other hand, 46.1% of the banks did not use any metric for risk measurement while the remainder, 23.1%, were using basic measures, and all these belonged to Category 2 banks.

Table 2: Summary responses of the risk management survey

Key responses	**%**
1. Banks with a comprehensive risk management framework (RMF)	53.8
2. Banks with an independent Risk Review Function	84.6
3. Banks' risk measurement tools	
(a) Banks using Value-at-Risk (VaR)	30.8
(b) Banks using Earnings-at-Risk (EaR)	23.1
(c) Banks using basic measures	23.1
(d) No metric currently used	46.1
4. Barriers to implementing RMF activities	
(a) Lack of appropriate technology	92.3
(b) Lack of tools	46.1
(b) Cost	38.5

Source: Computed from Bank of Zambia Survey (2005)

The subsidiaries of some foreign banks have benefited from their parent networks in terms of superior risk measurement and management systems. Although the indigenous banks, comprising small-to-medium sized banks, have also been expanding rapidly in terms of both asset size and product offering, their risk management systems have remained embryonic. As has been pointed out in the literature reviewed, rapid growth not commensurate with improvements in risk management systems can pose a threat not only to the solvency of these institutions but also to financial system stability. The combined size of these small-to-medium sized banks is significant and therefore poses systemic risk. This is despite the fact that overall, this category of banks has high levels of excess regulatory capital compared to the Category 1 banks.

From Table 3, the ROA for Category 1 banks was slightly higher than that of Category 2 banks. Further, the variability[7] in the ROA was slightly lower for Category 1 banks than that for Category 2 banks. In terms of the CAR however, Category 2 banks, on average, had a higher CAR and the variability in the CAR was twice as high as that for Category 1 banks. The results indicate that Category 1 banks with more superior risk management systems, on

[6]This was at the time of the study in 2005.
[7]Variability is the standard deviation measure of risk. All other things being equal, the higher the deviation, the higher the risk.

average, earned a higher return on assets and were better able to manage the variability in the ROA and CAR. In this regard therefore, Category 1 banks had a higher average ROE for a given average ROA.

Table 3: Empirical Study Results

	Return on Assets		Capital Adequacy Ratios	
Statistic	**Category 1 Banks**	**Category 2 Banks**	**Category 1 Banks**	**Category 2 Banks**
Mean	4.3	4.1	20.0	28.5
Median	4.0	3.3	19.5	28.5
Std. Deviation	2.4	2.6	2.9	6.2
Minimum	0.8	-0.1	16.4	19.7
Maximum	12.0	10.2	25.7	41.2

Source: Computed from Bank of Zambia Survey (2005)

V Conclusion

The paper concludes that the Zambian banking sector should draw lessons from the recent global market turmoil which demonstrated that weak and ineffective risk management systems of financial institutions contributed to their incurring of huge losses and therefore leading to instability in their entire financial systems.

Based on the BoZ risk management survey which revealed that a number of banks did not have a comprehensive approach to risk measurement and management, it is imperative that all banks in Zambia fully embrace modern risk measurement and management systems. Banks must formulate forward-looking risk measurement systems and sound practices for managing risks, particularly in times of rapid growth in new products or markets. Further, capital adequacy requirements and risk management systems should not be treated separately, but rather as complimentary. High levels of capital cannot be a substitute for proper risk management, but rather adequate capital and effective risk management must be complementary.

From a central bank's point of view, the objective of ensuring financial stability remains critical. In light of the evolving financial landscape, financial stability can be said to be dependent on the adequacy of risk management and control systems by market participants, on one hand, and appropriate supervisory responses by the regulator, on the other hand. It is, therefore, essential for the Bank of Zambia to take a more proactive role, using a combination of both the prescriptive and market-oriented approach, in laying a strong foundation in the proper practice of risk management systems by banks in Zambia. The Bank of Zambia must also be seen to be taking a continuous and leading role in providing leadership in research on the latest developments in the field of financial innovation and risk management.

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CHAPTER SEVEN

African Central Bank and Monetary Convergence- An Alternative Perspective

By

Nambula Wamulungwe and Ivan Zyuulu

Abstract

This paper assesses the viability of establishing the African Central Bank. It examines relevant pre-requisites and steps for the successful transition to full monetary union culminating in the creation of the African Central Bank. The study finds that the creation of the African Central Bank is feasible provided a more organic approach is promoted within a reasonable time frame and that the various structural challenges are seriously addressed by the African Union (AU). Finally, the paper recommends the development of regional central banks as pillars for the African Central Bank.

I Introduction

Despite the increasing support for monetary union on the African continent, there currently appears to be little consensus on the process to be followed in establishing an African Monetary Union. Two main approaches have evolved in recent debates as follows:

I. A move to an African monetary union spearheaded by the establishment of Pan-African financial institutions (namely; the African Investment Bank, the African Monetary Fund and the African Central Bank). This is also referred to as the fast-track approach.

ii. A move to an African monetary union driven by the strengthening of integration and policy harmonisation at sub-regional level as a pre-requisite for the continental integration programme. This is also referred to as the gradualist approach.

This paper evaluates the feasibility of establishing the African Central Bank (ACB) and suggests a process for successful implementation of the ACB. The paper draws on broad theoretical perspectives on monetary integration, experiences of other regions as well as the unique conditions of the region of Africa in proposing the appropriate course for the planned ACB.

In evaluating the feasibility of monetary union in Africa, the paper addresses itself to three cardinal questions that define the context and scope of the discussion;

i. Question of Timing - Can the ACB be successfully implemented by 2018? As a corollary, at what stage in the process of integration is it most suitable to institute each of the three proposed Pan-African institutions?

ii. Question of Process - Should the African Monetary Union evolve from the establishment of regional central banks which then consolidate into a continental central bank after effective harmonisation of the regional institutions or should the continent start with a

Pan-African Monetary Union by moving directly towards establishing Pan-African Institutions?

iii. Question of Fit - To what extent does the diversity of African countries and regions (in terms of economic, political, social, cultural, geographic and other attributes) impact on the effective integration of the continent?

The paper is organised as follows: Section 2 gives a background to the process of establishing an African Central Bank while section 3 provides theoretical perspectives on the benefits, process and options for establishing monetary unions. Section 4 provides a case study on the creation of the European Central Bank (ECB) while section 5 discusses the prospects, challenges and options for the creation of the African Central Bank. Sections 6 and 7 provide conclusions and recommendations, respectively.

II Background

The aspiration of African leaders to attain integration of their countries at political, economic, social and cultural levels can be traced back to the establishment of the Organisation of African Unity (OAU) in 1963 (the precursor to the current African Union). During the OAU's extra-ordinary summit of 1980, the 'Lagos Plan of Action' was adopted to establish regional institutions that would pave way for the eventual establishment of the African Economic Community. The commitments in the Lagos Plan of Action were translated into concrete form when the OAU Heads of State and Government signed the treaty establishing the African Economic Community (AEC) in 1991 in Abuja, Nigeria. Article 44 of the Abuja Treaty of 1991 and article 19 of the constitutive Act of the African Union (AU) of 2000, established the need to create an African monetary union by harmonising currency areas. In addition, the AU's constitutive Act provided for the setting up of three Pan-African financial institutions, namely; the African Investment Bank (AIB), the African Monetary Fund (AMF) and the African Central Bank (ACB).

The Abuja Treaty of 1991 set up the modalities for establishing the African Economic Community. These consist of six stages over a transition period not exceeding thirty four years from the date of entry into force of the treaty. The following are the prescribed stages, each consisting of specific activities to be implemented;

First Stage (5 years)

- Strengthening of Regional Economic Communities (RECs) and establishing new ones in regions where they do not exist.

Second Stage (8 years)

- At the level of each REC, reducing tariff and non-tariff barriers and determination of the time table for the gradual liberalisation of regional trade and for the harmonisation of customs duties vis a vis third states;
- Strengthening of sectoral integration, particularly in the areas of trade, agriculture, finance, transport and communications, industry and energy; and
- Co-ordination and harmonisation of the activities of RECs.

Third Stage (10 years)

- At the level of each REC, the establishment of a Free Trade Area (FTA) and Customs Union (CU).

Fourth Stage (2 years)

- Coordination and harmonisation of tariff and non-tariff barriers among various RECs with a view to establishing a continental customs union.

Fifth Stage (4 years)

- Establishment of an African common market (ACM).

Sixth Stage (5 years)

- Consolidation and strengthening of the structures of the ACM, including free movement of people and factors of production; creation of a single domestic market and Pan-African Economic and Monetary Union, African Central Bank (ACB) and establishment of a Pan-African Parliament.

The African Union (AU) and the Association of African Central Banks (AACB) have since adopted the creation of a single African currency as important components of their programmes. In 2002, the AACB adopted the African Monetary Cooperation Programme (AMCP) with the objective of creating the African Central Bank through a convergence programme.

In 2007, the Assembly of Governors of the AACB and the AU Commission formed a joint committee that defined the following common strategy for the creation of the ACB;

a) Macro-economic convergence as a pre-requisite to the introduction of a common currency and the creation of the ACB;

b) The need to create an African common market prior to attaining monetary integration;

c) Regional Economic Communities (RECs) to be the pillars of economic and monetary integration in Africa; and

d) The creation of the African Monetary Institute (AMI) as a transition stage towards the creation of the ACB.

The different regional economic blocks in Africa are currently at different stages of economic integration, with most of them having attained or fast moving towards the attainment of a Free Trade Area (FTA) or Customs Union (CU). However, most RECs have recently set up frameworks for macro-economic harmonisation. The African Monetary Cooperation Programme has since adopted a set of criteria and numerical targets to drive the process of macro-economic convergence.

The AMCP has as its first stage the harmonisation of the monetary cooperation programmes of the various sub-regional groupings that will then serve as the building blocks for the single African monetary zone.

In keeping with the AMCP, the Southern African Development Community (SADC) region has equally instituted a set of indicators as part of the macro-economic convergence criteria. In addition, the SADC has a clear road map for the attainment of monetary union within the

regional grouping. The following is SADC's schedule for monetary integration as set out in the Regional Indicative Strategic Development Plan (RISDP):

- Free Trade Area - 2008
- SADC Customs Union - 2010
- SADC Common Market - 2015
- SADC Monetary Union - 2016
- Single Currency - 2018

So far, SADC is on track, having established the FTA in August, 2008. SADC is also collaborating with other RECs in broadening the integration agenda. For instance, at a tripartite summit of the SADC, Common Market for Eastern and Southern Africa (COMESA) and East African Community (EAC) groupings held in August, 2007, it was resolved that the three RECs should start working towards a subsequent merger into a single REC.

It could generally be observed therefore, that though slow, Africa's economic integration process is steadily gaining momentum as gauged by the developments at sub-regional level and the efforts to harmonise and subsequently integrate the various RECs under the auspices of the AU.

In keeping with the desire expressed by Heads of State to fast-track African economic integration, the AU recently decided to create three Pan African financial institutions (as provided for in the AU's constitutive Act) namely; the African Central Bank (ACB), the African Investment Bank (AIB) and the African Monetary Fund (AMF). Consequently, a debate has arisen over the process for instituting Pan-African economic integration. Specifically, the question is whether to proceed with the sub-regional economic integration process as a stepping stone towards the ultimate economic union of the continent or whether to proceed directly with the formation of continental institutions that would operationalise the monetary union of Africa.

III LITERATURE REVIEW

The Case for African Economic Integration

One of the commonly held justifications for regional integration in Africa is the need to effectively deal with the various challenges stemming from globalisation (Honohan and Lane, 2000). Nations across the world are integrating their economies with those of their neighbours to create larger and more competitive regional economic groups that can engage more effectively in trade and other international relations. Smaller countries are known to face greater challenges and risks in dealing with unpredictable external shocks.

Furthermore, economic growth of smaller countries is generally constrained by the small size of their markets. As in other regions of the world, therefore, regional economic cooperation is now widely accepted as a necessary condition for Africa's long-term sustainable development.

Regional integration takes various forms and often progresses from lower levels of association to greater levels of integration over time. A monetary union (involving the creation of a single central bank and a common currency) is one of the deepest forms of economic integration of countries in a given region.

Costs and Benefits of a Common Currency

The traditional Mundel's Optimal Currency Approach (OCA) (Mundel, 1961; McKinnon, 1963) could be considered the main theoretical framework used to evaluate the costs and benefits of a common currency. This approach quantifies three factors:

i. The extent to which external shocks are asymmetric

A common currency implies a loss of monetary policy autonomy; therefore, countries in a monetary union lose an instrument for responding to shocks independently. However, if all countries faced the same shocks, a common monetary policy would be optimal. Countries with similar production structures tend to face similar shocks.

ii. The extent to which the losses can be mitigated by other shock absorbers such as labour mobility and financial transfers

A common currency is therefore, more desirable when accompanied by free movement of labour and/or a system of fiscal transfers.

iii. Benefits relating to savings and transaction costs

There are savings on transaction costs that are incurred by changing currencies and the removal of exchange controls. If a substantial amount of trade takes place between member countries, then savings on transaction costs are likely to be higher. Furthermore, a common currency can stimulate trade between members.

According to Masson and Patillo (2005), OCA criteria are currently not well met by African countries. It is observed that the gains from having a common currency are relatively small, given that the level of intra-African trade is very low. The level of economic diversification in most African countries also tends to be very low and this increases vulnerability to external shocks. Furthermore, labour mobility between countries is low and constrained by a lack of financial resources.

Similar observations on the relatively small gains of a move to monetary union have been made for countries in Latin America and the Caribbean (Hochreiter Eduard et al, 2002). Other recent empirical studies support the positive effects of currency unions on trade (Rose, 2000; Glick and Rose, 2001) and income (Frankel and Rose, 2002).

Honohan and Lane (2000) argue that structural characteristics of African economies are quite different from those of European economies but that much can be gained from monetary cooperation as an external agent of restraint and for promoting stability in the financial sector. They further suggest that there is little evidence of contagious attacks on African currencies requiring the co-ordination of exchange rate policies. They therefore, advocate for international cooperation without the need for a common currency.

Debrun *et al,* (2002) in their study on Monetary Unions in West Africa explore the questions of winners and losers in the establishment of monetary unions in Africa. They suggest that net gains or losses from joining a monetary union depend on the extent of correlation of shocks to the terms of trade of members, the extent to which countries have a political distortion towards overspending and the strength of trade linkages between member countries.

Options for Monetary Integration

Masson and Pattillo (2005) outline five different types of monetary integration:

a. An informal exchange rate union with separate currencies which are fixed to one another, whose parities are fixed but only within margins.

b. A formal exchange rate union with separate currencies which are fixed to one another with very low margins and a strong degree of coordination among central banks. The Common Monetary Area involving South Africa and some of its neighbours is an example of such a union.

c. A full monetary union with a single currency such as the *euro area*.

d. A situation where one country adopts the currency of another country and does not issue its own currency (dollarisation). Panama (uses US dollar) and more recently Zimbabwe (uses multi-currency system) are good examples.

e. A currency board, where a country pegs its own currency to another currency with zero margins as is the case in Hong Kong. In this case, the money supply is limited to the quantity of reserves held in the other currency.

Generic steps towards the creation of a Monetary Union

Economic literature suggests that as international trade and investment levels continue to rise, the level of economic integration between various nations also tends to deepen. Formal economic integration usually takes place in stages, beginning with the lowering and removal of barriers to trade and culminating in the creation of an economic union. Although it is rare that relationships between nations follow so precise a pattern, the following sequence of stages has generally been recognised in literature (Mirus and Rylska, 2001);

a) Free Trade Agreements (FTAs)

Free Trade Agreements (FTAs) or Preferential Trade Agreements (PTAs) are considered the first level of formal economic integration. Aside from a commitment to a reciprocal trade liberalisation schedule, FTAs place few limitations on member states.

b) Customs Union (CU)

A Customs Union (CU) builds on an FTA by, in addition removing internal barriers to trade and also requiring participating nations to harmonise their external trade policy.

c) Common Market (CM)

A Common Market (CM) is a major step towards significant economic integration. In addition to the provisions of a CU, a CM removes all barriers to the mobility of people, capital and other resources within the area in question. Establishing a CM typically requires significant policy harmonisation in a number of areas. It is also typically associated with a broad convergence of fiscal and monetary policies due to increased economic inter-dependence within the region.

d) Economic Union (EU)

This represents the deepest form of economic integration. An EU adds to a CM the need to harmonise a number of key policy areas including monetary and fiscal policies, labour, regional development, transportation and industrial policies. Since all member countries essentially share the same economic space, it would be counter productive to operate divergent policies. An EU normally includes the use of a common currency and a unified monetary policy, which constitute a monetary union.

Pre-Conditions for Monetary Union

Macroeconomic convergence

Macro-economic convergence is considered a critical pre-requisite for the implementation of a common monetary policy. For this reason, the European Union introduced what was known as the Maastricht criteria, which includes targets for inflation and fiscal deficits that European Union countries had to meet for several years before joining the common currency. These criteria helped instil the much needed fiscal discipline.

However, it is the view of some analysts (Hochreiter *et al*, 2002) that the growth and stability pact is a necessary but not sufficient condition for a monetary union to succeed and that the EMU was driven by political considerations.

Strong Institutions

Well designed and robust political and economic institutions such as a Monitoring, Performance and Surveillance Unit (MPSU) are necessary for successful transition to monetary union. The success of the EMU has partly been credited to the development of its economic and political institutions. It is argued that these would take time to build in the case of the African Monetary Union (Honohan and Lane, 2000).

Political Will

It has been argued that history provides very different prospects for monetary union in Europe as contrasted with other regions such as Latin America, Asia and Africa (Eichengreen, 1997). It should therefore, be noted that political dimensions are equally very important in the success of monetary unions. These political considerations have been noted to be missing in attempts at monetary union in other regions. Kronberger (2002) in his study on optimal currency area for Mercosur countries highlights the following citation by De Grauwe "*… therefore it is utopian to separate the problem of monetary union from political unification … monetary union is an essential part of political union*."

IV EVOLUTION OF THE EUROPEAN MONETARY UNION (EMU)

The European Monetary Union (EMU) currently provides the most comprehensive and contemporary model for the establishment of a regional monetary union. The EMU has been termed the 'largest historical experiment in giving up sovereignty in monetary (and other) policy areas (Hochreiter *et al*, 2002).

The European Union is a political and economic union of 27 member states. It was established by the treaty of Maastricht in 1993 upon the foundation of the pre-existing

European Economic Community (EEC). The evolution of the EMU is historically traced back to the end of the Second World War. During this period, Europe developed a strong repulsion against national rivalries as a result of the human, economic and social losses arising from the long periods of war.

The road to the present day EMU was a long haul spanning over half a century and involving a succession of treaties dating as far back as 1950. The first treaty of 1950 involved bringing the coal and steel industries of France and Germany under the coordination of a single supra-national authority. Four other countries joined in 1952 forming the European Coal and Steel Community.

The Treaty of Rome in 1958 established the European Economic Community (EEC), which soon emerged as the most significant of the treaty organisations. The EEC worked on a large scale to promote the convergence of national economies into a single European economy.

The European Free Trade Association (EFTA) was established in 1960 by seven countries as a customs union and trading block (with other countries gradually joining right through to the nineties).

Subsequently, The Brussels Treaty of 1965 provided for the merger of the organisations into what came to be known as the European Community (EC) and later the European Union (EU). The development of a single market between the EU and most EFTA nations was completed in 1994, when the European Economic Area (EEA) came into being.

The European Monetary System (EMS) was organised in 1979. This was an arrangement by which most nations of the EU linked their currencies to prevent large fluctuations relative to one another and counter inflation among members. In the early 1990s, the EMS was constrained by differing economic policies and conditions of its members.

In 1992, the EU members formed an economic and monetary union (EMU) involving the introduction of a single European currency managed by a European Central Bank. In 1994, the European Monetary Institute (EMI) was created as a transitional step in establishing the European Central Bank. The purpose of the EMI was to strengthen central bank compatibility and monetary policy coordination to prepare for the establishment of the ECB. EMI lasted until 1998 when members of the Executive Board of the European Central Bank were appointed. The European Currency Unit (ECU) was the forerunner of the euro which began circulating in 2002, close to four decades after the formation of the European Union. However, strong public anxiety over loss of sovereignty as a result of dropping their respective currencies continued in Denmark, Britain and Sweden.

The following is a summary of the evolution of the ECB and the Euro in the ten years between 1992 and 2002:

- 1952: The European Coal and Steel Community is formed
- 1960: The EFTA is formed as a Customs Union
- 1965: The Brussels Treaty establishing the EEC (later EU) as a Common Market is signed
- 1992: The treaty establishing the EMU as an economic and monetary union is signed
- 1994: The development of a single market is completed
- 1994: The EMI is established as a stepping stone to the ECB
- 1998: The ECB is established and EMI dissolved

- 1999: All restrictions on the movement of capital between member states are abolished
- 2002: Euro bank notes go into circulation

The European Union's protracted journey towards an eventual monetary union demonstrates that the process of achieving a monetary union requires the fulfilment of certain conditions, including;

i. High levels of awareness and consensus among members on the objectives and importance of attaining a monetary union;

ii. High degree of macro-economic convergence;

iii. Strong political will;

iv. A sense of common destiny in the region;

v. Sufficient time to allow for an organic transformation of institutions;

vi. Strengthening of the co-ordination framework for fiscal and monetary policies;

vii. Integration of money, capital and labour markets;

V CREATION OF AN AFRICAN CENTRAL BANK

Modalities

The establishment of an African central bank is envisaged to take place in two stages (Mboweni, 2007).

Stage 1:

The first stage is expected to last from 7 to 10 years. During this stage, the ACB will be responsible for the supervision of national and multi-national African central banks. It will also harmonise the conduct of monetary policy in Africa and manage part of the international reserves of African central banks. Generally, therefore, the ACB will be expected during this period to lay the groundwork for continental monetary integration.

Stage 2:

In the second phase, a common currency will be put in place and the ACB will become the issuer of notes and coins and implement a common monetary policy in the manner the European Central Bank currently does.

At a technical level, a lot of work will be required to institute regulatory harmonisation in order to facilitate monetary and financial integration. This will entail, among other things;

- Co-operation on exchange control policies to facilitate a free flow of capital between member states;
- Harmonisation of legal and operational frameworks of central banks;
- Harmonisation of payment and clearing systems; and
- Harmonisation of banking supervision standards.

African Experience with Monetary Unions

There are currently a few examples of monetary integration in Africa or attempts at it in the West, Central and Southern African regions.

a) The CFA franc Zone

The CFA franc zone is probably one of the longest surviving monetary unions in the world. It has its origin from the economic and political relations between France and its colonies in Africa. After independence of these former French colonies in the 1960s, the responsibility for issuing the CFA franc and overseeing the zone was shifted to two regional central banks.

There are two CFA franc zones, one in West Africa (formerly the West African Economic and Monetary Union (WAEMU)) comprising eight member countries and the Central African CFA zone (CEMAC) comprising six countries. The currency of the CFA Franc zone was initially linked to the French franc until the Euro was introduced in Europe.

b) The Common Monetary Area (CMA)

Members of the CMA are the Southern African Customs Union members, namely; South Africa, Swaziland, Lesotho and Namibia. Each country in the CMA issues its own currency while values of the respective currencies are pegged to the South African Rand. The Rand is also recognised as legal tender in all the CMA countries. There are plans to establish a common central bank for the zone.

c) The Economic Community for West African States (ECOWAS)

There have been other attempts at monetary union in Africa, one of the notable ones being efforts by the Economic Community for West African States (ECOWAS), comprising both Francophone and Anglophone countries in West Africa. ECOWAS was established in 1975. A single monetary zone for ECOWAS comprising an independent common central bank with a common monetary policy was envisaged by 2003. However, ECOWAS efforts have not yet borne fruit due to challenges in meeting the convergence criteria. It has been suggested by some observers (Siddiqi, 2003) that the West African countries are not sufficiently aligned. In other words, the present economic structure and external trade sectors of the English and French speaking countries of West Africa may not be sufficiently similar to underpin fixed parity between currencies and to allow complete liberalisation of capital movements.

d) The MAGHREB UNION

The Arab Maghreb Union (AMU) is a proposed economic integration of the five North African countries Algeria, Libya, Mauritania, Morocco and Tunisia which make up the Maghreb, the Arabic term for the western region of the Arab world. The plan for a common market by 2000 was set forth in a treaty of the five nations establishing the trading bloc in 1989. The Maghreb common market was to be modelled after the European Union's common market, as the AMU treaty was similar to the European Economic Community Treaty of 1957.

Progress toward establishing the Maghreb common market, however, has been much slower than anticipated. Although the first half of the 1990s saw 26 cooperative agreements in such areas as taxation, customs, and central banking, by the mid-1990s the process was far behind schedule. Despite the cultural unity of the Maghreb, which is predominantly

Arabic-speaking and Muslim, with a shared historical sense of identity, there have been economic and political obstacles to integration. At the ten-year anniversary of the treaty's signing, there were serious questions about the AMU's future (Encyclopedia of Business, 2009).

Challenges

Despite the limited success noted above, the continent's great need for higher levels of economic growth through the expansion of trade and investment creates an inherent prospect for its monetary union. However, as earlier discussed, the benefits of a monetary union are more assured where the economies of member countries are closely integrated. Therefore, it could be said that the prospects of monetary union in Africa are getting better as the continent makes strides in its integration process.

However, there could be several challenges. These include:

a) Despite the growing political will among the current crop of leaders to accelerate the economic integration of Africa, the large number of countries (53 member states) and their diversity creates a challenge. Hence, the inherent structural differences in the AU impede the process of aligning and co-ordinating policies towards convergence.

b) Ensuing from the challenge of having such a large number of players, the multiplicity of different integration initiatives in Africa further complicates the building of consensus on policy objectives.

c) African countries are mostly young states that do not share a long history of common experience. In short, they are heterogeneous. The combination of heterogeneity (both economic and cultural) implies special challenges for devising clear and credible decision making structures to support the integration process.

d) It is widely observed that unlike Europe, Africa lacks market driven economic integration. Consequently, most of the transformations of institutions, particularly at continental level, have not been organic. The level of intra-regional trade remains low even when informal trade flows are taken into account. Hence, there would be a stronger case for a common currency for instance among smaller clusters of nations that trade closely with each other, e.g. intra-SADC as against a common currency for the whole continent at the current low levels of economic interaction.

e) In addition to lacking complementarities in production and trade in goods and services, Africa continues to rely heavily on primary commodities. There is a paltry level of trade in value-added manufactured products. This automatically reduces the scope for intensive trade within the region. Intensive trade is a natural driver for monetary integration.

f) It is also widely observed that more effort needs to be expended in further reducing civil wars and political instability in Africa in order to achieve the goals of macro-economic convergence in the AU because of their direct impact on the latter.

Options for the establishment of the African Central Bank

There are two broad options to the attainment of the African Central Bank, namely a gradual approach and a fast track approach. The gradualist approach entails a lengthy transition period with convergence conditions. The initial focus is on policies that strengthen the compatibility of members' economies before the process culminates into a monetary union. The main disadvantage of this approach is the relatively long time it takes to realise the advantages of a monetary union.

A fast track approach entails either skipping some stages in between (e.g. moving from FTA to MU) or applying the processes simultaneously. The key disadvantage of this process is a lack of organic transformation of the institutions. The unification of Germany is a typical example of a fast tracked process.

In the context of the debate regarding the process of establishing the African Central Bank, the option of strengthening regional integration (with the possibility of regional central banks) as building blocks towards the establishment of the ACB could be considered a gradualist approach. On the other hand, the option to establish Pan-African institutions as a means to accelerate the process of continental integration could be considered a fast track approach.

It is important to note that Africa has not yet even attained the FTA or CU stage at continental level, the basic building blocks towards an eventual monetary union. It is only at sub-regional level that countries are now moving towards FTAs and CUs. It would therefore, be necessary that as the sub-regions advance further into higher forms of integration, the continent works its way through the process as was seen in the case of the EMU where different sub-regional treaties remained in place for long periods of time while new blocks merged creating new institutions that advanced the broader objectives of Europe.

Ultimately, a more optimal solution for Africa may lie in between the gradualist approach and the fast track approach. The gradualist approach remains necessary to ensure organic and sustainable transformation of institutions. On the other hand, the creation of Pan-African institutions, if phased appropriately and with adequate ownership of the regional economic communities, could help enhance the momentum particularly in getting the RECs to merge into a continental economic community. The creation of the African Monetary Institute (AMI) as a transition stage towards the creation of the ACB was proposed by the Assembly of Governors of the AACB and the AU Commission joint committee as part of the common strategy for the creation of the ACB. The AMI if established would play a key role of harmonising policies of central banks prior to their consolidation into a regional central bank. Similarly, the African Investment Bank could be set up without much of a challenge as it could operate along the lines of the AfDB.

However, the African Monetary Fund and the African Central Bank if formed before the continent even attains a Customs Union are likely to fail in their mandates as they would inherently require a strong platform of macro-economic convergence and stronger political will. As earlier guided by the Abuja Treaty of 1991 and the common strategy of the AACB and the AU, it will be necessary to ensure an African Common Market is in place prior to the attainment of monetary integration. There is therefore, need to link the timing for the establishment of the three Pan-African institutions to the schedule of the continent's progression along the various stages of integration.

The African Union is aiming for a full monetary union with a single currency. However, it might be worthwhile to consider other options (such as informal exchange rate union, formal exchange rate union, dollarization or currency boards) as stepping stones to full monetary integration.

In light of the discussion above, three models have been generated for consideration:

1. Model A: Fast Track approach involving simultaneous accession of 53 African states' Central banks to the African Central bank;
2. Model B: Gradualist approach involving establishment of sub regional and regional central bank; and
3. Model C: Gradualist approach involving establishment of 3 regional central banks.

Fig. 1 - Model A:

(Fast Track approach involving simultaneous accession of 53 African states' Central banks to the African Central bank)

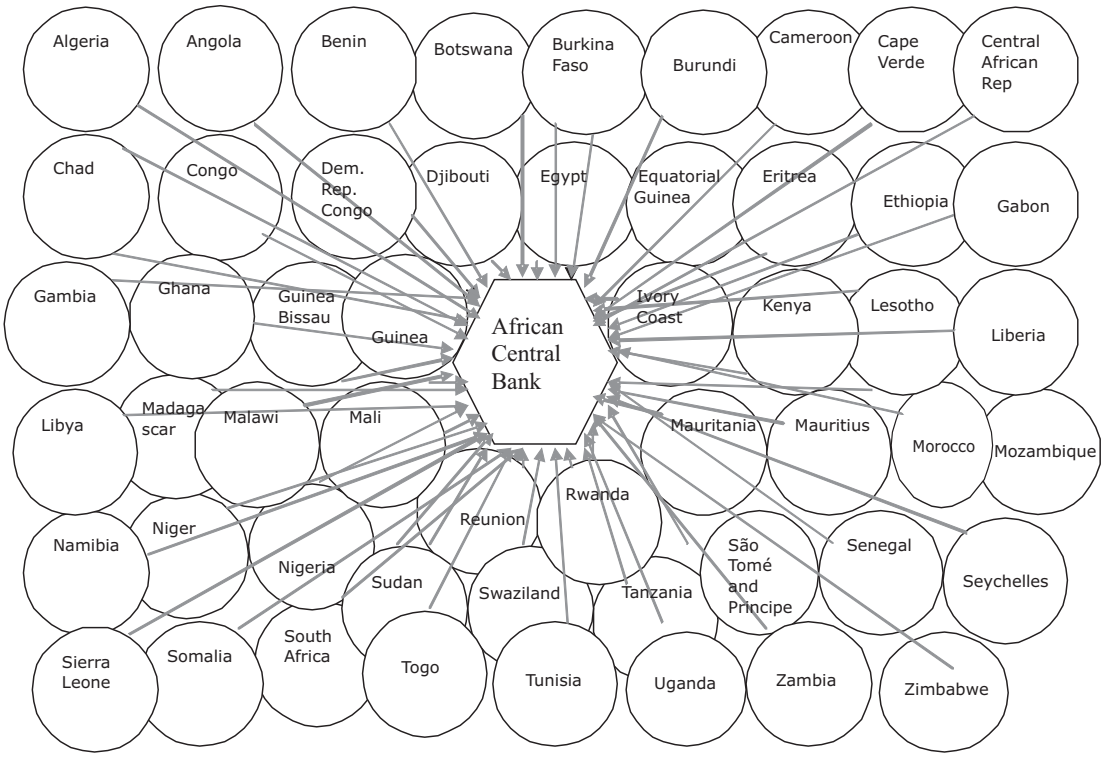

Fig. 2 - Model B:

(Gradualist approach involving establishment of sub-regional and regional central bank)

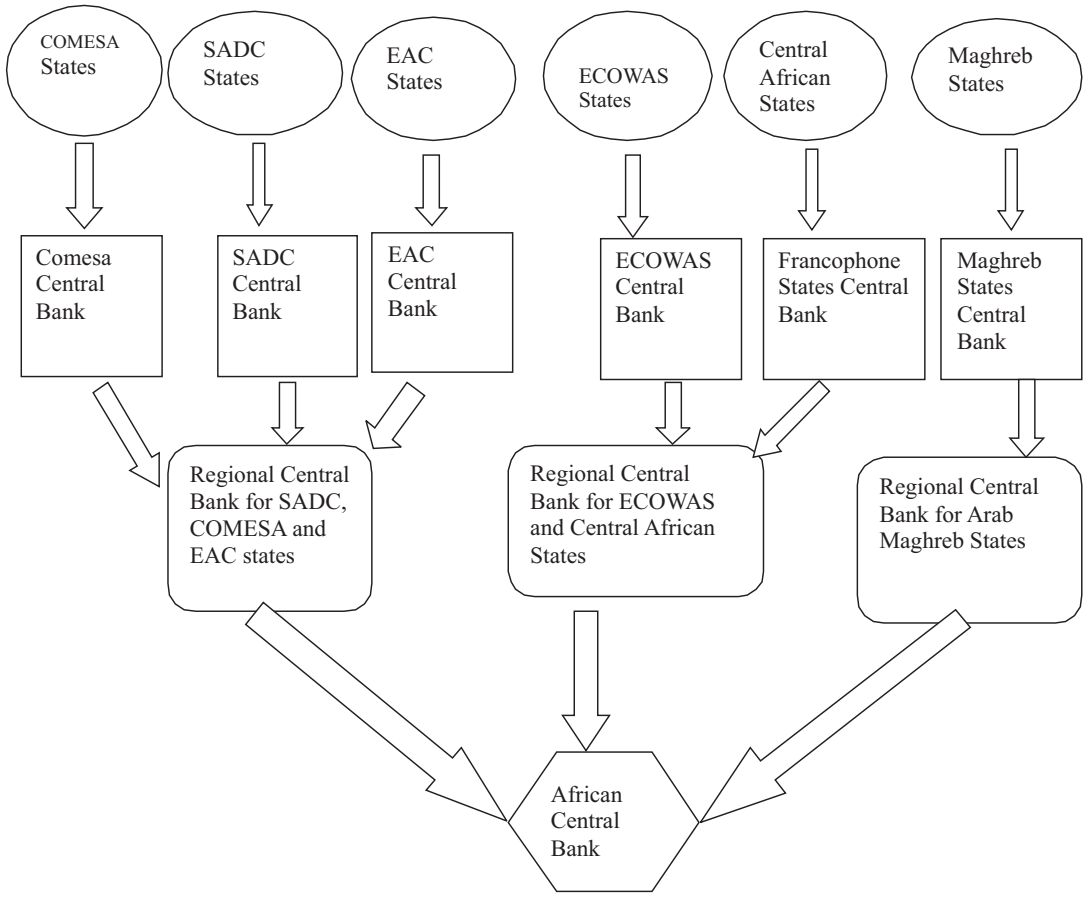

Fig. 3 - Model C:

(Gradualist approach involving establishment of regional central banks)

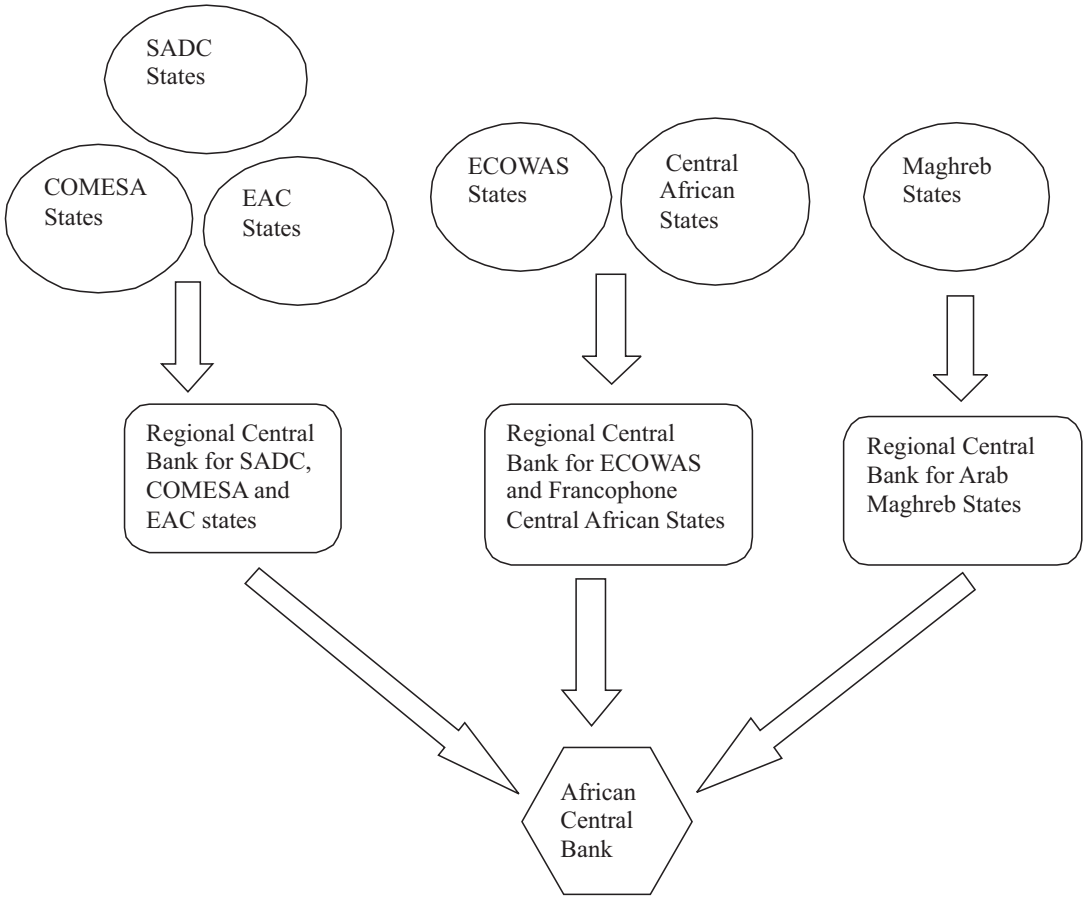

Table 1 - Summary of the key features of the Models A, B and C:

Decision Criteria	Model A	Model B	Model C
Organic transformation of institutions	Weak	Very strong	Strong
Time Frame	8 - 10 years	15 years	10 years
Strength of macro-economic convergence	Weak	Very strong	Strong
Capacities of central banks to transform their processes to fit into the continental framework	Weak	Very strong	Strong
Effect of overlapping membership to RECs	No effect	Weakness	Strength

Recommended Option:

In view of the attributes of the three options discussed above, we recommend option C (based on model C) which is a gradualist approach involving establishment of three regional central banks.

Additionally, in order to strengthen option C, we further recommend the immediate formation of the African Monetary Institute (AMI) to strengthen central bank compatibility and monetary policy co-ordination in readiness for the ACB. Furthermore, this implies that the regional organisations in the respective subcontinent merge into one sub-regional economic grouping. For instance, COMESA, ECA and SADC merge into one economic block.

VI CONCLUSION

The African Central Bank remains a viable project. However, the process of establishing the ACB needs to be guided by a clear framework. The key tenets of the common strategy agreed upon by the joint committee of the Assembly of Governors of the AACB and the AU Commission provide a good basis to guide this process.

As observed in Latin America and Asia, political pre-conditions are important to guarantee the success of monetary union in Africa. Therefore, the desire by African Heads of State to fast-track regional integration of Africa is commendable. However, a realistic implementation framework for the three Pan-African institutions (that takes into account the progress made in integration of the continent) is critical.

The need for strong economic and political institutions in Africa cannot be over-emphasised. Concerted efforts should be directed at addressing the various structural challenges that the continent is facing such as low levels of intra-regional trade, poor infrastructural inter-connectivity, political instability, lack of economic complementarity, slow progress towards economic convergence, etc.

With regard to timing, the current target of establishing the African Central Bank by 2018 appears quite ambitious given that presently, in 2010, Africa does not even have an FTA at continental level. Despite having stronger institutions and a smaller geographical area, it took the EU over 30 years to move from FTA/CU to the EMU stage with a single Central Bank and a common currency and an additional 10 years between the formation of the EMU and the institution of a common currency. Establishing the African Central Bank by 2018 therefore, requires that the African continent progresses from FTA/CU stage to CM within the remaining 9 years. Whereas this could be politically feasible, such speed could undermine the needed organic transformation of institutions which is necessary for their sustainability. It would also prove very costly to the region both financially and politically, given the large number of member countries and the need for each of them to carry their citizens and national programmes along.

As the design of the three Pan-African financial institutions gets under-way, it will be imperative to ensure that organic transformation of institutions is safeguarded (through the acceleration of integration efforts at sub-regional level) to ensure sustainability of the continent's integration process. This is particularly critical given the heterogeneity of the AU member countries.

VII RECOMMENDATIONS

In view of the forgoing arguments, the following are hereby recommended:

1. Model C is recommended for consideration. This entails that the respective regional economic communities will have to merge prior to the establishment of the regional central banks.

2. That given the level of heterogeneity (economic, political, cultural) among member countries on the continent, regional Central Banks should be instituted first so as to help smoothen the transition to a continental central bank and help build necessary capacities of national and sub-regional central banks to transform their processes to fit into the continental framework;

3. That the time-frame for the creation of the ACB be closely synchronised with the timeframe for the attainment of a common market on the continent; and

4. That consideration should be given to the establishment of the African Monetary Institute (AMI) prior to the setting up of the ACB. The purpose of the AMI, as with the EMI in Europe, would be to strengthen central bank compatibility and monetary policy co-ordination in readiness for the ACB.

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