

Kwacha Appreciation 2005-2006: Implications for the Zambian Economy

Kwacha Appreciation 2005-2006: Implications for the Zambian Economy



United Nations
Development Programme

KWACHA APPRECIATION 2005 – 2006: IMPLICATIONS FOR THE ZAMBIAN ECONOMY

Authors

John Weeks
Venkatesh Seshamani
Allan C. K. Mukungu
Shruti Patel



Published for the
United Nations
Development
Programme
(UNDP)

Copyright © 2007
by the United Nations Development Programme
Alick Nkhata Road
P.O. Box 31966
Lusaka, Zambia 10101

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission from the United Nations Development Programme.

Cover design: Paola Valle Dominguez & Maiwase Gondwe Barnaart.
Design: Mulumba M. Lwatula, Zedspot Media.
Printing: Mission Press. Ndola, Zambia.

For a listing of any errors or omissions in this report found subsequent to printing,
please visit our website at
www.undp.org.zm

Acknowledgements

This Report could not have been prepared without the generous contribution of many individuals and organizations. The authors wish to express their gratitude to the following: Rafael Aguirre, European Union – Zambia; S.M. Arora, TATA Zambia; J. Barnhart, USAID; T. Bhebhe, African Development Bank - Zambia; Samuel Bwalya, Zambia Revenue Authority; Richard Chembe, Bank of Zambia (BoZ); Emmanuel Mulenga Pamu, BoZ; Noah Mutoti, BoZ; James Mulungushi, Ministry of Finance and National Planning (MoFNP), Denis K. Chisenda, MoFNP; David Ndopu, MoFNP; Agnes Musunga, MoFNP; Felix Chizhka, Support to Farmers Association Project; Elfreda Chulu, Central Statistical Office (CSO); John Kalumbi, CSO; Peter Cottan, National Milling Corporation Limited; Coillard Hamushimbi, Zambia National Farmers Union; Alan R. Hardness, Sausage Tree Camp Zambia; Peter Henriot, Jesuit Centre for Theological Reflections (JCTR); Christian Petrauskis, JCTR; Sari Jormanainen, Embassy of Finland; J. Kakoza, International Monetary Fund; Gerhad K. Kangamba, Ministry of Mines and Mineral Development; Jennifer Kargbo, Economic Commission for Africa - Zambia; Stein Liyanda, Zambia National Tourist Board; Olav Lundstol, Embassy of Norway; Robert Liebenthal, Economic Association of Zambia; Eva Lovgren, Embassy of Sweden; Gibson Masumbu, Zambia Business Forum; L.C. Mbewe Zambia Export Growers Association; Mick Muffy, Mukushi Farming Block; Oswald Mwewa, Zambia Manufacturers Association; Jos Verbeek, World Bank – Lusaka and Washington; Mushiba Nyamazana, World Bank - Zambia; Nigel Polland, York Farms; Andrew Sardanis, Chaminuka Lodge; Phillip Graf Von Schwerin, German Technical Co-operation; Julius J. Shawa, Ministry of Agriculture and Co-operatives; Siazongo D. Siakalenge, Ministry of Commerce, Trade and Industry; Musiyalela Sitali, Zambia Investment Centre; David Thompson, The Lusaka Hotel; Wilma Viljanmaa, Embassy of Finland; Songolwayo Ziyambo, Zambia National Farmers Union; and Flint Zulu, Civil Society for Poverty Reduction.

Finally the authors also wish sincerely to thank the UNDP Resident Representative, Aeneas C Chuma, for initiating the study on the Kwacha appreciation and his support during the entire process. They also wish to express their appreciation to the Strategy and Policy Unit, in particular, the unit head, Abdoulie Sireh-Jallow, Senior Economist and Elda Chirwa, National Economist for managing the entire report process. Recognition is also due to Christopher Msoni, Research Assistant and Miriam Emefa Attigah, Economist for the valuable information provided. The authors also acknowledge the administrative assistance provided by Angelah Kumwembe, Fabiola Valle and Maria Letizia Antognazza and Haavard Holland for his excellent editorial support.

Preface

Starting in the second half of 2005 through September 2006, the Zambian Kwacha appreciated dramatically against all the major currencies. This sudden appreciation generated debate as to the cause and impact it had on the economy. The exporters in the manufacturing sector feared the impact of the appreciation on Zambia's international competitiveness. The farming groups expressed alarm about its negative impact on agricultural profitability and employment. Donors and lenders were concerned about the falling value of development assistance.

Furthermore, another important factor was the impact of the Kwacha appreciation on fiscal space and the capacity to implement the Fifth National Development Plan, which focuses on increasing growth, reducing poverty and achieving the Millennium Development Goals.

In view of the foregoing, this Report investigates the impact of the exchange rate appreciation on the Zambian economy to determine whether a policy response is required. The Report specifically looks at the impact of the Kwacha appreciation on trade revenue, Official Development Assistance (ODA) and debt repayments and servicing. The findings of the study show a loss of US\$ 197 million on trade and US\$ 218 million on ODA but a gain of US\$ 262 million on debt. This however, results in a net negative effect (loss) of US\$ 154 million to the Zambian economy even when the study is extended from the first quarter of 2003 to the second quarter of 2006.

Furthermore, the Report states that for Zambia to achieve faster growth, economic diversification and poverty reduction, it needs to have a development-focused exchange rate policy, in particular, a stable exchange rate, which will encourage private sector development as well as planning for various stakeholders in the economy.

The United Nations Development Programme hopes that the Report will be useful for the Government, stakeholders in the private sector and the cooperating partners.



Aeneas C. Chuma
UNDP Resident Representative

Table of Contents

Acknowledgements	iii
Preface	v
Table of Contents	vi
List of Acronyms	viii

Chapters

Executive Summary	1
Chapter 1: Introduction	5
Chapter 2: Arguments for and against appreciation in Zambia	7
2.1 Public Debate on Appreciation	7
2.2 Intervention is Inefficient	7
2.3 Intervention is not Effective	8
2.4 The Pressures for Kwacha Appreciation Have Ended	9
2.5 Appreciation has Positive Consequences	10
2.6 Government Policy should be Symmetrical	11
2.7 Export Diversification and Efficient Import Substitution	12
2.8 Exchange Rate Instability	13
2.9 Summarising the Arguments	14
Chapter 3: The So-called Dutch Disease	15
3.1 Appreciation Pressures and Impact	15
3.2 Dutch Disease Effects in Zambia	16
3.3 Likely Effects on the Manufacturing Sector	17
3.4 Is the Kwacha 'Out of Line with Fundamentals'?	18
Chapter 4: Causes of the Appreciation	19
4.1 Exchange Rate Moments	19
4.2 Modelling the Nominal Exchange Rate	19
Chapter 5: Fiscal Effects of Appreciation (Fiscal Space)	24
Chapter 6: Domestic Price Effects	28
Chapter 7: Kwacha Appreciation and Tradable Commodities	32
7.1 Overall Competitiveness in Trade	32
7.2 Evidence by Sectors and Commodities	35
7.3 Other Evidence by Sector	39
7.4 Evidence from Stakeholders	41
7.5 Probable Impact across Sectors	42
Chapter 8: Policy Action	46
8.1 Why Action is Necessary	46
8.2 Improving Policy Implementation	46
8.3 Macroeconomic and Financial Environment	48
8.4 Liquidity and Exchange Rate Management	49

Annex

Annex 1: Basic Statistics	53
Annex 2: Partial Equilibrium Exchange Rate Model	60
Annex 3: Estimating Fiscal Effects	62
Annex 4: Media Debate and Civil Society Views	64
References	70
People and Organisations Consulted	72

List of Acronyms

ADB	African Development Bank
AIDS	Acquired Immuno-Deficiency Syndrome
BIS	Bank of International Settlements
BoM	Bank of Mozambique
BoU	Bank of Uganda
BoZ	Bank of Zambia
CSO	Central Statistical Office
CSPR	Civil Society for Poverty Reduction
EU	European Union
GDP	Gross Domestic Product
GIR	Gross International Reserves
HIPC	Highly Indebted Poor Country
HIV	Human Immunodeficiency Virus
IFS	International Financial Statistics
IMF	International Monetary Fund
MDG	Millennium Development Goals
MDRI	Multilateral Debt Relief Initiative
NER	Nominal Exchange Rate
NGO	Non-Governmental Organization
ODA	Official Development Assistance
PRGF	Poverty Reduction and Growth Facility
RER	Real Exchange Rate
SARPN	Southern African Regional Poverty Network
UNDP	United Nations Development Programme
US	United States of America
USAID	United States Agency for International Development
VAT	Value Added Tax
ZAMTEL	Zambia Telecommunications Company
ZANA	Zambia News Agency
ZESCO	Zambia Electricity Supply Corporation
ZMK	Zambian Kwacha
ZNFU	Zambia National Farmers Union

Executive Summary

Main conclusion

After a review of the evidence, this report concludes that since late 2005, the movement of the Kwacha relative to other currencies caused substantial negative effects on the Zambian economy. These currency movements make it more difficult to achieve the major goals of the government: faster growth, economic diversification and poverty reduction.

The negative effects of the appreciation and associated instability are serious enough to justify action by the government and the Bank of Zambia (BoZ), to increase the effectiveness of exchange rate management. Doing so requires close coordination between the BoZ, various institutions of government, and donors. Medium and long term measures are required, to establish the framework in which short term interventions would be effective.

The high volatility of the Kwacha had as serious consequences as the appreciation. This volatility has created uncertainty for the private sector and increased transaction costs. Exchange rate volatility discourages the production of tradables by raising their risk premium compared to non-tradables. Until the financial system develops private sector instruments for hedging against exchange rate risk, it is appropriate for the government and BoZ to act in the public interest to reduce such risk.

The main objective of exchange rate policy should be to foster economic diversification in accordance with the government's medium and long term goals. This requires export competitiveness. In the long run, the exchange rate should be in line with productivity levels in the sectors producing non-copper tradables, rather than fluctuate with international copper prices.

Causes of the Appreciation

It would appear that the main cause of the sudden and large appreciation of the Kwacha was the rise in international copper prices, as well as capital movements, both private and public. This moved the trade balance from deficit to surplus. The International Monetary Fund (IMF) and others project reductions in world copper prices over the coming years, in nominal as well as real terms. It follows that the appreciation was not the outcome of changes in the underlying fundamentals governing the exchange rate, but rather resulted from a short run external shock.

Role of the Bank of Zambia

A medium and long term exchange rate policy implies management of the Kwacha in the short term. The main instrument of exchange rate management is foreign exchange transactions by BoZ. During the months of extreme volatility of the Kwacha, BoZ repeatedly used

this instrument. The statistical evidence suggests that BoZ operations on the exchange rate did have an impact. However, the reduction in volatility was quite small: If the BoZ had not intervened as it did, the Kwacha would have appreciated an additional 4 percent. Thus, BoZ pursued the appropriate policy and did so effectively, but the impact was minor.

The impact was small for two reasons:

1. Sterilisation operations to prevent a breach of monetary targets cancelled the effect of foreign exchange purchases; and
2. The foreign exchange purchases were too small.

Statistical evidence suggests that rise in the copper price was so rapid and large in 2005 that it was beyond the resources of BoZ to have more than a moderate impact on the appreciation, perhaps 10 percent at most. This implies that except for extreme events such as the copper price boom in 2005-2006, BoZ interventions in the foreign exchange market are effective and have a substantial impact.

There are important lessons for BoZ and the government to take from the movement of the Kwacha during 2005-2006:

1. BoZ can and does intervene effectively; except under extreme circumstances it can manage the volatility of the Kwacha;
2. Given the foreign exchange resources available, the effectiveness of BoZ operations can be increased by a strategic as well as tactical approach to exchange rate operations; and
3. Institutional and structural changes, as well as a change in the practices of development agencies, could increase the impact of exchange rate volatility management.

In summary, the BoZ can justifiably claim to have acted effectively and professionally, during 2005-2006; but neither BoZ nor the government should be pleased with the outcome.

In order to design and implement a development-focused exchange rate policy, the government may consider changing the policy guidelines for BoZ. Currently, BoZ's mission statement is 'to formulate and implement monetary and supervisory policies that will ensure price and financial system stability'. This could be expanded so that BoZ's mandate stretches to pursuing policies consistent with broad-based sustainable growth, which could include management of the exchange rate.

Fiscal Effects

Appreciation of the Kwacha had a substantial and negative impact on public income. The appreciation reduced fiscal space, requiring higher taxes, new taxes, or expenditure reduction. The fiscal effect had two major components: official development assistance and trade

taxes. Revenue from both these has a negative relationship to the exchange rate.

In 2005, the negative effect on the public budget of the Kwacha appreciation was largely balanced by the positive impact on external debt service. This positive impact ended with debt relief and was almost zero after 2005.

Macro and Sectoral Effects

From the quantitative and qualitative information available by May 2007, there is strong evidence that the movements in the Kwacha with respect to other currencies had the macro and sectoral effects predicted by economic theory.

1. The movements in the Kwacha appreciation had the expected domestic price effects, tradable prices fell and prices of non-tradables rose (and the reverse for depreciation). However, domestic price adjustment was not complete, suggesting substantial market power by wholesalers and retailers.
2. In terms of purchasing power parity measures, the Kwacha appreciated with respect to the currencies of its major trading partners (the European Union, the United Kingdom, South Africa and the United States).
3. The Kwacha also appreciated in real terms with respect to regional competitor countries, because of the appreciation itself and Zambia's higher rate of inflation than its neighbours (in order of loss of relative competitiveness, Malawi, Tanzania, South Africa, Uganda and Kenya).
4. Evidence suggests that manufacturing output, exports and prices declined as a result of the appreciation, caused by a fall in relative profitability and import competition.
5. For specific commodities, it appears on the basis of monthly data that the exports of copper wire were negatively correlated with the Kwacha-dollar rate (appreciation increases exports), while cotton products and sugar had a positive correlation with high elasticities (appreciation reduces exports). For other products, flowers, coffee, tobacco, and fruit and vegetables, no correlation was found. However, at the time of this report it may have been too early to accurately assess the impact of Kwacha movements.

Policy Suggestions

By establishing in a clear and public manner the country's medium term exchange rate policy, exchange rate management could be made more effective. Doing so would require consultation, discussion among the various elements in the public sector, particularly the President's office, the Ministry of Finance and National Planning, and BoZ. Responsibility for the decision would rest with the first institution. The policy chosen should be consistent with fiscal management, the task of the second, and the third is the institution that would have the primary (but not sole) role for implementation.

Donors, Lenders and External Non Governmental Organisations

There are several steps that donors and lenders could take to facilitate the government's management of the exchange rate and the external sector:

1. Distribute development assistance in a more predictable manner and more smoothly through time;
2. Pay all foreign exchange directly to BoZ, to facilitate a more accurate monitoring of external flows; and
3. In negotiation with the government, create a risk sharing scheme, in which exchange rate effects on the Kwacha value of Official Development Assistance (ODA) are shared between the external agency and the government.

Success in realising the third recommendation will vary among external agencies. We can report that during interviews with seven donors and lenders, including those most important in share of ODA, only one agency was unambiguously opposed to the possibility. Mechanisms for risk sharing could take many forms, from a simple sharing of exchange rate effects to hedging mechanisms funded by the donors and lenders in their own countries.

Bank of Zambia and Government Institutions

For the government and BoZ, the first challenge will be to attain consensus across a wide range of stakeholders on the need for exchange rate intervention. This would be facilitated by emphasising the effectiveness of BoZ interventions during 2005-2006. Then several steps need to be taken in order to improve policy implementation:

1. Strengthening of the existing mechanism of liquidity forecasting, particularly by improving information provided to BoZ on government fiscal operations.
2. Review of current procedures for the issuing of treasury bills, for open market operations, and for the issuance of government securities for its financing needs, with the purpose of linking these to exchange rate operations.
3. Conduct a study to determine the relationship between growth in reserve money and underlying (non-food) inflation. This is in order to establish more appropriate bounds for growth in reserve money and thus create more policy space for active exchange rate management.

However, prior to undertaking such measures, BoZ needs to consult with the international financial institutions, in order to adopt a macro policy appropriate for effective exchange rate management. This should be done considering the costs and trade-offs associated with higher liquidity, higher interest rates, and an appreciating currency. A new exchange rate policy can only be efficient within the framework of a flexible, consistent and credible policy stance.

1 Introduction

This report investigates the impact of exchange rate appreciation and instability on the Zambian economy, to determine whether a policy response is required; and, if required, to recommend appropriate measures.

This study is an initiative of the United Nations Development Programme (UNDP) in Zambia, in consultation with the Zambian government and with non-government stakeholders. The study aims at providing a set of policy options to address exchange rate appreciation and instability. Central to writing the report was the cooperation provided by BoZ. In April 2005 Zambia reached Completion Point for Heavily Indebted Poor Countries (HIPC) debt relief, and in July 2005 qualified for the Multilateral Debt Relief Initiative (MDRI). These debt reduction measures lowered the external debt stock from US\$7.2 billion in December 2004 to approximately US\$550 million July 2006. At the same time, the international price of copper approached a level unprecedented in decades. The combination of these two favourable external events are likely to have had a dramatic impact on the economy.

During the second half of 2005, the Kwacha appreciated dramatically against all major currencies. This sudden appreciation generated debate as to the cause and consequences. Manufacturing exporters feared the impact of appreciation on Zambia's international competitiveness, and farmer groups expressed alarm about its negative impact on agricultural profitability and employment. Among donors and lenders there was concern about the falling value of development assistance. The public mood ranged from indifference to patriotic identification with the Kwacha. Eighteen months after it approached 3000 to the US dollar, the Kwacha had returned above 4000, still appreciated compared to the first half of 2005 when it was in the 4800-4900 range. This study assesses the actual and potential effects of appreciation on the Zambian economy. Along with issues of competitiveness, the impact on fiscal space is of central importance to this study. At issue is the fiscal capacity to achieve the government's new development plan, which focuses on increasing growth, reducing poverty, and achieving the Millennium Development Goals (MDGs) (Weeks et al 2006).

While currency appreciation is a common outcome of commodity price fluctuations, Zambia's situation had several unusual aspects. First, the suddenness and size of the appreciation at the end of 2005 had no precedent in the country's history, and is extremely rare in the sub-Saharan region. Therefore, there is little experience with designing and implementing appropriate and effective policies in that specific context. Second, international experience suggests that Zambia may be the first aid-dependent country to experience more than minor appreciations (IMF 2005). This characteristic makes it case study of the impact of appreciation on development assistance. Third, the dramatic appreciation occurred

in the context of external policy conditionalities predicated on currency weakness, slow growth and inflationary pressures, in contrast to the actual situation of accelerating growth and falling inflation. It is possible that this radical shift in the economic context implies an altered policy framework.

1

2 Arguments for and against appreciation in Zambia

2.1 Public Debate on Appreciation

As noted in the introduction, the appreciation of the Kwacha generated debate and controversy over the necessity of a policy response on the part of the government (see Annex 4). Prior to considering the causes of the appreciation, it is necessary to review this debate, in order to place this report in the context of the national discussion. The purpose of this review is not to dismiss or endorse arguments, but to consider the circumstances under which the arguments might be valid or invalid.

One of the indications of the strength of civil society in Zambia was the public debate over the causes and consequences of the currency movements during 2005-2006. This debate provides a model of how all of development policy could be discussed. In an Annex 4 to this report we present the results of a survey of civil society opinion.

2.2 Intervention is Inefficient

The most fundamental argument against intervention to dampen, arrest or reverse the appreciation is that a non-intervention policy results in a market determined exchange rate which efficiently allocates resources. By this argument, it is unavoidable that interventions result in a 'distorted' exchange rate that creates inefficiencies that misallocates resources between tradable and non-tradable commodities, and perhaps undermines sustainable economic growth.

Economic theory specifies the conditions under which a non-interventionist policy would produce an efficient exchange rate. Theory defines an efficient exchange rate as one that allocates resources on the basis of the fundamental determinants of social profitability in the economy. These fundamental determinants are the prevailing technology, the skills of the labour force, the supply of productive factors, and the structure of household demand and external demand.

The exchange rate is one of many prices in a market economy, and its efficiency is determined within a general equilibrium system. A basic principle of general equilibrium is that the efficiency of any specific price requires that all other prices also be efficient. If some other important price in the economy is misaligned, such as the interest rate, then the exchange rate will also be misaligned, even though the exchange rate is market determined and the balance of payments sustainable. For example, if the BoZ base rate is administratively determined and results in private sector lending and borrowing rates above or below efficient levels, this will affect the equilibrium in the foreign exchange market. Therefore, the market-determined argument requires perfectly functioning markets throughout the economy.

Were it the case that all markets functioned perfectly with no administrative interven-

tions (e.g. on the interest rate), the argument further requires that the perfectly functioning market outcome be unique. If it is not unique, then there may be many market-determined exchange rates consistent with efficient allocation, each yielding different allocative outcomes. Some of these outcomes may be more consistent with the government's various policy goals than others, which provides a justification for intervention to choose among the outcomes.

If markets are perfect and their general equilibrium results in an unique exchange rate, one must consider the time period over which adjustment occurs in response to external effects such as a change in the price of exports and imports (for example, the copper price in the case of Zambia). If the adjustment from one efficient general equilibrium to another is rapid in chronological time, then the argument for non-intervention is strong. However, if the adjustment is slow, the disequilibrium period can create inefficiencies resulting from private sector errors in anticipating the new equilibrium exchange rate. In these circumstances, there is justification for government intervention to accelerate the adjustment to equilibrium.

Finally, it should be noted that the concept of an equilibrium exchange rate is ambiguous. If markets function perfectly, the exchange rate should achieve two important outcomes: 1) There should be a tendency for international prices of traded goods to equal their domestic prices when converted at the exchange rate, the principle of purchasing power parity; and 2) A tendency for the balance of payments to move to an equilibrium of currency flows. Even in theory both tendencies occur simultaneously under restrictive assumptions.

Summary

The efficiency argument for non-intervention requires that all markets function perfectly without public sector regulations or private sector market power, and that the outcome of perfect markets be unique. It further requires that the efficient outcome not merely be a tendency over time, but also prevail in the short run.

2.3 Intervention is not Effective

A pragmatic argument for non-intervention is that in practice intervention will be ineffective: attempts to foster an exchange rate inconsistent with 'market fundamentals' are doomed to failure. Since this is a pragmatic argument rather than a purely theoretical one, it is appropriate to judge its validity by empirical evidence.

To make this judgement, one must specify the purpose of intervention, define what is meant by 'effective', and distinguish between short and long time periods. The argument that intervention is ineffective because it contradicts 'market fundamentals' is an argument against the special case in which the goal of intervention is to maintain a fixed exchange rate at an over-valued level for a long time period. The attempt to do this, as in Zambia during the later Kaunda years, is unsustainable because it requires the drawing down of reserves to

maintain the fixed rate, or administrative controls that result in a parallel market.

The experience of several countries demonstrates that a fixed under-valued exchange rate can be maintained for a considerable time period (for example, Japan in the 1960s and 1970s, and China more recently). By definition, an under-valued exchange rate implies net foreign currency inflows (a build up of reserves), there need to be no direct pressure for appreciation. However, the accumulation of reserves can have negative macro effects, possibility reducing the impact of interventions to prevent appreciation and increasing the potential money supply. If there are negative effects, managing them is primarily an issue of monetary policy and secondarily exchange rate policy.

Finally, the statistical results in Section 4 demonstrate that the interventions by BoZ in the foreign exchange market were effective in the technical sense that they had a consistent and sustained, though relatively small, impact on the level of the Kwacha. A conclusion could be drawn from this that in face of less extreme movements in the copper price, BoZ could implement a coherent management of the exchange rate.

Summary

Attempting to maintain an over-valued exchange rate leads to the loss of reserves that undermines the attempt. An attempt to maintain an under-valued exchange rate leads to the accumulation of reserves which can be managed to have a neutral impact on the policy. The accumulation of reserves may have negative side effects that require complementary monetary policy measures. Statistical evidence strongly supports the conclusion that BoZ interventions were consistently effective during 2005-2006.

2.4 The Pressures for Kwacha Appreciation Have Ended

Some commentators, including some officials at BoZ, argue that while intervention to arrest Kwacha appreciation and fluctuations may have been appropriate during October 2005 through September 2006, it is not necessary with the Kwacha at over 4000 to one United States (US) dollar (April 2007). It is further argued that the medium and long term consequences of HIPC and MDRI debt relief will be greater stability in the foreign exchange market. Only minor interventions would be necessary, to compensate for copper price fluctuations and accumulate reserves. The conclusion of this argument is that the exchange rate problem is over.

The statistical evidence shows no direct impact on the Kwacha of debt relief (see Section 4). However, this could be the result of a high correlation between debt relief and other variables used in the explanatory model. Also, it is possible that the most important effect of debt relief was on private sector expectations, which are difficult to specify rigorously. The validity of the argument does not eliminate the possibility that currency instability may occur in the future, or that appreciation may again reduce competitiveness. Therefore, there remains a case for establishing procedures and policy rules in anticipation of future instability. As discussed below, a recent study by the Bank of International Settlements

concluded that Zambia had one of the most volatile exchange rates in the sub-Saharan region. A rigorous analysis is required before one can conclude that volatility is a problem of the past.

Summary

The exchange rate appreciation and instability during 2005-2006 was extreme, but consistent with the longer term instability of the Kwacha. Therefore, there remains a case for exchange rate management in order to sustain macro stability and competitiveness.

2.5 Appreciation has Positive Consequences

Zambia's long term decline (1975-2000) was associated with a depreciating exchange rate. Its recovery and growth have been associated with an appreciating exchange rate. If one sets aside non-economic arguments for appreciation, for example those prompted by nationalist sentiment, several arguments for appreciation still remain. An appreciating exchange rate may: 1) Increase private sector confidence, 2) Make investment goods cheaper and most are imported into Zambia, 3) Reduce the cost of non-capital imports, especially petroleum; and 4) Reduce the use of foreign currencies in domestic exchanges ('de-dollarisation').

Taking these arguments in turn, private sector confidence is influenced by movements in the exchange rate, but the relationship is an extremely complicated one. The fundamental source of private sector confidence is profit expectations. The nominal exchange rate is one of many influences. The movement of the exchange rate will not have a uniform impact across the private sector. Even for that part of the private sector whose confidence is positively correlated with the nominal exchange rate, exchange rate instability may cancel the confidence gains from an appreciation. This is essentially an empirical issue about which no *a priori* conclusion can be drawn.

Investment projects become cheaper with appreciation, in proportion to their imported content and their export potential. The impact of cheaper capital imports will vary depending upon private sector expectations. If the private sector assumes the appreciation to be a medium and long term adjustment, it will conclude that capital has become cheaper relatively to labour. A large volume of economic research over almost fifty years suggests that this is a mixed blessing. The perception of a permanently appreciated Kwacha would shift relative profitability in favour of capital and import intensive projects. To the extent that input substitution occurs, capital and import intensity would increase within projects. In Zambia the former effect would be more important than the latter, because of the absence of a domestic capital goods sector. Economic theory and empirical evidence indicates that Zambia is relatively abundant in unskilled labour. Therefore, exchange rate appreciation that provokes greater capital intensity would seem contrary to principles of efficient allocation, as well as broad-based poverty reduction.

If the appreciation were viewed as temporary, then it would not change the relative profitability of technologies, thus would not prompt capital-labour substitution. Rather,

enterprises would take advantage of the temporarily appreciated Kwacha to bring forward planned capital imports. While in principle this could have substantially reduced the short-term cost of capital equipment, there was at the time of completion of this report no evidence of an increase in orders of capital imports during 2006.

BoZ officials informed us that the most important element of the third effect, reduction in the cost of non-capital imports, was petroleum prices. Inspection of the relevant statistics indicates that retail petrol prices in Zambia fell or rose slower than international prices. While this provides *prima facie* support for price benefits from appreciation, closer inspection raises doubts about how these statistics should be interpreted. The conclusion from the statistics presented in Section 6 is that the net impact of the domestic price effects of appreciation on household welfare are ambiguous, but likely to be negative.

The fourth effect, reducing the use of foreign currencies in domestic transactions, would be the rational response to the appreciation of the Kwacha. A distinction should be made between dollar holdings by those who speculate on the foreign exchange market, and those who use dollars (or other currencies) in normal transactions because of fears of Kwacha depreciation. The appreciation of the Kwacha might have a medium or long term effect on the latter, but only a temporary effect on the former. One can conclude that the appreciation is likely to have reduced the use of foreign currencies in domestic transactions. This is a positive outcome, but it is difficult to quantify the economic gain it implies. For example, there is no obvious way to quantify the gain from de-dollarisation versus the losses incurred by exporters.

Summary

The probability of realising the possible gains of appreciation in Zambia is low or not supported by empirical evidence, net effect of price changes is ambiguous, and the certain gain (de-dollarisation) cannot be quantified.

2.6 Government Policy should be Symmetrical

An argument has been made that few of the leaders of the private sector complained when the Kwacha depreciated, though a large portion of the Zambian population suffered. Rather, the private sector adjusted to the falling exchange rate. Now that the exchange rate is appreciating, the private sector asks for special measures to protect it, though it opposed such measures for the losers when the Kwacha depreciated. According to the symmetry argument, the private sector should adjust to the appreciation, as it did to the depreciation.

Setting aside political and ideological arguments, the validity of the symmetry hypothesis turns on two closely related issues: whether exchange rate movements are symmetrical in their effects; and whether the foreign exchange market is efficient. Consider what would occur if an extended period of real depreciation were followed by a period of appreciation, then depreciation. Some of the producers who took advantage of the initial depreciation would lose their markets during the appreciation. The gains in export expansion during the

first depreciation could be regained during the second if the costs of curtailing production then expanding it again were minor. If these costs are substantial, the period of currency appreciation may result in non-reversible losses of export markets. Further, if the market for foreign exchange is not competitively efficient, the price signals to producers may be asymmetrical with regard to output and input prices. For example, because the international markets for non-traditional agricultural products and foreign tourists are highly competitive, an appreciation might lower Kwacha revenue. However, if there is a concentration of market power among importers, the appreciation may not lower the Kwacha cost of imported inputs.

Summary

In the Zambian context, because of market power of importers and the narrowness of the foreign exchange market, it is unlikely that the effects of currency movements would be symmetrical. Thus, currency appreciation is likely to cause changes in the structure of exports and imports that might not be fully reversed during a subsequent depreciation.

2.7 Export Diversification and Efficient Import Substitution

Whatever the politics of winners and losers in the appreciation process, a rising Kwacha undermines a central goal of development strategy, economic diversification, as well as efficient import substitution (i.e., import substitution consistent with comparative advantage). It also makes food security more difficult to achieve. Therefore, it has a negative effect on poverty reduction.

There is a consensus in the theoretical and empirical literature that in the context of booming primary product export, an appreciating exchange rate undermines the profitability of other exports. This is the conclusion of the so-called Dutch Disease literature discussed in the next section. If export diversification is a policy goal, the appreciation of the Kwacha is a problem requiring action by the government and BoZ. Any counter argument must then challenge the appropriateness of export diversification as a development goal. In the course of our mission we met with representatives of government, the private sector, Non-Governmental Organisations (NGOs) and international development agencies. No one questioned the desirability of Zambia achieving export diversification. Therefore, assessing the need for policy action involves judging the importance of this argument compared to non-interventionist stances one might support.

With regard to poverty reduction, it has been frequently asserted, for example in World Bank documents, that the net effect of devaluation on the incomes of the poor is positive. This assertion derives from the generalisation that the poor produce tradable commodities. For the rural poor in Zambia this generalisation would appear correct, and appreciation is likely to have a negative effect on their welfare. For the urban poor, the impact of appreciation is less clear. If imported necessities become cheaper, the urban poor gain. We lack the data to test this hypothesis, and anecdotal evidence suggests that price reductions have

been minor. On the employment side, the net gain or loss from the appreciation depends on 1) Whether tradable or non-tradable activities are more employment generating, and 2) Whether there is a different likelihood of the poor finding work in the two types of activity.

Summary

If the primary criterion for judging the impact of the appreciation of the Kwacha is export diversification, policies for effective exchange rate management are necessary. The net effect of appreciation on the rural poor is likely to be negative, and no generalisation is possible for the urban poor.

2.8 Exchange Rate Instability

Many people interviewed, especially those in the private sector, argued that exchange rate stability is more important than its level. A fluctuating exchange rate makes it difficult for the private sector and the public sector to plan their budgets, especially their capital expenditures. It is argued that the potential for exchange rate instability remains strong, implying a continuous and active role for BoZ in exchange rate management. Such a role involves short-term interventions within a medium-term exchange rate projection.

This argument can be put formally in terms of a trade-off between the level of the exchange rate and its variability. The cost to a firm of a unit of foreign exchange is the exchange rate plus the cost of hedging against exchange rate risk, which in the simplest case, implies ‘iso-exchange rate curves’, in which unit cost is constant along a negatively sloped line on a diagram with the exchange rate and hedging costs on the axes. In principle, there would be many combinations of the exchange rate and hedging costs for which the firm would be indifferent.

This argument is difficult to test rigorously, for lack of data. Taking a less rigorous approach, it is clear that the characteristics of the Zambian economy lend credibility to private sector complaints about exchange rate volatility. In theory, economic agents can protect themselves against the negative effects of volatility through ‘hedging’. However, the mechanisms for hedging against exchange rate volatility, financial derivatives, do not exist in Zambia to any significant degree. These derivatives emerge through the long term process of financial development, and cannot be created ad hoc in an economy with an underdeveloped banking system. Because of the underdeveloped nature of the financial system, private agents, especially small and medium scale operators, cannot then effectively hedge against exchange rate risk. Until the financial system is able to generate the required instruments, there is therefore a case for the public sector to manage this risk.

Summary

Zambia had one of the most volatile exchange rates in the sub-Saharan region in the 2000s. The institutions and instruments to hedge against exchange rate risk hardly exist. This

provides a compelling case for public sector exchange rate management.

2.9 Summarising the Arguments

We can summarise the debate over the appreciation of the Kwacha by stating two polar positions, which we call ‘never intervene’ and ‘must intervene’.

Never Intervene:

Currency markets operate competitively, so any public sector intervention distorts the efficient outcomes those markets produce. If public sector interventions are consistent with underlying market fundamentals, they are unnecessary; if they are inconsistent with those fundamentals they are ineffective. In any case, the causes of appreciation and volatility have ended, so debate over intervention is of no policy importance. Further, concern over appreciation ignores the benefits it brings, such as cheaper capital goods and increased private sector confidence. If export diversification and import substitution are efficient, they will follow from increases in private sector confidence. Non-intervention is a fair and symmetrical policy based on the principle that the government should not favour some economic agents over others.

Must Intervene:

The market for the Kwacha is not competitive; it is dominated by a few traders. Therefore, the outcomes the market produces are not efficient. Public sector intervention can be effective in influencing outcomes consistent with development goals. This intervention should be institutionalised because of the inherent instability of the Kwacha which is causing long term damage to the economy. That instability and the appreciation have weakened the economy by making it more dependent on copper, undermining the export diversification achieved during depreciation. The argument for ‘symmetry’ in policy is misplaced, first because the non-interventionist policy of the 1990s was unsuccessful, and, second, because the effects of exchange rate movements are not symmetrical.

It is our impression that the typical approach to the appreciation of the Kwacha by government officials, the private sector, and development agencies has been pragmatic, and very few people in Zambia hold either of these extreme positions. For the rest of this report, we set aside the ideological issue of whether intervention is ‘good’ or ‘bad’, in order to address the pragmatic policy questions:

1. What has been the cause of the Kwacha appreciation and instability?
2. What has been the impact?
3. Is intervention required? and
4. Are there forms of intervention that would achieve the desired policy objectives?

3 The So-called Dutch Disease

3.1 Appreciation Pressures and Impact

The term ‘Dutch Disease’ has been applied to describe the impact of Kwacha appreciation on the economy. General use of the term refers to the effects of incomes from an external ‘windfall gain’, commonly from commodity export, on a country’s currency. At issue are the consequences for the tradable sector, including exports and import-substituting industries.¹ In Zambia it has been suggested that Dutch Disease-type effects have resulted from a range of external factors such as record high copper prices, private capital inflows, and debt relief from the HIPC and MDRI Initiatives. This section analyses the mechanisms through which Dutch Disease effects occur, and assesses the relevance of the phenomenon to Zambia.

The term Dutch Disease derives from the Netherlands, when natural gas was discovered in the North Sea in the 1960s. The natural gas boom induced an expansion in public current expenditure (rather than public investment) and an appreciation of the currency, which reduced Dutch export competitiveness.

The impact of the large inflows of foreign exchange is analytically divided into three effects:

The Spending Effect:

The inflow of foreign exchange from copper exports leads to a rise in national income. As income increases, the demand (and therefore the price) of non-tradable goods will increase. The demand for tradable goods also increases, but this is met by an increase in imports financed by copper earnings. Because the price of tradable goods is fixed at the world price, the Real Exchange Rate (RER) appreciates as the price of non-tradables rises. Due to the granting of generous tax holidays to copper producers, the revenue generated by the increase in copper prices and exports will be relatively small for the Zambian government in the foreseeable future (unless these tax arrangements are renegotiated, see Weeks et. al. 2006, Chapter 5). As result, the public sector component of the spending effect should be minor.

¹ ‘Windfall’ gain refers to ‘a gain that is realised without sacrifice’; that is, a gain received without expenditure of resources, with the implication that it resulted from good luck rather than effort. Market power is frequently cited as the source of windfalls. In the literature on resource booms, it is used in this sense, on the basis of the argument that natural resources are limited in supply. The term is also used to imply that the gains are temporary.

The Resource Transfer Effect:

The boom in the copper sector and the increased demand for non-traded goods would raise the marginal products of mobile factors employed by the two sectors, and draw resources away from other traded commodities (agriculture and manufacturing), if the economy is near full utilisation of resources, or if there are shortages of key inputs. The extent of the resource transfer effect will depend upon the extent to which resources from the manufacturing sector can be utilized by the copper and non-traded goods sectors (the degree of labour and capital mobility). For example, if labour is the only mobile factor between sectors, it would be drawn away from the traded goods sector towards the copper sector and the non-traded goods sector to meet increased demand. The resource transfer effect leads to a contraction in the supply of tradable goods and an expansion in the supply of non-tradables.

The Expenditure-Switching Effect:

The increase in national income and the corresponding rise in demand for tradable goods which is met by higher imports would lead to deterioration in the trade balance. This effect is reinforced by the decrease in domestic supply of tradable goods resulting from the spending and resource transfer effects.

3.2 Dutch Disease Effects in Zambia

From 2002 the Kwacha slowly appreciated in real terms, and dramatically after October 2005. However, currency appreciation alone should not be regarded as evidence of Dutch Disease. Any inflow of foreign capital not used to accumulate international reserves will put upward pressure on the exchange rate. If the inflow of foreign exchange is spent entirely on imports for which domestic demand existed, the increase in supply of imported goods would depress the price of tradables relative to non-tradables, leading to a real appreciation. Even if the government decided to convert all the foreign exchange into Kwacha and spend it domestically, the increase in supply of foreign currency in the economy would lead to a nominal (and real) appreciation. The same logic can be applied to private inflows of foreign currency. Regardless of whether foreign exchange inflows are used to finance imports or domestic expenditure, and regardless of the source of inflows, some RER appreciation should be expected.

To identify the Dutch Disease effects, one needs to examine relative price changes for tradable and non-tradable good (Section 6), and effects on different types of exports (Section 7). As an initial observation, one can see similarities between the trade position in 2006 and that during the first decade of independence, when the country received high foreign exchange earnings from copper. When copper prices declined in the mid 1970s, the Zambian government engaged in foreign borrowing to finance its import bill and avoid an adjustment in the RER. However, when access to foreign loans ended in the early 1980s, a sharp depreciation of the RER resulted.

According to a recent IMF report (IMF 2006), the real annual average price of copper is forecast to decline by almost 60 percent compared to the level at the end of 2006. This forecast is consistent with the historical experience that prices of metals tend to converge to production costs in the medium term. Futures markets would seem to foretell a decline in the prices of most metals, including copper, to the end of the 2000s. Given the substantial probability that the high price of copper was a temporary phenomenon, revising the contracts with copper companies to increase their contribution to public revenue would be a priority, though this policy change lies outside the terms of reference of this study (see the recommendations in Weeks et. al. 2006).

Analysing the non-copper exports can provide an indication of the presence of Dutch Disease effects. Using the available data, this is done in Section 7. Another indication of Dutch Disease-type effects would be increases in the prices of non-tradable goods compared to tradable goods. The contribution of price increases in non-tradable goods to overall inflation increased with the appreciation of the Kwacha, though accounting for only between one and two percent.² The annual non-food inflation rate stood at 16.2 percent in November 2006, compared with 15.4 percent in October 2006. This increase was due to the rise in inflation rates for non-traded items, medical care, transport and communications, rent and household energy. Such a result suggests Dutch-Disease effects, and is pursued further in Section 6.

3.3 Likely Effects on the Manufacturing Sector

The Dutch Disease analysis tends to produce a bleak picture. However, there are a number of reasons why the de-industrialisation effect predicted by the Dutch Disease analysis is unlikely to occur in Zambia. Two key assumptions are that the economy operates at full employment, and that imports are perfect substitutes for domestically-produced goods. Evidence suggests that these do not apply in Zambia. According to BoZ quarterly surveys of business opinion and expectations, manufacturers operated at about 60 percent of total capacity in 2005 and 2006. A survey by BoZ found that capacity utilisation in Zambia's formal manufacturing sector was below 60 percent in 2005 and 2006 (BoZ 2005, 2007). Therefore, if Zambia was initially operating at less than full-employment and imports are not perfect substitutes for domestically produced goods, the increase in income from copper revenues and other net inflows could have a positive effect on domestic manufacturers.

The spending effect would give domestic firms scope to increase production and prices in the tradables sector. This is particularly the case if domestic firms cannot compete on the international market. If the domestic supply of tradables increases, and this results in a corresponding decline in non-copper imports, the negative impact on the trade deficit would be reduced. There can also be an increase in employment. The experience of Nigeria

2 The following categories in the Consumer Price Index (CPI) are considered non-tradables: medical care, recreation and education, and rent and household energy. The latter has been included as the fuel portion is assumed to be relatively small.

and Indonesia in the late seventies supports this analysis. In both countries most domestic manufacturing companies could not compete on the international market. In effect, their output was non-tradable. As a result, given the limited substitution between imported and domestically produced goods, the spending effect from the increase in oil revenues led to a substantial increase in the growth rate of the domestic manufacturing sector in both countries.³

Notwithstanding this possibility, a rapidly appreciating exchange rate can be detrimental to exports and may limit the country's growth potential. Moreover, the plausible presence of hysteresis effects makes currency appreciation undesirable. Changes in economic variables are not symmetric. As discussed in Section 2, a change in the exchange rate that is later reversed (when copper revenues decline) may have a negative long-term impact on the trade account. For example, due to long term currency appreciation, a country partly loses its export markets. Going back to the initial exchange rate would not be enough to bring domestic firms back into the market. To return to the initial trade pattern, the exchange rate would have to 'over-depreciate', making it profitable to incur the costs of starting up export operations and compete with foreign firms. The high level of volatility of the Kwacha against major currencies has also exacerbated the impact of the real appreciation. Several private sector operators have the view that volatility of the exchange rate has a more damaging impact on business planning and investment decisions than the appreciation itself.

3.4 Is the Kwacha 'Out of Line with Fundamentals'?

An exchange rate would be in long-run equilibrium for given values of key variables (openness, productivity differential, terms of trade, public expenditure, direct foreign investment, and international interest rates), if it is compatible with internal and external equilibrium. The movement of the Kwacha after October 2006 raised questions as to whether the currency was 'out of line' with these fundamentals; that is, whether movement of the Kwacha reflected changes in the economic fundamentals that determine the equilibrium exchange rate. To understand whether this is the case, the factors that have led to the Kwacha appreciation must be assessed as temporary or permanent. If the inflows of foreign exchange are temporary, it would be beneficial for BoZ to intervene to target the RER. This would require tolerating inflation and a real interest rate increase in order to prevent Dutch Disease effects of the temporary real appreciation. However, if the force behind Kwacha appreciation is permanent, appreciation of the RER becomes inevitable. In this case, BoZ should focus on avoiding exchange rate volatility. These issues are treated in Section 4 on the causes of the appreciation.

³ Between 1970 and 1981, growth rates in domestic manufacturing increased by 11.7 percent in Nigeria and 13.4 in Indonesia. In both countries these increases superseded even the increases in the traditional non-tradables. (De Silva, 1994)

4 Causes of the Appreciation

4.1 Exchange Rate Moments

In August 2005 the Kwacha appreciated by 9 percent compared to the maximum monthly change of 4 percent during the previous thirty-one months. After small changes in September and October (a depreciation of 1 percent and an appreciation of 2 percent, respectively), November brought an 8 percent appreciation, followed by 16 percent in December. Some degree of stability returned during January–May 2006, though appreciation continued as the Kwacha crept towards 3200 to the US dollar. At the end of May 2006 the Kwacha had appreciated over 40 percent compared to the average during February 2003–July 2005. Because the rate of inflation was higher in Zambia than in its trading partners (see Section 6), the purchasing power parity measure of the RER appreciated considerably more than the nominal rate.

4.2 Modelling the Nominal Exchange Rate

In an open economy the exchange rate is the most important relative price, affecting all major aggregates. To be analytically rigorous, the nominal exchange rate should be modelled within a general equilibrium framework. For Zambia a general equilibrium specification of the exchange rate could only be done with annual data because of the absence of monthly and quarterly statistics for key variables, including national income. An annual model would provide limited insights because of the short term volatility of the exchange rate during 2005 and 2006. Therefore, it is necessary to adopt a partial equilibrium approach. In this partial equilibrium model the nominal exchange rate is determined by the excess demand (positive or negative) for the Kwacha, the stock of international reserves, and policy interventions by BoZ.⁴ We assume that the merchandise trade balance is a close proxy for the excess demand for the Kwacha. Figure 4.1 shows the close relationship between the exchange rate and the trade balance, especially after mid-2005. The trade balance itself is a function of the copper price and the exchange rate. The stock of international reserves affects private sector expectations of exchange rate movements. BoZ foreign exchange interventions lower or raise the exchange rate depending on whether foreign exchange is sold or purchased. The algebra of the partial equilibrium approach can be found in Annex 2.

In the course of discussions with government officials, representatives from development agencies, and experts from civil society, it was suggested that the election of 2006 created political uncertainty that weakened the Kwacha. The consensus was that the weakening began in July or August and continued to October. To test this hypothesis that politi-

⁴ Modern exchange rate analysis treats foreign exchange flows as stock adjustments, with agents seeking an optimum portfolio mixed of domestic and foreign assets. Our model adopts the simplistic flow approach.

cal uncertainty negatively affected the exchange rate, we introduce a binary variable that assumes the value of one for July–October 2006. It should be noted in this context that such variables at most do no more than increase the correlation coefficient of a statistical specification without providing any explanation. In other words, unexplained variation is reduced by using a variable whose relationship to causality is unknown. In this case, the use of a binary variable can be justified because of an apparent consensus among knowledgeable observers. However, this consensus, even if it is a strong one, does not change the fact that the binary variable represents a hypothesis test, not a behavioural relationship.

The equation was estimated using monthly data from January 2003 through November 2006.⁵ The statistics are reported in Table 4.1, and shown in Figure 4.2. We note that the coefficients of the variables are of the predicted sign and statistically significant at less than 1 percent probability. The value of the Durban-Watson statistic is marginally into the inconclusive range for autocorrelation.

A close inspection of Figure 4.2, which plots these values over time, indicates several important points. First, the values calculated from the model do well in passing the severe test of tracking movements in the nominal exchange rate. The sharp appreciations of the Kwacha occurred during July-August 2005 (from over 4800 to 4400) and October through December (from 4350 to 3400). Though the model ‘misses’ the first, it tracks the second quite closely, as with the depreciation after April 2006.

More interesting is the inclusion of the narrow line with squares for data points, which traces the predicted values on the assumption that BoZ made no interventions in the foreign exchange market (that is, BoZ forex sales and purchases were zero). When BoZ interventions are omitted, the value of the exchange rate is consistently lower (that is, appreciated) compared to the predictions that included BoZ interventions. In other words, the model suggests, as BoZ officials maintained, that appreciation would have been greater in the absence of BoZ interventions. However, the difference is relatively small, an appreciation of 3.7 per cent less during April 2005 through November 2006.

It follows from the model that larger foreign exchange purchases would have further reduced the degree of appreciation. Figure 4.3 shows the counter-factual scenario in which BoZ sought to maintain the exchange rate at 4000 to the US dollar. The calculations for Figure 4.3 make the following assumptions: 1) Exports equal imports, and this is unaffected by changes in the copper price; 2) The initial stock of gross reserves is twice the level of imports; and 3) Foreign exchange purchases increase the level of gross reserves by the amount of the purchase. Thus, the calculations incorporate the dampening effect of the accumulation of reserves of the BoZ foreign exchange purchases. At a copper price of about 140 US cents, no intervention is required in the scenario to maintain a Kwacha-dollar rate of 4000. The average foreign exchange purchase during the years (which years) of slightly

⁵ At the time this report was revised, the latest gross reserves and BoZ foreign exchange dealings were available through the November 2006.

over US\$ 15 billion is required for a copper price of about 165 US cents. For the copper price in March 2007 of 250 US cents, purchases of US\$ 80 million are required.

The scenario indicates the central problem facing BoZ in its attempts to manage the exchange rate. BoZ interventions in the foreign exchange market can be effective in moderating pressures for appreciation. However, the higher the copper price, the larger the interventions must be, and intervention to maintain a given exchange rate becomes increasingly difficult as the copper price rises above two US dollars per pound. Therefore, it is not surprising that at the end of 2005 and into 2006 the BoZ's attempts to limit the appreciation of the Kwacha appeared futile.

The main conclusions of this section are:

1. The appreciation of the Kwacha during 2005-2006 resulted from excess demand arising from increases in the copper price;
2. BoZ interventions were effective in moderating the appreciation, but severely limited by the extent of the rise in the copper price;
3. Because lower copper prices are anticipated, exchange rate management by BoZ should have a greater impact in the future.

BoZ's purposeful management of the exchange rate was the correct policy, especially in light of a recent report by the Bank of International Settlements (BIS) that found the Kwacha to be one of the most unstable currencies in Africa. According to that study, the standard deviation of the monthly percentage change in the Kwacha was 8 percent between 2002 and 2005, compared to an average of 4.4 percent in other African countries with a similar exchange rate regime. In the final section we discuss some policy and institutional changes that would increase the impact of interventions by BoZ.

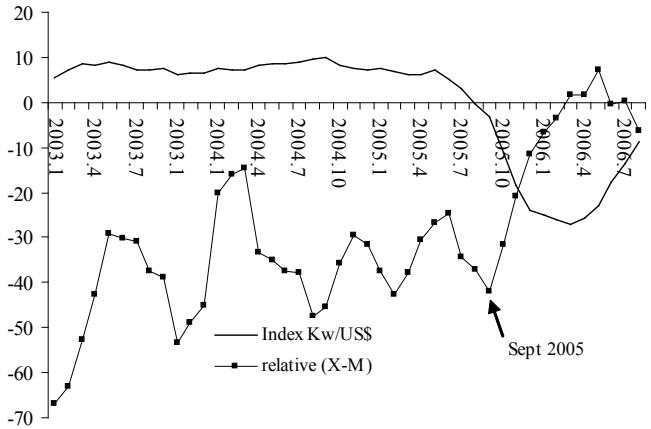
Table 4.1
Regression
Analysis of the
Nominal Exchange
Rate, January
2003–November
2006

Note: ln (BoZ forex sales) 3m is the three month average of BoZ foreign exchange sales (divided by an average of exports and imports), with the last month the current month for the dependent variable.

Dependent variable is nominal exchange rate	Coefficient	Standard Error	Significance of T
(Constant)	9.669	.231	.000
ln(Exports/Imports)t-1	-.153	.050	.004
ln(Copper Price)t-2	-.262	.044	.000
ln(Gross Reserves)t-1	-.108	.038	.007
ln(BoZ forex sales)3m	-.800	.278	.007
Election	.221	.050	.000
Adjusted R-square = .754	Degrees of freedom = 38		
F statistic = 27.36	Signif @ .000		
Durbin-Watson Stat =	1.474		

Figure 4.1
**Index of the Kwacha-
 US\$ Rate and the
 Relative Trade Balance,
 2003-2006 (3 month
 moving average)**

Notes: The Kwacha US\$ rate is measured as the rate in any month divided by the average for all months, and the average of the index set to zero. The relative trade deficit is $100 * [(X-M) / (.5(X+M))]$.



4

Figure 4.2
**Regression-Estimated
 and Actual Kwacha/US\$
 Rate, March 2003-
 November 2006**

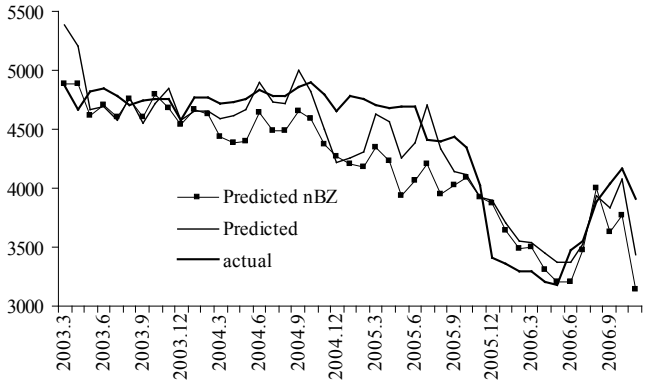
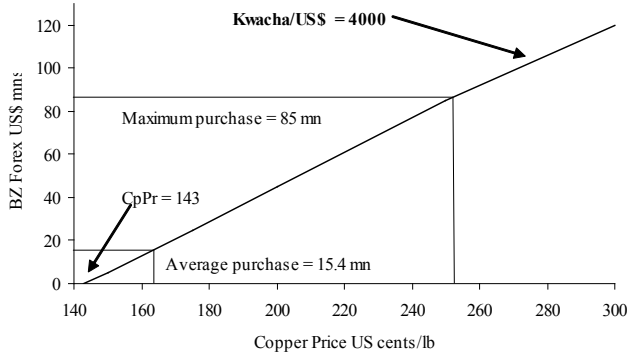


Figure 4.3
Regression-Estimated
Effect of Bank of
Zambia Foreign
Exchange Purchases for
Different Copper Prices
for Kwacha/US\$ = 4000

Notes: The calculation uses the regression model in Table 4.1. The scenario assumes that exports equal imports. It also assumes that initially gross reserves are two times the level of imports. Each intervention increases gross reserves by the amount of the purchase of foreign exchange.



5 Fiscal Effects of Appreciation (Fiscal Space)

The most important short term impact of the Kwacha appreciation may be its budgetary effects. The government operated under strict lender conditionalities on its fiscal deficit in the 2000s. In the context of these deficit limits, revenue shortfalls due to exchange rate appreciation could be a major constraint on effective budget planning. Any estimate of fiscal effects must be a counterfactual exercise: What would have happened had the appreciation not occurred or had it been less?

Specifying the counterfactual requires a choice of the exchange rate to which the actual exchange rate would be compared. A practical approach would be to choose the exchange rate on which the government would have based its budgetary planning for 2005 and subsequently. From May 2003 through the end of 2004, the Kwacha exchange rate to the dollar varied from a high of 4896 to a low of 4578 (average of 4766), a difference of less than seven percent, with a coefficient of variation of 1.5 percent. We assume that the government used the average for this period for its 2005 fiscal planning.⁶ On this assumption we can estimate the three major fiscal effects on the appreciation: 1) Trade taxes (Value Added Tax (VAT) on imports and tariffs); 2) External assistance (grants and loans); and 3) Servicing of the external debt. With the data available it was not possible to estimate the impact on the import content of public non-debt expenditures, and it is likely that this was small.⁷

Table 5.1 provides estimates of the counterfactual that in 2005 and 2006 the exchange remained at the average for May 2003 through December 2004. The gains or losses for ODA and debt service are simply calculated as the US dollar value times the difference between the actual quarterly exchange rate and the 2003-2004 average (for the months specified). The trade revenue gains and losses are the difference between the actual and regression-estimated values, in which revenue is a function of actual imports and the exchange rate (see Annex 3 for details).

As one would expect, the trade revenue losses are quite substantial, almost Kwacha (ZMK) 200 billion for the four quarters 2005.3-2006.2, and the ODA losses slightly higher. Over the same four quarters, the gain from lower Kwacha debt service was quite large at over ZMK 250 billion. Almost 80 percent of the gain on debt relief occurred in the last quarter of 2005. The sum of the three effects was a negative ZMK 154 billion, about thirty-five million US dollars at the average exchange rate for 2005 (see Figure 5.1).

The lower part of Table 5.1 gives the share in public revenue of these effects. During 2003 their sum was quite small, about .4 percent of public revenue, and -1.4 in 2004. The

6 On the basis of interviews, we concluded that this was de facto the case.

7 Inspection of annual expenditures shows that the overwhelming majority was for wages and salaries. Public sector imports would have been limited to 'consumables' (for example, printer ink) and the capital budget.

large devaluation at the end of 2005, because of Zambia's huge debt service, had a net fiscal effect for the entire year that was slightly positive (2.2 percent of public revenue). However, for the first five months of 2006 the impact was strongly negative, over 9 percent of public revenue.

Several conclusions can be drawn from the estimates of the fiscal effects of the appreciation. First, the positive fiscal effect on debt service of appreciation was rendered irrelevant for the present and future as a result of HIPC and MDRI debt relief. At the end of August 2007 the Kwacha stood at 4020 to the US dollar. Without debt service as a fiscal cushion, should it again appreciate toward the low 3000's, the budgetary effect would be devastating. For the last quarter of 2005 and first five months of 2006, the ODA and trade taxes effects created revenue declines of over 10 percent of public income. Were there complete data on the second quarter of 2006 (when the Kwacha averaged 3290) and the third quarter (below 4000), it is likely they would show even larger negative appreciation effects.

Figure 5.2 demonstrates the major fiscal consequences of appreciation. Using the method described in Annex 3, the diagram shows the share of ODA and trade taxes in GDP at different exchange rates.⁸ The diagram shows that at the exchange rate in January 2007, trade taxes accounted for about 4.5 percent of GDP. A return to the exchange rate in March 2006 would lower this share by a full percentage point, with a slightly larger percent loss for ODA. From a hypothetical position of a primary budget in balance with an exchange rate of 4100, an exchange rate of 3200 implies a 2 percent deficit, and the exchange rate prevailing in September 2004 brings the budget into surplus. Therefore, one can conclude:

Appreciation of the Kwacha had a substantial and negative impact on public income. Appreciation reduces fiscal space, requiring higher taxes, new taxes, or expenditure reduction.

From a fiscal perspective, Kwacha appreciation made it more difficult to fund poverty reduction and achieve the MDGs.

⁸ The diagram is a very simplified *ceteris paribus* relationship, for it assumes that appreciation would have no impact except on the public budget. Thus, it indicates is the impact effect, with no time for other variables to adjust.

Table 5.1
Quarterly Trade
Revenue, ODA and
Debt Service Gains
and Losses, 2003-
2006, absolute and
percentages of total
public revenue

Notes: The first two columns report actual figures, supplied by the Zambia Revenue Authority. The next four columns, 'Gains or losses', are calculated as follows: Trade – a regression was estimated in which trade taxes were a function of the US dollar value of imports and the exchange rate; the actual trade taxes were subtracted from values calculated using actual imports and the 'counterfactual' exchange rate (average exchange rate for May 2003 through December 2004, see Annex 3). ODA and Debt – Calculated as actual ODA and external debt service times the difference between the actual and counterfactual exchange rate. Sum – total of trade taxes, ODA and debt service. For 2006.2, April and May only.

Quarter	Total revenue	Trade revenue	Gains/ Trade	or losses ODA	Debt	Sum
	Kwacha billions					
2003.1	966	258	-42	-7	3.4	-39
2	1079	264	-10	-4	-11.0	-22
3	766	283	23	.0	.7	23
4	1101	328	23	-8.5	24.1	38
2004.1	1009	314	5	.0	.4	5
2	1142	356	-29	7.9	-8.8	-30
3	1215	375	-15	1.5	-1.5	-15
4	1275	408	30	-19.3	13.7	24
2005.1	1248	384	-3	-3	.3	-3
2	1398	412	-6	-22.2	12.8	-15
3	1579	471	-4	-1.3	9.8	5
4	1389	430	-26	-121.1	192.8	46
2006.1	1325	325	-95	-63.2	43.5	-115
2	915	249	-73	-32.5	15.8	-90
Sum*	2005.3-2006.2		-197	-218	262	-154
Percentages						
2003.1		26.7	-4.4	-1	.3	-4.1
2		24.5	-9	.0	-1.0	-2.0
3		36.9	2.9	.0	.1	3.0
4		29.8	2.1	-8	2.2	3.5
2004.1		31.1	.5	.0	.0	.5
2		31.2	-2.6	.7	-8	-2.6
3		30.9	-1.2	.1	-1	-1.2
4		32.0	2.3	-1.5	1.1	1.9
2005.1		30.8	-3	.0	.0	-3
2		29.4	-4	-1.6	.9	-1.1
3		29.8	-2	-1	.6	.3
4		31.0	-1.8	-8.7	13.9	3.3
2006.1		24.5	-7.2	-4.8	3.3	-8.7
2		27.2	-8.0	-3.6	1.7	-9.8

Figure 5.1
Quarterly Trade
Revenue, ODA and
Debt Service Gains and
Losses, 2003-2006,
percentages of total
public revenue

Source: Based on monthly data from the Zambia Revenue Authority.

Note: Data for third quarter of 2006 is for July and August only.

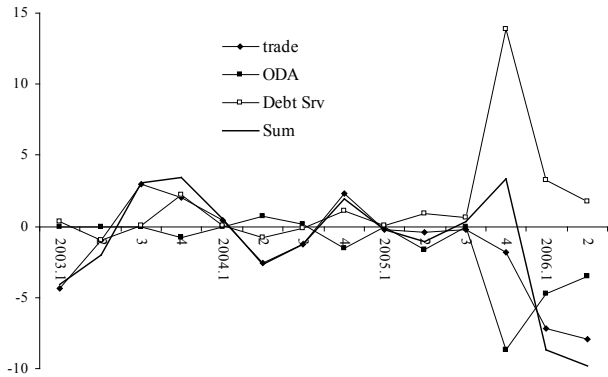
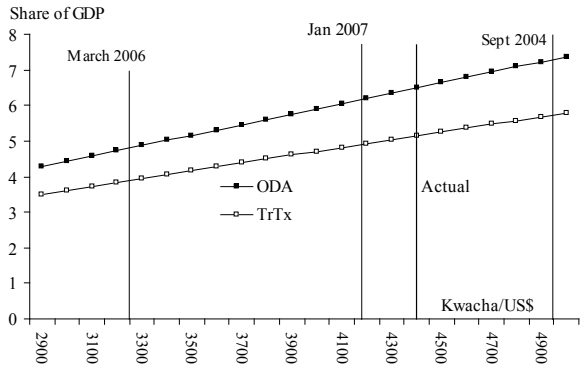


Figure 5.2
Trade Taxes and ODA
in 2005 at Different
Exchange Rates, (Share
of GDP)

Source: Ministry of Finance and National Planning, March 2006, 15.

Note: Converted at the average exchange rate for the year, the values were, trade taxes US\$ 482 million, ODA US\$ 382 million.



6 Domestic Price Effects

This section considers the domestic price effects of the movements in the Kwacha and the welfare implications of those price movements. The purpose is to investigate whether currency movements resulted in the relative price changes predicted by theory, and to draw inferences about welfare and efficiency effects. As observed earlier, theory predicts that domestic prices of tradable commodities should fall as the currency appreciates, and the prices of non-tradables should rise. The calculations use the monthly prices of specific consumer commodities reported in the Monthly Bulletin published by the Central Statistical Office (www.zamstats.gov.zm).

First we consider petroleum prices, which BoZ experts identified as the most important in terms of domestic economic impact. Of all commodities, petroleum is perhaps the pure tradable, and is 100 percent imported in the case of Zambia. By definition, the domestic price of petroleum is:

$$P_z \equiv (P_w)(K_d)(M_z)$$

Where P_z is the Zambia price of the petroleum product in US dollars, P_w is the world price in dollars K_d is the Kwacha-dollar exchange rate, and M_z is the mark-up by domestic wholesalers and retailer.

To avoid the need to specify the international product, we use price indices that assume that the mark-up is the same for all petroleum commodities.⁹ Using indices, Figure 6.1 decomposes the domestic price, actual prices of premium grade petrol at the pump, the price with the Kwacha held constant at its June 2006 value, and the price calculated by multiplying the international price of petroleum times the actual Kwacha-dollar exchange rate. The latter counterfactual is called the ‘full adjustment’ price. If the domestic mark-ups were constant, then the domestic price would move identically with international prices and the exchange rate. By definition, any difference between the two would be evidence of market power preventing complete adjustment to border prices. The diagram suggests that a substantial proportion of prices changes due to the exchange rate were passed on to the domestic market. The dashed line shows the counterfactual in which domestic retailers adjusted prices to changes in the world petroleum price, but not to the Kwacha. Here, the Kwacha is held at an average value of 116 for the twenty months, compared to 102 for the index of the average price. The hypothetical ‘full adjustment’ has an average index of 96,

⁹ The discussion is limited to the price of premium grade petrol. The results for diesel fuel and paraffin are almost identical, so they are not included.

which suggests that while 14 percentage points were passed on to the domestic market, 6 percentage points were not.

This partial transmission of international price and exchange rate changes is supported by a regression exercise. If the equation above is treated as a behavioural relationship, the elasticity of the domestic petroleum price with respect to the Kwacha was less than .50, and with respect to the world petroleum price slightly over .50 (see note to Figure 6.1). Further, the highest significance for both coefficients was achieved with a time lag of two months, indicating that domestic price adjustment is delayed as well as partial. The most obvious interpretation of the partial and delayed adjustment is market power at the wholesale and retail levels in Zambia. Figure 6.2 provides statistics consistent with this interpretation. During the months of a relatively constant Kwacha-dollar rate, the average difference between 'full adjustment' and the actual domestic petrol price was quite small. In the period of an appreciating Kwacha the percentage point differences increased substantially, to eleven, twenty-four, and then thirty-five percentage points. Once the Kwacha began to depreciate, the differential fell sharply.

This pattern suggests a 'ratchet effect' in pricing, in which wholesalers and retailers raise domestic petroleum prices quickly in response to devaluation,¹⁰ but adjustment to appreciation is slow and partial. This behaviour may indicate a need for the government to consider measures to force greater price competition on the retail petroleum sector. We can conclude that appreciation was associated with lower domestic petrol prices, but prices fell less than the potential implied by market fundamentals.

The result for petroleum can be compared to that for white maize. While yellow and white maize are internationally traded commodities (the latter much less than the former), a statistical exercise found no correlation between monthly prices in Zambia and any readily available time series on world market prices. This is in contrast to high correlation between the international price and Zambian price of petrol. Therefore, we feel justified to treat the Central Statistical Office (CSO) time series on white maize as a non-traded or semi-traded commodity. In this case, the theoretical prediction is that to the extent that white maize is non-traded, its price should fall with depreciation of the Kwacha and rise with appreciation.

Table 6.3 suggests that the prices of white maize had a significant and negative correlation with the Kwacha-dollar rate. This is consistent with white maize being a non-traded or semi-traded commodity. A rising price of white maize would have negative welfare impact on net maize buyers and a positive impact on net maize sellers. In 2005, about 40 percent of Zambians lived in urban areas, almost all of whom were net maize buyers.

It is unlikely that rural net maize sellers exceeded this percentage, because a substantial portion of rural households either do not grow maize or their production is less than their

10 The 'ratchet effect' is associated with the work on J S Bain in the field of industrial organization in the 1950s.

consumption (see Chapter 3, Weeks, et. al. 2006). Therefore, in the short term the net effect on maize prices of the appreciation of the Kwacha was negative in terms of household welfare, especially for the urban and rural poor, who both are overwhelmingly net food buyers. It is sometimes argued that in the medium term increased maize prices result in increased production that drives prices back down. Therefore, the welfare loss of maize buyers is temporary. This argument confuses movements along a demand schedule with shifts in the schedule. That prices go down and up and down again (movements along the schedule) does not cancel welfare effects of price changes.

Longer term gains result from outward shifts in the supply schedule. It may be that the fall in the price of agricultural tradables, for example coffee and flowers, would shift resources into maize, shifting supply functions and increasing the aggregate supply curve for maize. It could also be argued that the principal release of resources resulting from a fall in the profitability of agricultural tradables could be in the form of labour, and maize production is not constrained by the labour input.

Probable price effects of the movements in the Kwacha can be summarised as follows:

1. It appears that relative prices moved as theory would predict, with appreciation (depreciation) raising (lowering) the relative prices of non-tradables;
2. Domestic petroleum prices were positively correlated with the Kwacha-dollar rate, but the adjustment was not complete, indicating considerable market power on the part of wholesalers and retailers;
3. Maize prices rose, and it is probable that the welfare effect was negative, especially for households in poverty.

6

Figure 6.1
Calculation of Exchange
Rate Effect, Premium Petrol
Price, 2005-2007 (June 2005
=100)

Note: The regression relationship for the domestic petrol price (Pz) as a function of the exchange rate (Kd) and world petroleum price (Pw) is:

$$\ln(Pz) = 2.54 + .46\ln(Kd)t-1 + .517(Pw)t-2$$

(.01) (.00) (.00)

R2 = .76, F = 33.8, DF = 21
 (Probability that the statistic is zero is given under the coefficient).

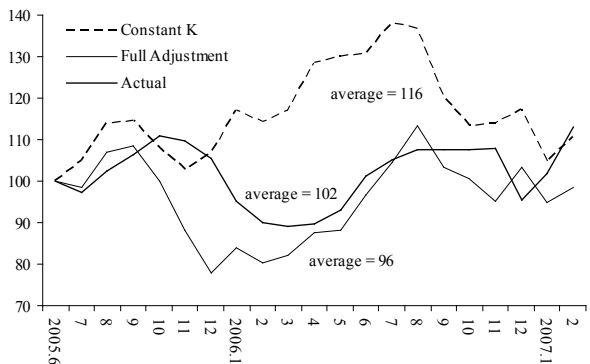


Figure 6.2
Percentage Point
Difference between
Hypothetical Full
Adjustment and Actual
Domestic Petroleum
Price

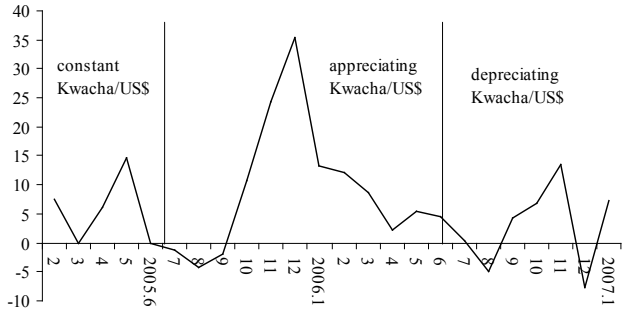
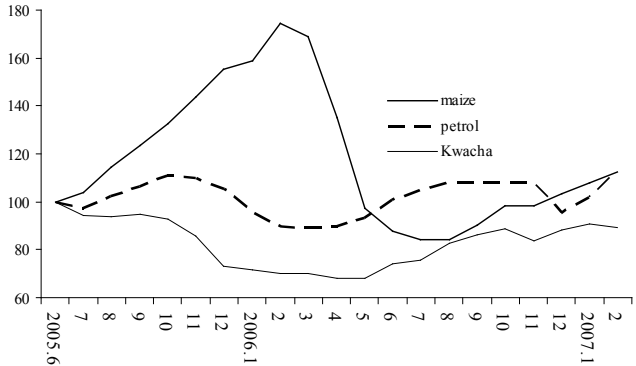


Figure 6.3: Price Indices
of Maize and Petrol,
2005-2007 (June 2005
=100)

Notes: The simple correlation between the petrol price and the Kwacha is .80, and the elasticity between the two is not significantly different from zero. The correlation between the monthly maize price and the Kwacha for 2004-2007 is .30 (F = 13.3), and the elasticity between the two is -.31.



7 Kwacha Appreciation and Tradable Commodities

7.1 Overall Competitiveness in Trade

Perhaps the most frequent concern expressed about the rapid appreciation of the Kwacha beginning in November 2005 was that it would undermine the export diversification that had occurred in previous years. Some of those interviewed by the assessment group were concerned that the appreciation and instability in the movement of the Kwacha would not only erode the profitability of business enterprises, but it would also undermine their long-term planning. This would particularly affect decisions on the level of production. It was mentioned in certain sectors that profitability had been reduced so much that some enterprises ceased operations.¹¹

One of the major concerns was that the appreciation would retard the growth of non-traditional exports, and return the country to dependency on mining, and its associated vulnerability to instability in international markets. At the time this report was written, it was too early to determine definitively the response of various sectors to the Kwacha appreciation. However, theory suggests that workers in the adversely affected sectors could migrate to the less affected sectors, such as the mining (particularly copper) sector, hence displaying some of the classical features of the Dutch disease syndrome.

To begin the analysis of exchange rate movements, we consider the movement of the Kwacha with respect to the currencies of Zambia's major trading partners, the European Union (Euro), South Africa (the Rand), the United Kingdom (Pound Sterling), and the United States (the US Dollar). Figure 7.1 shows an index of the monthly ratio of the Kwacha to these currencies from October 2004 to April 2007 with the average of all months as 100. At the beginning of the period the Kwacha stood at about 120 compared to all four currencies, and in May 2006 had declined to approximately 75 in each case, an appreciation of 60 percent in nominal terms. For eight months, December 2005 through July 2006, Kwacha appreciation averaged 79 for the Euro, 83 for the Rand, 78 for the pound sterling and eighty-one for the US dollar. Thus, the decline in competitiveness with regard to major trading partners was both substantial and sustained for almost three quarters. After July 2006, the appreciation reversed, especially for the Euro. However, the Kwacha retrained an appreciation of 20 percent or more for August 2006 through April 2007.

The major impact of the appreciation of the Kwacha relatively to these currencies was on imports, with the partial exception of South Africa which has some exports that are competing with Zambia's. Aggregate export competitiveness would be indicated by the

11 Some farmers the mission met reported that producers in the cotton and tobacco sub-sectors had ceased production due to the escalation of costs by the rapid appreciation of the Kwacha. A recurring complaint was that farmers were adversely affecting their input costs, and price decreases had minimal impact on their cost of living.

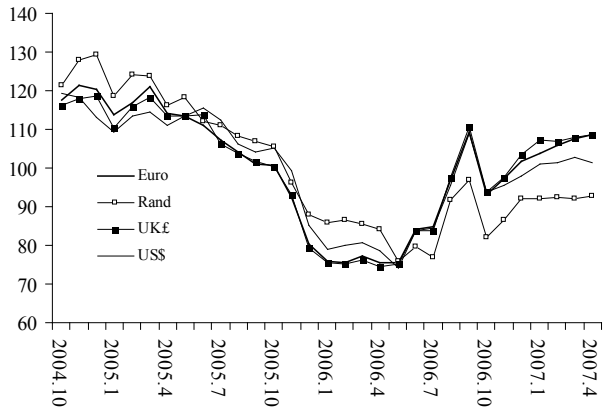
movement of the Kwacha with respect to its competitors. Indeed, if it were the case that the Kwacha appreciated with respect to its import source countries but not with respect to countries supplying similar exports, the effect could on balance be positive, cheapening imports while not reducing export competitiveness. Figure 7.2 shows the nominal movements of six currencies with respect to the US dollar, Zambia itself, South Africa, Kenya, Tanzania, Uganda and Malawi, with October 2004 as the base month. From October 2004 through June 2005 the six currencies showed similar movements with respect to the US dollar, all averaging slightly above or below the base month. For the nine months, November 2005 through July 2006, the Kwacha appreciated sharply against the currencies of the competitor countries, from a high of 69 percent compared to the Malawi Kwacha to a low of 31 percent with respect to the Kenyan Shilling. Despite the subsequent depreciation, the Kwacha in March 2007 still remained strongly appreciated against each of these currencies except the Kenyan Shilling.

Domestic inflation renders each country's exports more expensive in trade. In Figure 7.3, the nominal exchange rate with respect to the US dollar of the five competitor countries has been divided by the domestic price level, then, the same calculation for Zambia is subtracted from each. This calculation incorporates both differences in nominal movements of the currencies with respect to the dollar and the effect of differences in inflation rates. To the extent that the consumer price index for each country indicates changes in the prices of tradables, this measure is a superior indicator of competitiveness than the simple comparison of nominal exchange rates in Figure 7.2. Figure 7.3 indicates that at the beginning of 2007, Zambia's competitiveness had declined with respect to all the other currencies except that of Kenya: Tanzania and South Africa by forty percentage points, Malawi by over thirty, and Uganda by almost twenty.

On the basis of the calculations shown in Figures 7.1-7.3, one can conclude the following:

1. It is probable that the appreciation of the Kwacha compared to the currencies of Zambia's major trading partners had the positive effect of making imports cheaper without reducing export competitiveness because of the lack of common export commodities with these partners; and
2. The movement of the Kwacha with respect to the currencies of export competitors had the likely effect of a substantial reduction in international competitiveness.

Figure 7.1
Nominal Kwacha Exchange Rate for Major Trading Partners, October 2004–April 2007



7

Figure 7.2
Nominal Exchange rates to the US Dollar, Zambia and Five Competitors, October 2004 – March 2007

Note: An increase is a depreciation.

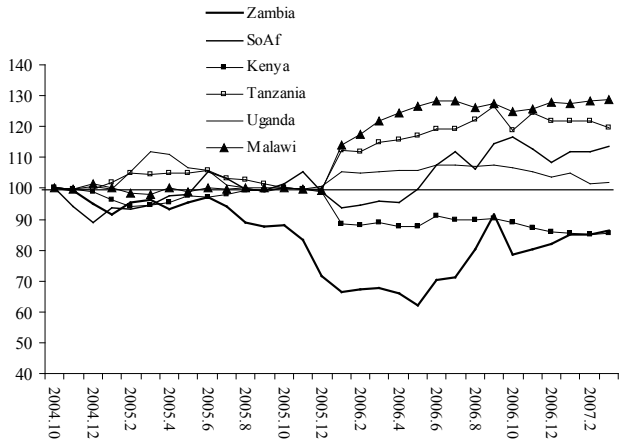
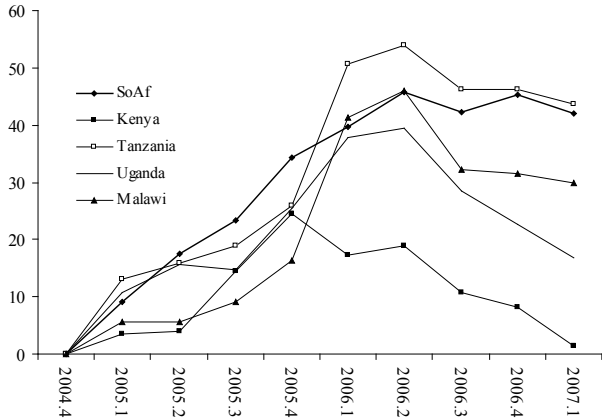


Figure 7.3
Nominal Exchange Rates Divided by the Domestic Price Level, Five Competitors Relatively to Zambia, last quarter 2004 – first quarter 2007

Note: For each country the nominal exchange rate was divided by the national consumer price index (other relevant indices not available on a monthly basis), then the same calculation for Zambia subtracted from each. The last quarter of 2004 set to 100 for all five and Zambia. A value greater than zero is a depreciation of the relevant currency relatively to the Kwacha.



7.2 Evidence by Sectors and Commodities

The analysis of the possible sectoral impact of movements in the Kwacha begins with the manufacturing sector as a whole. BoZ publishes a quarterly review of ‘business opinion and expectations’, which includes estimates of capacity utilisation, and changes in output, sales, prices and exports.

Table 7.2 provides the statistics from a simple regression of the Kwacha-US dollar exchange rate, lagged one quarter, on four manufacturing indicators, the estimated level of capacity utilisation, and the rate of change of sales, exports and prices.¹² The coefficient on the exchange rate is non-significant for capacity utilisation, but significant at greater than 90 percent for sales, exports and prices. The coefficients indicate that a 10 percent appreciation would: 1) Reduce the share of firms that increase sales by 8 percent, and 2) Reduce by 50 percent the firms with increasing exports. The larger elasticity for sales can be explained by a double effect of appreciation, reducing exports incentives and making import substitutes cheaper. With regard to prices, it appears that the manufacturing sector was highly sensitive to import competition. The simple regression suggests that a 10 percent appreciation would decrease the number of firms increasing prices by almost 20 percent.¹³

¹² The numbers for sales, exports and prices are the net percentage of informants reporting increases, to the average reported increase across respondents.

¹³ The regression should not be interpreted as indicating that a 10 percent appreciation would result in a 20 percent price decline. See previous footnote.

While on the one hand the statistics indicate a benefit to buyers of a decline in manufacturing prices, on the other, this decline was associated with falling sales and exports. It is reasonable to assume that the fall in sales and exports implies a fall in employment. These statistics must be viewed with caution, because they are based on replies to questionnaires rather than direct observation. However, they conform to what theory would predict: appreciation has a negative impact on sales and exports in manufacturing sectors, and reduces prices in the sector as well as probably employment.

Turning to specific commodity exports, there appear to be asymmetries in the way the Kwacha appreciation affected various export commodities. The second column of table 7.1 shows the cross-correlations between the nominal exchange rate and the US dollar value of exports from various sectors of the economy. These cross-correlations indicate the degree to which the exchange rate and export volumes have moved together over time. The analysis is partial because it does not take into account other possible influences on export volumes. Only cobalt shows a negative correlation with the nominal exchange rate, and this is insignificant at 95 percent confidence level. Copper is positively correlated but with a low correlation coefficient of .22. Cotton and sugar return positive correlations with a slightly higher coefficient of .36. Overall, agricultural exports, livestock exports, flowers, horticulture and tobacco are highly correlated with the nominal exchange rate. According to the elasticities approach to the balance of payments, these results suggest that the appreciation is like to adversely affect livestock, flowers, horticulture and tobacco exports by more than 50 percent of the rate of appreciation. The results suggest that the export sectors would be negatively affected by appreciation with an elasticity less than unity.

In addition to annual data, there are disaggregated monthly statistics for exports for 2000-2004. The data are for exports in current dollars, and no appropriate deflator is available. With this problem in mind, we estimate a partial adjustment export function for seven export sectors. In the model, actual exports adjust to the difference between the previous period's exports and the desired level, with the desired level determined by the nominal exchange rate. A shift variable is included, taking a value of unity when the US dollar exchange is less than 4000. Since several of the commodities are agricultural, binary monthly adjustment variables are included, with January omitted. For all commodities but copper wire Zambia is assumed to be a 'small country'; i.e., its international market share is so small that producers assume that there is no demand constraint. The model is estimated in natural logarithms and ϵ is the error term.

$$\ln X_i(t) = \alpha_0 + \alpha_1 \ln X_i(t-1) + \alpha_2 \ln K_i(tn) + \beta_1 S + \beta_2 M_2 + \dots + \beta_{12} M_{12} + \epsilon$$

Where X_i is exports of commodity i in periods t and $t-1$, K is the nominal US dollar exchange rate with an unspecified lag, S is the binary shift variable, and the M 's are months.

The results are reported in Table 7.3 for seven commodities. For four of the seven equations there is no autocorrelation found and for three the test for autocorrelation is inconclusive, though the presence of a lagged variable creates a bias toward a negative finding. Except for tobacco, the lagged export variable indicates that about half the desired adjustment is achieved in the first period (four of seven coefficients lie in the range .43 to .52, and the single period adjustment are one minus these values). For two commodities, cotton products and refined sugar, the Kwacha variable is significant and of the predicted sign. The elasticity is quite high for both, suggesting that an appreciation of 1 percent reduces the current value of exports by almost 5 percent for cotton and almost 6 percent for sugar. For cotton, the shift variable is positive, suggesting some unspecified stimulus to exports such as a cost reduction. It is not surprising that only the monthly adjustment variables are significant for coffee, since this is a tree crop, and production decisions are likely to be relatively insensitive to short term movements in the exchange rate.

In the case of copper wire, a one percent appreciation is associated with an increase in exports of three-quarters of a percent, and world demand is income inelastic (.59). In addition, the shift variable is negative. Because the effect of a change in the exchange rate must always be greater on the output price than on current cost (which include non-traded labour), it is not clear why the coefficients on the exchange rate and shift variable are negative. Two possibilities are 1) That the exporters of copper wire have large dollar denominated debts whose debt service is reduced by appreciations high enough to overwhelm the non-traded costs (the negative Kwacha coefficient); and 2) Appreciation prompted producers to shift sales from exports to the domestic market (the negative shift coefficient).

Given the data problems and the possibilities of statistical bias, the results in Table 7.3 should be interpreted with caution. One can conclude that there is weak support for the hypothesis that negative effects on some export commodities had manifested themselves by early 2007, much as theory would predict.

Table 7.1
Correlation of
Sectoral exports
with the Kwacha-
US\$ Rate, Annual
Data 1995-2005

Source: Compiled using data from ZNFU study and IFS.

Variable	Correlation with NER	Variance
Nominal Exchange Rate (NER)	1.00	1.00
Cotton	0.36	0.13
Tobacco	0.61	0.37
Sugar	0.36	0.13
Horticulture	0.92	0.85
Flowers	0.57	0.32
Livestock	0.70	0.49
Agricultural exports	0.76	0.58
Real Effective Exchange Rate (REER)	0.61	0.37
Copper	0.22	0.05
Cobalt	-0.03	0.00

7

Table 7.2
Correlation between
Manufacturing
Indicators and the
Kwacha-US\$ Rate,
Quarterly Data (first
differences), 2003-2006

Notes: The values of non-significant (nsgn) coefficients are not reported. Below the coefficient is the level of significance. The hypothesis of autocorrelation can be rejected in all cases. The F-statistic is omitted because its significance is the same as for the T-statistic for a simple regression. The original data refer to the percentage of responding establishments that increased sales, exports and prices, not the amount by which these increased.

Source: BoZ, Quarterly Survey of Business (March 2005, April 2007).

	Constant	Kwacha t-1	Adjusted R-square	D-W stat	DF
Capacity utilisation			.01	.80	12
	nsgn	nsgn			
Sales		.82	.20	1.12	13
	nsgn	@ .05			
Exports		.51	.19	.90	13
	nsgn	@ .06			
Prices	nsgn	1.972	.39	.60	13
		@ .01			

Table 7.3 Estimation of Export Functions for Seven Commodities, Monthly Data, 2000-2007

Product	Constant	X(t-1)	Kwacha	WD(t-1)	Shift	Monthly adjustment	Adjusted R-sq	F-stat	D-W	DF
Copper wire (1)	5.50 @ .08	.48 @ .00	-.75 @ .07	.59 @ .03	-.48 @ .04	none	.30	9.47 @ .00	1.74 Inc	77
Flowers	4.72 @ .09	.43 @ .00	nsgn		nsgn	March, June, July	.55	6.02 @ .00	1.78 Inc	68
Cotton products (1)	-9.44 @ .02	.52 @ .00	4.76 @ .01		.32 @ .04	April, August	.53	7.66 @ .00	2.06 NAC ^a	70
Refined sugar (2)	-11.74 nsgn	.19 @ .08	5.91 @ .09		nsgn	none	.06	2.66 @ .05	1.99 NAC	81
Fruit & vegetables	nsgn	nsgn	nsgn		nsgn	May, June, July, August, Sept	.21	2.23 @ .02	1.96 NAC	47
Coffee	nsgn	nsgn	nsgn		nsgn	June, July	.32	3.02 @ .00	2.00 NAC	46
Tobacco	nsgn	.48 @ .00	nsgn		nsgn	March, June, July	.45	5.89 @ .00	1.84 Inc	70

Notes:

1. The Kwacha variable is the average nominal exchange rate for the previous four months.

2. The Kwacha variable is the average nominal exchange rate lagged one month.

Months in bold had negative coefficients.

For the Durbin-Watson statistic, Inc is 'inconclusive', and NAC is 'do not reject the hypothesis of no autocorrelation'.

Source:

Bank of Zambia

a NAC: no autocorrelation

7.3 Other Evidence by Sector

BoZ carried out a survey on the impact of the Kwacha appreciation on the performance of non-traditional exporters and the tourism industry, covering 180 companies, of which 155 responded (a response rate of over 85 percent).¹⁴ Over 70 percent of respondents claimed to be adversely affected, while only 7 percent were favourably affected. Adverse effects were reported in firms that exported more than 80 percent of their production and in those with less than 30 percent import content in their production. No firm exporting more than 60 percent of its output reported to have been favourably affected. Further, the firms that quoted the price of their exports in foreign currency (US dollars in almost all cases) were adversely affected.

¹⁴ Twenty-six companies had stopped exporting or were under the same management as other respondents.

A sectoral analysis of the effect of the Kwacha appreciation shows that percentage of respondents who were adversely affected was 83 percent in agriculture, 78 percent in tourism, 100 percent in the gemstone mining sector, 57 percent in the manufacturing and seventy-one in mining. Those affected positively were 3 percent in agriculture and tourism, 16 percent in manufacturing and none in mining. The survey also reported that the steps taken by firms to remain profitable included improving productivity and reducing costs (including labour costs), raising the selling price (although this reduced competitiveness), and importing inputs directly. Positively affected firms did not consider lowering labour costs, while unaffected firms did not raise prices or lower labour costs, although they sought to finance local costs by increased local sales, and imports by export revenues. It is not possible to comment on the methodology and rigour of this survey as we had no access to its annexes. It was not possible to determine the nature of the problems experienced by companies, and therefore to supplement information on our estimates of elasticities.

A Zambia National Farmers Union (ZNFU) study was undertaken in response to requests by its members to study the potential impact of the Kwacha appreciation on the sector, and to recommend mitigating actions. The study noted that agriculture comprised over 17 percent of the Zambian GDP, contributed 20 percent to foreign exchange earnings, employed over 71 percent of Zambia's labour force, and estimated that it supported over 70 percent of poor households. The study also stressed that most of the non-traditional exports, which are key to diversifying Zambia's economy away from the volatile mineral exports, are from agriculture.

The study found that the rapid Kwacha appreciation reduced the value of agricultural exports by over 30 percent, forcing reductions in farm-gate pricing and eroding exporter profit margins. It also found that the largest exporters in cotton, horticulture and tobacco experienced the greatest reductions in profits, while floriculture with a lower domestic content experienced less pressure from a strong Kwacha. A simulation of different exchange rates found that at a Kwacha 2500 exchange rate to the dollar there would be mass exit of enterprises from the agricultural sector. At Kwacha 3500 to the US dollar, agricultural export earnings would fall by more than 38 percent and adversely affect more than one hundred and ninety thousand farm households. A permanent appreciation would also affect agricultural production for domestic consumption, as imports become more competitive with local products (maize, wheat and dairy products).

The study concluded that all agricultural exporters suffered a decline in the Kwacha value of foreign currency revenues in direct proportion to the change in exchange rate of the Kwacha; that is, the market adjustment to appreciation was total. However, the extent of this decline depended on the extent of dependency of the sectors on Kwacha-based expenses. As noted above, floriculture was the least affected sector, because of its low labour costs. The profitability of the export of honey was highly sensitive to exchange rate changes because almost all of its production costs were in Kwacha.

7.4 Evidence from Stakeholders

The mission held discussions with stakeholders from different sectors, sectoral associations, government departments, international organisations, business enterprises, one non-governmental organisation, one bank, and two parastatal organisations. These discussions were useful, not least in revealing the issues stakeholders were concerned about and which may merit systematic research. We highlight the key issues raised by stakeholders, most of which referred to the level, unpredictability and volatility of the Kwacha.

Most respondents were concerned that exchange rate volatility limited the extent to which they could plan for the future. Respondents from the tourism sector stressed the importance of a stable exchange rate for their planning. There was a consensus that a Kwacharate below 3200 per US dollar would lead to mass exit from export sector overall, and one about 3500 might keep participants in operation with low profitability. Part of this consensus resulted from the judgement that in almost all sectors the costs of production were not reduced in line with the exchange rate. In dollar terms, the costs of production increased, making exported products less competitive on the international markets and imported products more competitive on the domestic market. While this may be a short-term phenomenon, uncertainty about exchange rate movements does not help planning or to undertake mitigating measures.

Many farmers, particularly in the tobacco and horticulture sectors were apprehensive of the impact of the appreciation on their ability to maintain their international markets. In the tobacco sector closure of production by some farmers may lead to falling volumes available for exports, resulting in international clients seeking more reliable suppliers in competing countries. Furthermore, it would seem that operators in the tourist sector are price takers, though research is needed to verify this.¹⁵ If so, they would lose their market share if they were to increase their prices, as clients would switch to competitors in South Africa, Botswana and Kenya.

Farmers in the tobacco sector also expressed concern that the loans they contracted could not be serviced at the appreciated exchange rate. Fore-closures by banks would lead to capital wastage because investments in curing plants could not be sold to other sectors. For tobacco, flowers and cotton the local market is small and saturated. Therefore, the possibility of increasing sales domestically was very limited. The appreciation also meant loss of competitiveness to imports, thus limiting the extent to which local production could increase its local market share.

With the exception of floriculture, labour in most of the non-mining sectors accounted for over 20 percent of variable costs. Permanent appreciation of the Kwacha could lead to mechanisation and unemployment. This would have multiple effects, including loss of quality obtainable through labour rather than mechanisation, and increasing poverty. It

15 It was the opinion of one prominent operator in the tourist sector that Zambian companies were not price takers, because of the segmentation of the tourist trade by country.

was reported that in Livingstone, one tour operator laid off 20 percent of its labour force. Cotton out-growers were reported to be in protracted discussions with exporters as the latter sought to lower the price paid to farmers. Although this might reduce the cost structure of the exporter in the short term, out-growers might shift to non-export crops if cotton were to become relatively unprofitable.

Respondents considered government non-intervention in the foreign exchange market to be the result of the political importance of mining. As copper exports are likely to be volatile, with falling prices anticipated in a few years, the respondents judged the apparent lack of adequate intervention by BoZ to be short-sighted and dysfunctional for economic growth. There were repeated calls for exchange rate management and/or provision for agricultural financing, e.g. through agricultural bonds.

In this context of exchange rate uncertainty, respondents lamented the underdevelopment of the financial sector, where few products existed to hedge against exchange rate changes. The few hedging options that did exist were prohibitively expensive, undermining profitability even more than appreciation itself. Moreover, as exchange rate volatility increases, so would the risk premium.

7 7.5 Probable Impact across Sectors

Economic theory suggests that appreciation of the local currency is likely to have a negative impact on the performance of the export sector through decreasing the local currency equivalent of the net earnings from exports. Being a small open economy, Zambia faces an inelastic international price structure. Therefore, Zambia's non-mining exporters cannot affect the international prices of their products. Using our quantitative and qualitative evidence, Table 7.4 summarises the likely effect of appreciation by major non-mining export. The table provides a summary of the characteristics of each product, followed by the source for that information, and, finally, our judgement as to the likely impact of appreciation.

When reviewing the table, one should remember that the rapid appreciation of the Kwacha began in November 2005, only seventeen months before this report was completed. Sufficient data had not been collected to indicate more precisely the impact of appreciation on the tradable sectors of the economy. Perhaps more important, in May 2007 it was too soon for many producers of tradables to decide what the impact would be. It is hardly surprising that in interviews those enterprises receiving revenue in foreign exchange described the effect of the appreciation over the range dire to catastrophic. Equally to be expected, those receiving revenue in Kwacha were more sanguine. These opinions were informative and often supported by logic and experience. However, they were not sufficiently broad-based or representative to allow for definitive conclusions. Therefore, the best we can do at this early stage is to offer the general points in previous sections, and indicate research priorities for the future.

Finally, it should be noted that prior to the rapid nominal appreciation of the Kwacha

at the end of 2005 the purchasing power parity measure of the RER had been appreciating for four years. On the eve of the appreciation 'shock' of November 2005, the RER was 50 percent above its value in June 2003 (see Weeks et. al., 2006, Chapter 2). This appreciating trend and sudden shock lends itself to a quite negative interpretation, supported by our interviews. Producers of tradables had been trying to adapt to an appreciating exchange rate for several years. It would be reasonable to assume that by mid-2005, a large proportion of tradable enterprises were near the limit of their capacity to adapt. In this circumstance, the very large appreciations in November 2005 through January 2006 may have been a trigger that brought disaster to the tradable sector. In December 2006, when the mission collected its information, there was no clear evidence of such a disaster. In agriculture one would not expect such a development to manifest itself until the 2005-2006 crop cycle. Further, in both agriculture and manufacturing, producers would continue to honour medium term contracts, which would also delay the manifestation of a crisis.

Table 7.4 Summary of likely impact of appreciation on various export products

Note: VC is variable costs of production. Information obtained from the ZNFU (2006) study.

Product	Characteristics	Empirical studies	Likely impact of Kwacha appreciation
1. Tobacco	Competitive market, labour cost 21% of VC1; import content 38% of VC; high capital costs (and thus debt stock) 16% of VC; limited alternative options for enterprise; loan servicing >13% of VC; net profit share of turnover 5% at K4,500 and -1% (if inputs at old rates and sales at K3,500), or -11% if both at K3,500	ZNFU 2006	Strongly negative due to labour intensiveness
2. Cotton	Oligopolistic domestic market and competitive international market, low capital intensity (<7%); imported inputs content >14% of VC; Kwacha costs > 84% of VC ; net profit share of turnover 2% at K4,500 and -6% at K3,500	ZNFU 2006	Strongly negative due to labour intensiveness
3. Floricultural exports	Competitive market, substantial import costs > 76% of VC, low labour costs 6.7% of VC; high transportation costs, highly capital intensive >470% of VC; loan servicing > 13% of VC; net profit share of turnover 14% at K4,500; 9% at K3500 and -1% at K,500	ZNFU 2006	Less negative since ratio of local/foreign costs is low.
4. Horticultural exports	Competitive market; labour 22% of VC; imported inputs content > 43% of VC; local input content >56% of VC; Capital input >17%; net profit share of turnover 3% at K4,500 and -5% (if inputs at old rates and sales at K3500), or -7% if both at K3500	ZNFU 2006	Strongly negative due high local input content
5. Coffee	Competitive market; labour intensive with costs >22% of VC, costs predominantly Kwacha > 52% of VC, long-term financing – interest costs >13% of VC; imported input content > 35% of VC; net profit share of turnover 4% at K4500 and -10% at K3500	ZNFU 2006	Strongly negative due to high local input and Kwacha costs content.

6. Sugar	Competitive market; local consumption = 50% production; local inputs Kwacha costs >80% of VC; imported input content 20% of VC; net profit share of turnover 13% at K4500 and -2% at K3500 and no VAT and -13% at K3500 with VAT	ZNFU 2006	Strongly negative due to high Kwacha costs (although this is mitigated by sale of 50% of production in Kwacha) and increasing imports due to cheapness of foreign priced sugar in Kwacha.
7. Paprika	Imported input content >50% of VC; labour costs >23% of VC; Kwacha costs > 36% of VC; loan servicing costs > 13% of VC; net profit share of turnover 17% at K4500 and 9% (if inputs at old rates and sales at K3500), or 4% if both at K3500	ZNFU 2006	Less negative, and likely to be an alternative option for farmers from other sectors.
8. Honey	Competitive market; 100% of variable costs in Kwacha.	ZNFU 2006	Strongly negative since all costs are Kwacha based, although there is no clarity on proportion sold locally.
9. Tourism	Competitive market; prices set at least one year in advance; price takers; labour intensive; revenue in dollars while costs in Kwacha, high international marketing costs;	None	Strongly negative due to Kwacha-based costs and advance price fixing practice. Market differentiation reduces exchange rate effect.
10. Maize	Competitive market; staple food – inelastic demand but also price protected; high competition from neighbouring countries; imported input content > 24% of VC; Kwacha-based costs > 50% of VC; loan servicing > 22% of VC; net profit share of turnover at K4500 8%; K4500 -14% of VC (if inputs at K4500 and output at K3500), or -3% if both at K3,500	ZNFU 2006	Strongly negative due to high Kwacha-based costs and cheaper imports in Kwacha terms.
11. Wheat	Competitive market; high capital cost due to irrigation; high proportion of imported input costs > 67% of VC; low proportion of Kwacha-based costs < 11% of VC; high loan servicing costs < 23% of VC; net profit share of turnover at K4500 of 5% and at K3500 of -7%.	ZNFU 2006	Less negative, although will be affected by high increase in indebtedness vis-à-vis Kwacha earnings.

8 Policy Action

8.1 Why Action is Necessary

After review of the evidence, we conclude that short term management of the exchange rate is necessary, and that this should take place within a long term development framework. BoZ has demonstrated its ability to achieve effective short term management. It is the role of the government to determine the long term strategy within which BoZ should operate. A purposeful strategy is necessary in order to prevent a return to excessive dependence on copper. Further, exchange rate management would have a positive effect on fiscal planning. Successful exchange rate management would be part of an overall development strategy, in which macro management is the short term component. There has been a tendency in Zambia over the last two decades for governments to follow the approach of ‘get the short term economic management right and the long run will take care of itself’. In a natural resource based country, this is and has been a recipe for slow growth and copper dependence.

8.2 Improving Policy Implementation

Several macro conditionalities limit the capacity of the government and BoZ to establish and maintain a rational and effective exchange rate policy. Monetary targets limit the capacity to carry out foreign exchange operations, because they imply that these operations must be sterilised. This conditionality was designed for a stagflation context and is not currently relevant.

There is a large body of literature which shows exchange rate volatility, particularly in developing countries has a more detrimental effect on growth and exports than a steady appreciation or depreciation of the currency. Our discussions with private sector operators in Zambia corroborate this view; suggesting that the immediate challenge for the central bank is to smooth volatility of the Kwacha. However, BoZ faces a number of constraints which limit the effectiveness also of its actions to manage fluctuations in the exchange rate. While some of these constraints can only be overcome in the long run, others can be eased through better co-ordination between the BoZ and the government and through improvements in the BoZ’s technical capacity. Some suggestions for such cooperation and technical improvements are outlined in the following:

The conduct of monetary and exchange rate policy in Zambia faces tension between pursuing the stated and unstated objectives of policy. BoZ’s stated objective is the maintenance of price stability. This is supported by explicit ceilings for growth in reserve money under the IMF Poverty Reduction and Growth Facility (PRGF) programme. At the same time, as evidenced by BoZ’s intermittent interventions in the foreign exchange market,

the BoZ also takes steps to influence the exchange rate when it considers this necessary.¹⁶ In addition, BoZ acts to meet targets for the accumulation of net international reserves under the IMF program. However, there do not appear to be any similarly clear guidelines for foreign exchange operations. This is important, because BoZ responses to exchange rate developments and its policy of accumulating reserves may sometimes clash with its price stability commitments. Although this is an economic management issue faced by all countries adhering to a managed exchange rate regime, developing countries, and Zambia is no exception, face great difficulty in dealing with this challenge.

The impact of unclear objectives and policy conditionality related to ceilings on the growth of reserve money is illustrated by BoZ's actions during 2005. In the early part of 2005, BoZ kept reserve money to the targeted path set under the IMF PRGF program by issuing government securities and open market operations. In the second half of the year however, the authorities became concerned with movement of the Kwacha. As appreciation continued, commercial banks altered their portfolios in favour of the Kwacha. The BoZ took this opportunity to accumulate international reserves, buying foreign exchange from commercial banks. By definition, this purchase increased bank liquidity (increased commercial bank holdings of Kwacha). Increase in liquidity breached the money growth conditionality, requiring open market operations to sterilise the foreign exchange purchases. Thus, on the one hand, BoZ moderated the appreciation by buying foreign exchange; on the other hand, it increased pressure for appreciation through a tight monetary policy. As Mundell pointed out forty years ago, attempting to use open market operations to cancel the monetary effect of managing the exchange rate is inconsistent; either the currency must appreciate or the money supply increase (Mundell 1963, 481). As a result of the sharp rise in reserve money, foreign exchange sales were necessary in the following month to bring reserve money back to the target level, which intensified the appreciation.

This inconsistent action, foreign exchange purchases one month and sales the next, was interpreted by some observers as either BoZ incompetence, or its pandering to political pressure to 'strengthen' the Kwacha before an election. As explained, there is a straightforward, technical explanation of BoZ action. By attempting to prevent an appreciation, BoZ was momentarily practicing a fixed exchange rate regime. Under a fixed exchange rate regime it is not possible to constrain the money supply and prevent appreciation (Mundell's famous 'Impossible Trinity' is at work). The culprit was not BoZ incompetence or political influence, but the money growth conditionality which made the inconsistency unavoidable.

Were the arbitrary and dysfunctional money growth limits eliminated, it would become possible to use open market operations and foreign exchange operations in an effective manner. Realising this possibility would require a forecast for liquidity in the economy, so

16 In 2004 Bank of Zambia net purchases of foreign exchange was \$95.5 million, compared with \$18.5 million in 2003.

that the central bank can calculate the amount it needs to provide or withdraw. However, accurate forecasting of liquidity conditions by BoZ is hampered by lack of adequate information on government fiscal operations. It is also complicated by insufficient co-ordination between issuance of government securities and open market operations. The volume of treasury bill issuances is decided on a quarterly basis by the Monetary Policy Committee, taking into account the financing need of government, maturing securities, and other influences on liquidity including foreign aid inflows. These decisions are not co-ordinated with the BoZ's open market operations.

For example, in September 2005 a decision was taken to buy securities from the market, rather than issue new paper. The resulting increase in liquidity needed to be offset by large open market operations, which in turn led to large fluctuations in reserve money. At such moments the BoZ is hesitant to intervene in the foreign exchange market, because action to sterilise the resulting increase in liquidity might cause an even larger swing in reserve money. When attempting to smooth temporary fluctuations in the exchange rate, the BoZ's inability to accurately forecast liquidity means it cannot with confidence estimate the level of foreign exchange that can be bought (and the resulting liquidity sterilised) without breaching the reserve money target. Improving forecasts of government financing needs, as well as of overall liquidity conditions, is key to enabling the BoZ better manage exchange rate fluctuations.

Another issue facing BoZ is whether to announce its presence in the foreign exchange market. The difficulty is to know how these announcements might affect market expectations, and whether they would reinforce or undermine BoZ's actions. The Bank of Uganda (BoU) faced a similar problem to minimise the effects on competitiveness of the export sector arising from appreciation of the RER. The intervention strategy by the Bank of Uganda in the Inter-Bank Foreign Exchange Market was to announce its presence in the market, but not to announce the amounts offered for purchase or sale. On the other hand, if BoU went into foreign exchange market for sterilisation purposes, it would not announce its presence. This strategy has been associated with remarkable exchange rate stability.

8.3 Macroeconomic and Financial Environment

The Zambian Inter-Bank Foreign Exchange Market was established in 2003. It grew substantially over the next two years, but the foreign exchange market remains thin. In early 2007, there were thirteen primary foreign exchange dealers in the country and foreign currency supply was heavily concentrated in a small number of exporters and foreign donors. This exacerbates exchange rate volatility. In addition, with an open capital account, even small adjustments in international portfolio allocations to an economy as small as Zambia can result in large swings in capital flows and increase exchange rate volatility. In principle exchange rate risks can be hedged, but in practice the poorly developed financial market means there is no organised market for currency futures and options.

Effective intervention by the BoZ in the foreign exchange market is also made difficult

by the lack of appropriate instruments to manage short-term liquidity. Currently the BoZ relies primarily on bonds to manage underlying liquidity, and treasury bills for fine-tuning liquidity conditions. This generates great pressure to use foreign exchange sales as an additional instrument of monetary policy, rather than as a tool for managing exchange rate fluctuations. In the context of substantial aid inflows and portfolio investment to Zambia, there is a risk of further appreciation of the Kwacha, and a corresponding challenge for liquidity management. In the near future the BoZ will need to determine the optimal mix of domestic instruments and foreign exchange sales for sterilisation purposes. Excessive reliance on the former is likely to generate high interest rates, whilst relying on foreign exchange sales would only reinforce appreciation of the Kwacha.

Summary

At moments when BoZ acts to moderate movements in the currency, it is operating under the dynamics of a fixed exchange rate regime. Under these circumstances, it is impossible in theory and in practice to prevent appreciation and prevent monetary expansion. Therefore, to the extent they are binding, money growth targets must be abandoned in order to manage the exchange rate.

8.4 Liquidity and Exchange Rate Management

The experience of other African countries can illustrate the theoretical and policy points made in the previous section. Determining the most appropriate balance between inflation and the level of the exchange rate is one of the key challenges facing BoZ. Zambia is not the first country to be faced with such a dilemma. After the early 1990s, several African central banks had to make difficult decisions regarding the combination of inflation and real and nominal exchange rates that should be used to manage large inflows of foreign capital. Although the pace and magnitude of Kwacha appreciation dwarfs exchange rate movements in most other African countries, important insights can be gained from considering the experience and policy actions of other post-completion point HIPC countries.¹⁷ For example, Uganda, Tanzania, and Mozambique faced large inflows of aid and private capital after reaching their HIPC completion points and this contributed to strong upward pressure on their exchange rates. The remainder of this section examines the approaches to monetary and macroeconomic management used by these countries and discusses their applicability to Zambia (see Buffie, O’Connell and Patillo 2004).

Uganda reached HIPC completion point in early 2000. In the following months, aid flows and private capital inflows surged. Given that the increase in aid flows was financing expenditure on non-tradables and thus putting upward pressure on the exchange rate,

¹⁷ The majority of Sub-Saharan post-completion point HIPC countries experienced a RER depreciation rather than appreciation. This resulted from policies to avoid an appreciation and the effects of Dutch Disease. The implication is Dutch Disease effects were a concern prior to the surge in foreign exchange inflows.

BoU's initial response to the surge in foreign inflows was to accumulate reserves in order to minimise any exchange rate appreciation. However, the reserve accumulation increased in domestic liquidity, which had to be dealt with in order for Uganda to remain on track with implementation of its IMF program. The increase in domestic liquidity was sterilised through sales of domestic debt. The net issuance of treasury bills climbed very quickly from 37 billion Ugandan shillings in 1997/98 to 268 billion by 2001/02. This action led to a rapid increase in debt stock, interest rates, and debt service costs, as well as volatility in the treasury bill rate. So swift was this increase that the BoU abandoned its bond sterilisation strategy in 2001. Almost all the additional treasury bill issues were held by commercial banks because non-bank demand was limited. This squeezed the funds available in the banking system to lend to the private sector. Commercial bank holdings of treasury bills increased from 23 to 32 percent of their asset portfolio between 2000 and 2002. During this period bank loans to the private sector declined from 30 to 23 percent of banks asset portfolios.

Abandoning sterilisation through treasury bill issuances resulted in rapid growth of reserve money, and by 2001 this was about 10 percent above its program target. Under pressure from the IMF and the Ministry of Finance, the BoU used sales of foreign exchange as a tool for sterilisation. The nominal exchange rate did not appreciate in response to the Bank of Uganda's intervention. Despite the significant monetary overhang relatively to the program target, underlying non-food inflation remained low and consistent with the BoU's inflation target. Two factors partly explain the BoU's successful use of forex sales for sterilisation purposes. First, export earnings were affected by a slump in world coffee prices, and second, public expenditure was implemented at a rate slower than expected. As a result, there was less pressure on the exchange rate to appreciate.

Tanzania also reached HIPC completion point in 2000 and began to experience a surge in aid and private capital flows soon after. Sterilisation of the local currency counterpart of aid flows was also undertaken through the sale of domestic debt. As was the case in Uganda, concerns about the rising interest costs compelled the Bank of Tanzania to scale back its intervention in the domestic debt market. As a result, reserve money grew quickly and breached the target set under the IMF program. Inflation however, remained low and stable, despite the volatility in interest rates and excess growth in reserve money. Given that in Tanzania inflation was at about 4 percent, the cost of sterilisation increased rapidly, treasury bill rates rose in the last two years, and the RER depreciated to levels broadly consistent with fundamentals. A high reserve money path was set, consistent with estimated money demand growth. To achieve the reserve money targets, the IMF urged higher reliance on sales of foreign exchange, even if that entailed allowing for a slight nominal appreciation. This could be done while continuing to smooth out large abrupt exchange rate fluctuations and avoiding any significant exchange rate overshooting.

In Mozambique the increase in private capital flows preceded the resurgence of official aid flows. The central bank's used the inflows of private capital to increase its international

reserves. This increase was offset by fiscal sterilisation as government deposits with the Bank of Mozambique (BoM) rose sharply and net domestic assets fell one-for-one with the rise in net international reserves. However, by 2000 reserve money growth began to exceed its program targets. BoM was reluctant to use sales of domestic debt to control the growth in reserve money; arguing that the observed growth was non-inflationary and reflected an underlying recovery in money demand. It was only in response to significant encouragement and a sharp increase in inflation in the second half of 2001 that BoM adopted more aggressive open market operations.

These experiences highlight two key issues. First, it is important to understand the monetary transmission mechanism in Zambia. Of particular importance is the relationship between reserve money and underlying non-food inflation. As the experiences of Uganda, Tanzania, and Mozambique show, this can vary greatly among countries. A better understanding of this relationship in Zambia would enable the BoZ to improve its decisions on the amount of the liquidity expansion that needs to be sterilised, rather than erring on the side of caution and sterilising more liquidity than may be required to keep inflation in check. Second, expected movements in real money demand need to be taken into account in order to determine sterilisation needs.

From the outset, the central banks of Uganda, Tanzania, and Mozambique were concerned with avoiding excessive nominal and real appreciation. The initial response to inflows included a sharp accumulation of reserves and central bank intervention in the foreign exchange market. Concerns about the adverse effect of appreciation on traditional export crops appear to have been the main motivation behind this intervention. The key point is that, in all three countries, it was decided to allow greater liquidity expansion than set under each country's IMF program. Permitting liquidity expansion allowed for greater control over the exchange rate without being hugely inflationary. Further analysis of the causes of inflation in Zambia would help determine whether such a policy stance would achieve similar success.

In summary, the challenge of managing pressure on the exchange rate lies in balancing 1) The pressure on prices from increased liquidity, 2) The pressure on interest rates from sterilisation operations, and 3) Pressure on exchange rates from increased foreign exchange sales. For a given reserve money target, increased sales of foreign exchange may adversely affect export competitiveness through an exchange rate appreciation. Conversely, the use of domestic debt sales for sterilisation may put upward pressure on interest rates, and discourage commercial banks from productive lending (see Weeks et. al. 2006, Chapter 6). The appropriate policy mix among these options has consequences for prices, the exchange rate, interest rates, and ultimately for macroeconomic growth and stability.

Annex 1: Basic Statistics

This annex reports data and statistics relevant for analysis of exchange rates that are available on a monthly or quarterly basis. Monthly exchange rates are available at least back to January 1995. The sources are the Monthly Bulletin of the Central Statistical Office (exports, imports and exchange rate), and Statistics Fortnightly of the BoZ (gross international reserves), and the IMF's IFS Online Service.

Internet address of sources:

International Monetary Fund

<http://ifs.apdi.net/imf/about.asp>

Central Statistical Office

www.zamstats.gov.zm

Bank of Zambia

www.BOZ.zm

Notes to table:

GIR – gross international reserves, end of month

Copper price in US cents per pound, period average

Kwacha-US dollar rate, period average

Table A1.1: Monthly Data for the External Sector

Year & month	GIR	US\$ (millions)			Kwacha (millions)			Copper	Kwacha per US\$	Kwacha (millions)		Kwacha (billions)	
		Exports	Imports	Trade balance	Exports	Imports	Price (US cents/lb)	Donor flows		Debt service	VAT on Imports	Tariff duty	
2003.1	478	61.1	134.3	-73.2	269450	592175	75	4408	5629	46936	47.9	30.8	
2	473	74.6	150.0	-75.4	348209	700380	76	4669	11542	10739	53.8	30.9	
3	463	71.5	130.2	-58.8	348635	635234	75	4878	0	29756	50.6	43.9	
4	486	67.1	129.9	-62.8	313224	606291	72	4666	28981	20997	45.5	41.8	
5	527	85.3	123.4	-38.1	411624	595376	75	4824	18910	92958	47.2	41.3	
6	406	87.6	116.4	-28.7	424807	564006	76	4847	926	622016	46.4	42.0	
7	411	90.1	113.6	-23.5	430565	542724	78	4779	10189	43126	56.6	32.0	
8	402	82.2	123.0	-40.8	386167	577888	80	4699	3148	42404	56.6	41.7	
9	394	81.2	109.2	-28.0	385421	518229	81	4746	0	55054	51.9	44.2	
10	372	83.7	130.3	-46.6	397894	619260	87	4752	8383	181745	57.9	50.2	
11	355	93.5	146.4	-52.9	444236	695711	93	4751	0	14087	62.3	49.0	
12	286	69.2	147.6	-78.4	316757	675541	100	4578	207319	571380	70.8	38.0	
2004.1	269	93.7	127.1	-33.3	446968	605948	110	4768	16688	9536	58.4	39.5	
2	243	90.9	125.8	-34.9	432756	599220	125	4763	0	150311	60.2	38.0	
3	250	182.8	178.5	4.3	863041	842838	136	4722	0	28072	71.3	46.8	
4	260	140.2	168.5	-28.3	663845	797761	134	4735	0	6691	69.7	41.7	
5	274	149.5	198.1	-48.6	710588	941603	124	4754	39934	70521	66.1	41.8	
6	268	118.3	206.0	-87.7	571784	995543	122	4833	581410	651140	88.1	48.9	
7	278	161.8	204.4	-42.6	773976	977830	127	4783	1913	9518	74.0	44.5	
8	283	120.1	170.8	-50.7	575147	817822	129	4787	73002	79455	75.7	50.0	
9	306	116.3	205.9	-89.6	564843	1000080	131	4856	61064	60928	83.8	47.3	
10	296	115.0	195.2	-80.2	563264	955710	137	4896	0	50184	77.5	50.2	
11	288	128.4	172.7	-44.3	615985	828722	142	4798	7677	35841	84.4	43.3	
12	337	145.5	189.9	-44.3	676979	883243	143	4652	790375	621824	99.9	52.3	
2005.1	334	119.8	166.1	-46.4	573174	795007	144	4785	105749	119907	76.0	39.4	
2	321	99.4	143.1	-43.7	472831	680926	148	4758	5548	84207	67.3	42.7	
3	337	123.9	194.4	-70.5	583559	915911	153	4711	62444	52047	81.4	57.8	
4	522	147.4	238.8	-91.3	689164	1116224	154	4675	887404	110059	76.1	58.9	

Year & month	GIR	US\$ (millions)		Trade balance	Kwacha (millions)		Copper Price (US cents/lb)	Kwacha per US\$	Kwacha (millions)		Kwacha (billions)	
		Exports	Imports		Exports	Imports			Donor flows	Debt service	VAT on Imports	Tariff duty
2005.5	516	153.2	191.3	-38.1	718633	897440	148	4692	0	21944	60.3	62.1
6	456	184.9	231.2	-46.4	866382	1083610	160	4686	287383	599902	93.0	58.3
7	478	61.1	134.3	-73.2	269450	592175	75	4408	59993	14665	47.9	30.8
8	495	197.3	229.8	-32.5	868382	1011611	172	4402	19466	65110	103.6	53.9
9	483	158.5	269.6	-111.1	703690	1196833	175	4440	6216	61481	90.2	53.3
10	488	158.8	248.4	-89.7	690035	1079725	184	4346	12603	6528	99.5	70.2
11	517	171.8	231.7	-59.9	691967	933009	194	4027	157053	29208	84.2	62.4
12	451	185.6	230.1	-44.5	633861	785908	207	3416	230409	472552	68.7	45.3
2006.1	464	193.2	196.3	-3.0	650080	660307	209	3364	56414	22132	52.9	41.3
2	462	206.9	186.4	20.5	680862	613316	226	3290	43250	28916	60.7	41.0
3	462	300.4	235.6	64.8	989422	776022	232	3294	45424	47615	73.5	55.5
4	506	314.3	218.3	95.9	1005986	698882	290	3201	4641	10749	67.4	47.1
5	526	410.0	237.6	172.4	1305820	756669	365	3185	38698	19374	61.0	73.5
6	534	352.2	271.6	80.6	1222475	942596	326	3471	29538	2468	na	na
7	536	350.1	201.9	148.2	1241749	716253	351	3547	1383	36073	na	na
8	576	308.2	293.9	14.3	1197082	1141534	349	3884	209192	10495	na	na
9	688	382.2	265.1	117.1	1543720	1070746	344	4039	130540	9847	na	na
10	739	293.0	269.2	23.8	1219031	1119947	340	4161	109268	46437	na	na
11	727	258.5	286.5	-28.0	1011207	1120744	319	3912	16378	0	na	na
12	na	294.3	241.3	53.0	1214607	995770	303	4127	na	na	na	na
2007.1	na	314.5	320.0	-5.6	1339474	1363189	257	4260	na	na	na	na
2	na	241.6	212.2	29.4	1009369	886473	254	4178	na	na	na	na
3	na	na	na	na	na	na	na	4218	na	na	na	na

Table A1.2: ‘Non-traditional’ Exports in Millions of US Dollars

Year & month	copper wire	Tobacco	Flowers	Electricity	Cotton Cotton	Cotton Yarn	White Sugar	Coffee	Cement	Maize Seed	Fruit & Veg
2000.1	1.1	.3	4.9	.7	.5	2.2	1.4	.5			
2	1.2	1.0	3.7	.6	1.1	3.1	.9	.5			
3	1.5	.1	4.3	.5	1.2	2.4	1.5	.6			
4	1.8	.5	3.0	.5	.3	2.2	1.0	.5			
5	1.1	.3	2.8	.5	.5	2.7	1.8	.4			
6	.4	1.2	1.4	.6	.5	1.9	2.0	.6			
7	.2	.9	1.2	.9	1.7	.4	.9	.2			
8	.2	1.1	.8	.8	1.3	.7	.9	.2			
9	1.6	2.3	2.0	.8	1.0	2.2	6.7	.5			
10	1.6	.3	3.5	.6	.3	2.4	2.2	.7			
11	1.4	.2	3.2	.5	.4	2.3	1.5	.7			
12	.6	.2	3.1	.5	.7	3.6	1.9	.9			
2001.1	1.4	.2	3.5	.6	1.1	5.5	2.1	.7			
2	1.5	.9	2.6	.9	.7	2.1	1.7	.4			
3	.8	.1	1.9	1.0	.0	2.3	2.7	.4			
4	1.0	.6	2.7	.8	.0	2.3	2.2	.4			
5	.1	.7	2.2	.6	.2	2.6	2.8	.5			
6	.7	1.1	1.3	1.0	.4	2.7	2.5	.5			
7	.1	.3	1.2	1.2	1.9	2.2	2.2	.5			
8	.2	.8	1.5	1.1	2.3	2.5	3.4	.7			
9	.0	1.4	2.4	.7	1.9	2.0	1.9	.5			
10	.0	1.4	3.5	.5	1.3	1.9	8.9	.7			
11	.0	2.1	2.8	.8	2.1	2.4	1.8	.4			
12	.5	.0	3.4	.8	.3	2.2	1.6	.6			
2002.1	.5	.2	3.9	1.0	.6	1.2	2.8	.9	.4	.0	1.2
2	.4	.0	3.1	.9	1.8	2.0	1.7	.6	.3	.0	1.5
3	1.5	1.7	1.5	.9	2.8	2.2	2.4	.2	.5	.0	1.5
4	.9	.6	2.1	.6	.7	.8	1.0	.2	.2	.0	2.2
5	1.6	1.4	2.3	.3	1.1	1.7	2.1	.1	.3	.0	2.5
6	1.6	1.1	2.0	.2	.5	2.2	9.0	.1	.5	.0	2.9
7	1.1	1.0	1.8	.5	2.3	1.2	2.5	.1	.4	.4	5.0

Year & month	copper wire	Tobacco	Flowers	Electricity	Cotton Cotton	Cotton Yarn	White Sugar	Coffee	Cement	Maize Seed	Fruit & Veg
8	1.4	1.0	2.0	.6	2.8	2.2	2.3	.1	.6	.2	2.3
9	1.3	.5	2.3	.6	3.2	1.6	4.3	1.1	.3	.5	2.5
10	1.2	4.0	1.2	.6	4.7	1.8	1.8	.6	.3	.2	1.8
11	2.1	4.7	2.8	.8	4.9	2.2	3.2	2.5	.9	.2	2.9
12	2.7	2.4	2.9	.4	4.9	1.8	2.0	1.6	.4	.1	1.5
2003.1	1.9	.4	1.6	.8	2.5	1.5	2.0	.9	.2	.0	1.3
2	1.1	.5	1.4	.7	1.2	1.9	1.6	1.1	.4	.0	2.8
3	2.4	.4	.5	.8	1.5	1.8	1.2	.6	.6	.0	1.4
4	2.8	.6	2.1	.8	1.0	2.1	2.1	.7	.5	.0	1.9
5	2.4	1.4	2.3	.7	1.7	2.4	.9	.1	.4	.0	1.9
6	2.6	1.1	2.0	.5	1.6	1.8	12.0	.0	.7	.0	3.8
7	2.9	1.0	1.8	.7	3.5	.8	2.1	.2	1.0	.0	3.8
8	1.9	1.0	2.0	.7	5.5	1.3	2.2	.2	.5	.0	2.9
9	3.0	.5	2.3	.7	2.7	1.4	1.7	.7	.7	.5	2.3
10	2.7	4.0	1.2	.7	1.3	1.9	2.7	1.0	.8	1.1	1.6
11	2.8	4.7	2.8	.7	.6	2.5	1.4	1.2	.6	.5	1.6
12	2.6	2.4	2.9	.7	.9	2.2	.7	1.1	.4	1.3	1.5
2004.1	2.2	2.4	3.3	.3	2.4	2.2	1.3	.8	.6	2.1	.2
2	4.7	4.1	2.9	.3	2.4	1.6	2.3	.9	.6	3.9	1.5
3	3.3	.7	1.3	.3	2.7	2.5	2.0	.8	.7	3.5	1.3
4	4.6	1.1	1.5	.3	2.2	2.2	6.4	.5	.8	2.9	1.7
5	5.4	2.0	1.9	.3	1.9	2.3	6.2	.2	.5	.8	2.1
6	5.6	2.1	.5	.4	4.3	2.0	1.8	.0	.3	1.3	3.1
2004.7	4.8	1.0	.5	.4	4.3	2.0	1.8	.3	.1	1.4	2.4
8	4.0	6.0	1.5	.4	6.3	2.2	2.4	.3	.8	1.0	1.3
9	4.8	4.5	3.2	.5	8.8	1.6	3.5	1.2	.7	2.4	1.7
10	3.4	4.5	3.6	.4	5.2	2.3	1.7	.0	.6	2.4	1.4
11	8.5	2.7	3.8	.4	6.6	2.6	2.0	2.2	1.0	4.4	1.1
12	7.2	1.1	1.6	.5	4.2	.4	1.9	1.5	.4	3.5	3.6
2005.1	6.2	.6	1.5	.3	1.9	1.7	8.1	.9	.9	3.2	2.9
2	8.6	.6	2.8	.3	3.9	2.4	3.5	1.7	.7	1.6	1.6
3	8.5	.1	3.2	.3	4.2	2.4	1.8	1.2	.6	.8	.9
4	6.2	3.9	2.8	.3	.3	1.9	1.3	.3	.0	.2	1.1

Year & month	copper wire	Tobacco	Flowers	Electricity	Cotton Cotton	Cotton Yarn	White Sugar	Coffee	Cement	Maize Seed	Fruit & Veg
5	12.3	9.0	2.6	.3	2.2	2.4	13.4	.4	.1	.0	1.3
6	7.8	5.7	2.7	.3	1.6	1.9	16.7	.3	.3	.1	2.7
7	9.4	8.3	1.9	.3	10.0	2.2	3.8	.2	.8	.0	1.6
8	9.5	9.5	2.2	.3	7.8	2.0	2.6	.4	.4	.0	1.5
9	8.4	11.1	2.5	.3	9.5	2.3	3.6	1.6	.7	.4	2.1
10	8.5	4.8	3.4	.3	7.8	.8	5.1	1.4	.8	.2	1.7
11	7.9	4.2	3.1	.3	3.8	2.7	5.3	.5	1.0	.7	1.4
12	13.3	2.4	3.4	.3	2.7	1.3	2.5	2.1	.0	3.6	2.5
2006.1	10.2	1.5	2.8	.4	3.7	1.2	1.6	1.6	.5	.0	2.3
2	10.6	4.1	3.7	.4	4.7	2.2	3.6	1.7	.6	.0	1.7
3	14.8	2.4	2.5	.4	3.7	1.7	2.8	1.0	.5	.1	1.4
4	11.2	5.2	2.2	1.1	3.1	1.4	1.4	.2	.6	.0	1.7
5	18.2	7.7	2.6	.9	1.8	1.4	7.8	.0	.9	.1	3.1
6	19.8	5.1	2.0	.6	3.1	1.5	5.3	.3	.9	.0	2.3
7	9.4	8.9	1.8	.7	5.4	1.4	2.6	.4	1.2	.0	2.5
8	11.1	10.0	1.5	.6	11.6	2.6	2.5	1.9	2.7	.1	2.9
9	14.9	11.1	3.0	.5	9.3	1.6	10.1	1.2	1.0	1.0	2.7
10	15.9	4.8	4.5	.5	7.3	1.3	6.2	1.1	1.4	.6	1.7
11	21.9	4.7	4.1	.5	5.6	1.2	3.3	1.2	1.2	2.0	1.6
12	17.0	4.9	3.9	.5	3.0	1.4	7.2	.9	.9	3.0	1.5
2007.1	14.6	4.3	5.4	.6	2.2	1.7	4.4	1.0	.4	1.7	1.7
2	15.8	4.6	4.6	.6	2.6	1.5	5.2	.7	5.0	.7	1.5

Table A1.3: Selected Domestic Prices and the World Price of Petroleum

Year & month	US\$ per barrel WP ¹ oil	Kwacha per unit				
		litre Premium Petrol	litre Diesel	litre Paraffin	20 litres White maize	unit eggs
2005.1	38.10	5300	4824	3798	14055	5939
2	39.61	4896	4500	3488	15377	6086
3	45.38	5166	4550	3615	15853	6086
4	46.81	5619	4749	3819	14146	5906
5	44.97	5856	5099	4147	12892	5810
2005.6	50.42	5714	5069	4193	13272	6886
7	52.82	5561	5006	4101	13766	5916
8	57.43	5856	5408	4270	15197	6011
9	57.74	6082	5793	4289	16404	5961
10	54.39	6336	5732	4274	17610	5549
11	51.74	6267	5727	4304	19060	5875
12	53.84	6026	5659	4266	20598	5810
2006.1	58.96	5433	5091	3675	21106	5766
2	57.62	5136	4819	3790	23184	23184
3	58.93	5097	4746	3769	22433	22433
4	64.75	5122	4563	3772	17950	17950
5	65.48	5322	4739	3743	12906	12806
6	65.81	5775	4991	3939	11619	11619
7	69.67	6003	4963	3977	11193	11193
8	68.94	6152	5094	4116	11148	11148
9	60.43	6155	5085	4122	11949	11949
10	57.20	6155	5092	4122	13059	13059
11	57.49	6169	5218	4172	13031	13031
12	59.16	5457	5131	4056	13726	13726
2007.1	52.68	5820	5351	4253	14339	14339
2	55.74	6450	5715	4658	14927	14927
3	na	6290	5579	4491	14952	14952

Notes

1 WP: World Price, crude.

Annex 2: Partial Equilibrium Exchange Rate Model

The regression results in section 4 are based on the following specification. Define the following variables:

K_t = Kwacha/US\$ rate

X_t = commodity exports in current US dollars;

M_t = commodity imports in current US dollars;

CP_t = copper price in US cents per pound;

GR_t = gross international reserves in current US dollars as a proportion of imports; and

FP_t = BoZ sales of foreign exchange in current US dollars, as proportion of total trade, measure as $.5(X+M)$.

In implicit form, the model is:

$$1. K_t = K_t [(X/M)_{t-1}, CP_{t-2}, GR_t, FP_t]$$

Exports in period t are the sum of copper exports and non-copper exports.

$$1a. X[c]_t = \alpha \{q[c]_{t-1}\}$$

$$1b. q[c]_t = \{p(c)_{t-1}\}^\beta$$

$$1c. X[nc]_t = \{e_{t-1}\}^\delta$$

Copper exports are determined by production in the previous period ($q[c]_{t-1}$), and production is determined by the world copper price in the period previous to production. In other words, the copper price in period t determines production in period t+1, and that production is the basis for the export volume in period t+2. Note that the parameter α can be greater than or less than unity, because of inventory adjustment. Non-copper exports are assumed to be a function of the nominal exchange rate alone. This simple approach to non-copper exports requires several assumptions, perhaps the most important of which is that non-copper exports are out of inventories, so the quantity can adjust to the exchange

rate in the current period.

$$2. M_t = \{e_{t-1}\}^\phi$$

Imports are assumed to be a function of the current nominal exchange rate.

Thus, the trade balance is:

$$3. tb_t = [X_t/M_t] = (p(c)_{t-2})^\beta (e_{t-1})^\delta (e_{t-1})^\phi$$

Gross international reserves affect the private sector's expectation of appreciation or devaluation. Through purchases and sales of foreign exchange, BoZ can attempt to manage the exchange rate. Finally, the model includes the hypothesis test that the election of 2006 had an impact on the exchange rate. Substitution yields the following estimating equation, with all variables in natural logarithms except foreign exchange purchases and the binary for the election hypothesis. The final symbol is the error term.

$$4. K_t = \alpha_0 + \alpha_1(X_{t-1}/M_{t-1}) + \alpha_2(CP_{t-2}) + \alpha_3(GR_t) + \alpha_4(FP_{t-1}) + \alpha_5D_t + \varepsilon$$

Annex 3: Estimating Fiscal Effects

If one ignores exemptions, by definition the Kwacha revenue from trade taxes (VAT on imports and tariffs) is:

$$(\text{TrTx})_K \equiv (\alpha_t + \beta_t)E_t M_t$$

Where α and β are the average VAT and tariffs rates, E is the exchange rate, and M is the value of imports in foreign currency.

The counterfactual can be measured as,

$$\begin{aligned} \Delta(\text{TrTx})_K &\equiv (\alpha_t + \beta_t)E_t M_t - (\alpha_t + \beta_t)E^* M_t \\ &\equiv [(\alpha_t + \beta_t)M_t][E_t - E^*] \end{aligned}$$

E^* is the average exchange rate for May 2003 through December 2004, as explained at the beginning of section 5. This calculation makes the simplifying assumption that the exchange rate had no impact on the foreign currency value of imports. The impact on overseas development assistance and debt service is (f indicates the foreign currency value):

$$(\text{ODA})_K \equiv E_t(\text{ODA})_f \text{ and } (\text{DbS})_K \equiv E_t(\text{DbS})_f$$

The counterfactual for these two external flows is (where XF is the sum of ODA and debt service),

$$\Delta(XF)_K \equiv (E_t - E^*)(\text{ODA})_f - (E_t - E^*)(\text{DbS})_f$$

The value of $\Delta(XF)_K$ can be calculated directly from BoZ statistics on ODA flows and debt service. It is not possible to calculate $\Delta(\text{TrTx})_K$ directly because there are not data for α and β . These can be estimated by treating the definition of $(\text{TrTx})_K$ as a behavioural relationship. This equation was estimated using quarterly data, from the first quarter of 2003 to the first quarter of 2006. Note that in logarithmic form the coefficients on the exchange rate and imports should not be significantly different than unity. Prior to estimating the equation, the dependent variable was tested for seasonal variation, and the quarterly effects were non-significant. It was assumed that revenue is calculated with a quarter lag in the exchange rate, though the statistical outcome changes very little using the current exchange rate.

The purpose of the exercise to estimate the implied tax rates, and there is no hypothesis of causality. The Kwacha exchange rate carries the predicted value (not significantly different from one), but the imports variable does not (it is significantly less than one at less than 1 percent probability). This might be explained by quarterly changes in the composition of imports, which would affect the average tariff and VAT rate, and the share of imports exempted from taxation.

Regression Analysis of Trade Taxes, First Quarter 2003-First Quarter 2006	Independent Variables	Coefficient	Standard Error	Significance of T
	[Constant]	-7.37	2.88	.02
	ln(imports)	.71	.10	.00
	Ln(Kwacha/US\$)t-1	1.04	.31	.01
	Adjusted R-square = .82	DF =	10	
	F statistic = 28.36	DW =	1.10	

Source: See data in Annex 1.

Annex 4: Media Debate and Civil Society Views

1. Debates in the Media

Debates in the media regarding the kwacha reflected widely varying views regarding the causes and consequences of the appreciation. Reports appeared in the national newspapers, Times of Zambia, Daily Mail and The Post; in other news media including the Zambia News Agency, ZANA and the Zambia National Broadcasting Corporation; in bulletins, the Zambian Marketer, Aypdels, Business Day and People's Daily Online; and in press statements from political parties. Other media channels, Afrol News and Southern African Regional Poverty Network (SARPN) News, brought out opinions of various stakeholder groups. The local World Bank office and the IMF Mission to Zambia in November 2006 also expressed their opinions on the issue through press releases.

Views were expressed on the causes and consequences of appreciation and the corrective measures that were perceived to be needed. The debate included whether the appreciation was an accident of circumstance, politically motivated, or a result of changed economic fundamentals. A key issue was who were the gainers and losers, and who were responsible for the gains and losses. This linked to discussion of what the Government and other economic players, such as exporters and marketers, should do to minimize the adverse impacts of fluctuations in the value of the domestic currency.

Several factors were identified in media debates as prompting the appreciation:

1. Improved macroeconomic management over several years led to Zambia reaching the HIPC Completion Point thereby reducing Zambia's external debt from a staggering level of US\$ 7.1 billion in 2004 to less than \$500 million in 2005.
2. Following the Gleneagles meeting, Zambia qualified to the MDRI leading to 100 percent cancellation of debt to the IMF, World Bank and African Development Bank (ADB).
3. Reaching the HIPC Completion Point released disbursements of budget and balance-of-payments support to the tune of \$155 million.
4. The country's profile and attractiveness to foreign investors improved leading to \$120 million recorded foreign portfolio investments in government securities by the end of 2005.
5. A dramatic reduction in debt service to \$133 million in 2006.
6. A record high increase in copper prices and significant improvement in non-traditional export performance, leading to an overall increase in merchandise exports.
7. Growth in foreign currency deposits with commercial banks from \$436 million in June 2005 to \$551 million in December 2005.

Sceptical observers argued that high copper prices had no bearing on the appreciation of the Kwacha since most earnings from copper remained abroad without entering the Zambian economy. In apparent support of this argument, official statistics showed that Zambia's current account deficit rose from \$583 million in 2004 to \$826 million in 2005. This line of scepticism led to the inference that the appreciation of the Kwacha was driven by political manipulation, and by portfolio speculators buying government bonds and securities. It was argued that these speculators would be the major beneficiaries of the appreciation. An almost polar opposite argument was that the appreciation of the Kwacha was a sign of growing investor confidence in the economy, and government should not interfere with the trend.

With regard to the consequences of the appreciation, the conclusions were mixed. It was argued that while non-copper exporters would be harmed, producers using imported materials would benefit because the prices of these materials were imported. Companies should realize that the appreciation of the Kwacha is a positive development since it would enable them to import capital goods at affordable prices. Further, an increase in capital goods would increase investments for both importers and exporters. However, this could have a negative side effect, since companies will find it cheaper to import their inputs than buy from local suppliers, who will then be forced to cut prices or shut down. Layoffs would occur or wages fall, and industrial unrest could result.

Other effects were also viewed as mixed. While Kwacha appreciation was viewed as helping Zambia to attain its lowest inflation rate in thirty years, it was also associated with lower yields on securities investments. Particular scepticism was shown with regard to price effects, and it was argued that the test of the benefits of the appreciation would be whether the prices of traded commodities, such as petrol, fell absolutely.

In addition to the above, opinions were expressed over several other possible consequences of the exchange rate movements.

1. Kwacha appreciation led to a steep hike in the prices of services provided by hotels and country lodges, allegedly resulting in a decline in tourism and staff layoffs. If tourism performed well despite the Kwacha appreciation, it was because of the instability in neighbouring Zimbabwe, which has made Zambia a preferred destination in the region.
2. Kwacha appreciation led to a 36 percent shortfall in the funding of the European Union (EU) development projects in Zambia, amounting to US\$ 60 million.
3. Appreciation itself may not be bad for the economy, but the instability of the exchange rate caused serious difficulties for investors and the public.

Regarding corrective measures, it was argued that measures were needed to counter the appreciation in order to increase non-copper exports, though the specifics were not always clear. A frequent line of argument in the other sense was that it remained the responsibility

of companies to adjust to the appreciation, by raising productivity, adopting better management techniques, and introducing systems for production and supply chain management. They should not complain about a stronger Kwacha since they made huge profits when the Kwacha was weak. From the interventionist side came the suggestion that the government consider a system of price controls on wholesalers and retailers. They should be given a grace period to clear old stock, and the new stock should be pegged at prices to reflect Kwacha appreciation. Along the same line, utility companies such as Zambia Electricity Supply Corporation (ZESCO) and Zambia Telecommunications Company (ZAMTEL) would be required to adjust prices fully to the appreciation of the Kwacha.

2. Civil Society Views

In an attempt to assess the views of civil society, a questionnaire was given to a small sample of NGOs with main offices in Lusaka that are prominently involved in developmental activities at the community and grassroots levels. The questionnaire was administered to a dozen NGOs, with a response rate of 58 percent (7 out of 12 respondents replied). There was sufficient information in the responses to evaluate the perceptions of people working in the organizations regarding the causes of exchange rate changes, their consequences on the programs and activities of the organizations, the adjustments the NGOs have made and their preferences for an environment in which they can carry on their operations effectively.

The Table A4.1 gives the profiles of the NGOs that responded. One organization gave only partial information. The next table provides information on budgets. There is significant variation in the budget size, the average budget size works out to K1.6 billion (\$400,000) at the rate of K4000 per US\$. In terms of dependence on donor funding, except for two NGOs that have only 15 percent and 40 percent, respectively, the remaining NGOs are highly dependent on external funding. In fact, for three of them, the percentage is 99. Only one NGO kept its funds in Kwacha account, the others keep 90 percent of their funds in foreign exchange accounts and the currency in which they are held is invariably the US\$.

The budget as distributed between staff salaries, remunerations and administration, programs and other expenses, varies between 28 percent for salaries and administration (lowest percentage) and 72 percent for programs (highest percentage) to 61 percent for salaries and administration (highest percentage) and 39 percent for programs (lowest percentage). The modal distribution is 40 percent for salaries and administration, 55-60 percent for programs and 0-5 for other expenses. The focus of work of the organisations covered a range of topics: justice and peace, gender, HIV/AIDS, livelihoods and food security, governance and institutional development, civic engagement and advocacy, research, policy analysis, policy dialogue, information management, religious social teaching, social conditions research, debt and trade, land related issues, and advocacy campaigns, capacity building, training and networking.

Table A4.1 NGO Profiles

Name of organization	Year established	Vision/objective	Branches/focal points outside Lusaka
Catholic Centre for Justice, Development and Peace	1970	Attainment by citizens of integral human development	Branches in all 72 districts of Zambia
Civil Society for Poverty Reduction	2000	Enjoyment by all people of all basic needs	Five Provincial offices
Consumer Unity and Trust Society – Africa Resource Centre	2000	Promotion of South-South civil society cooperation on research, advocacy and capacity building on economic policy making and consumer welfare	None
Jesuit Centre for Theological Reflection	1988	Promotion through faith of justice for all in all spheres of life, especially for the poor	Five branches for one project (Debt and Trade) and ten branches for another (Basic Needs)
Organization Development and Community Management Trust	2000	Attainment of sustainable social, economic and environmentally sound human development of underprivileged people	No, but works through membership in other districts
Zambia Land Alliance	1997	Lobbying for land policies in the interests of poor communities	District Land Alliances in five districts
Forum for African Women Educationalists in Zambia	1995	Emancipation of girls and women for a better society	Branches in all nine provinces of Zambia

Table A4.2 NGO Budgets

Budget size	percent foreign funding	percent funds held in forex account	Main currency in which account held
Varies between K400 million and K3 billion	Varies between 15 and 99%	Varies between 0 (only one case) and 90% (in all other cases)	US dollars

Exchange rate impact and adjustments

All the responding NGOs stated that they have been adversely affected by the appreciation of the Kwacha. Among the adjustments the organisations had to make were:

1. Reduction in utilities and consumables (phone, fax, internet and stationery);
2. Cancelling of new orders of equipment (e.g., computers);
3. Reduced printing of publications and switching to photocopies and soft copy publications;
4. Reduction in a number of staff remunerations such as gratuities, transport funds, medical allowances, participation in conferences and workshops;
5. Shift from dollar to Kwacha salaries;
6. Recruiting less qualified persons due to lower Kwacha value of the salary offered;
7. Increasing staff salaries in US dollar terms;
8. Reduction in networking activities, training workshops and internships as well as downsizing projects; and
9. Approaching donors for additional funding

As can be seen from the above list, NGOs have adopted several Kwacha cutting measures and also sought to increase their dollar budgets by appealing to donors. In many cases, they were not successful. For example, one NGO approached a donor for additional funding of K48 million to sustain a project, but received only K36.8 million and so had to cut down its activities. The NGO sector faces stiff competition in recruiting and retaining staff. Cut in staff remunerations may motivate some of the better qualified and competent staff to seek greener pastures elsewhere. Indeed, one organization lost two of its prominent staff members within a short space of time.

NGO perceptions on Kwacha appreciation

Opinions on the reasons for the appreciation of the Kwacha varied. While some agreed with the government position that the Kwacha was strengthened by market forces, others were sceptical about this explanation. They felt that there must have been some government intervention due to ‘election’ year. Statistics, in their view, do not corroborate the ‘copper price and debt relief’ explanation since the margin of change in the exchange rate was just too large and too fast. However, as shown in section 4, the period prior to the election was associated with a depreciation of the Kwacha, not an appreciation, and copper prices would appear to provide a statistically reliable explanation of exchange rate movements.

Some felt that along with government intervention, there must also have been central bank manipulation contributing to the appreciating trend in the Kwacha. Interestingly enough, one organization has blamed the central bank, but for the opposite reason. In its view it is the inadequate intervention by the central bank to adjust demand and supply that led to the persistent Kwacha appreciation. Much of civil society may have held opinions

on the appreciation that could be proved wrong in a simple and straight-forward way. This implies the need for transparency in exchange rate policy.

On the issue of whether an appreciating Kwacha meant a strong economy, one NGO's responded that this would be true in an ideal world. A strong economy characterized by high levels of production and export volumes would result in increased foreign exchange, and reduce the Kwacha price of foreign exchange. This has not been the case in Zambia, the respondent believed, and the appreciation of the Kwacha has not led to any fall in domestic prices. To the contrary, the cost of housing, food, electricity and water allegedly rose.

Another NGO made the argument that while the country seeks to diversify its export base, the strong Kwacha is making exports increasingly uncompetitive in the international market. Further, the effect of Kwacha appreciation has not been reflected in the prices of imported products. Hence the strength of the economy should not be judged by the exchange rate, but by the production and export base.

Two other organizations held the opposite view. One of them stated that there was a nexus between a strong Kwacha and a strong economy, but explained this nexus in hypothetical terms rather than in terms of what had happened. This organization felt that the cost of imports and employment of expatriate employees would fall. The other organization felt that to the extent the appreciation of the Kwacha was caused by high copper prices and debt relief, it represented a positive development for the economy.

In this context, views were sought on the appropriate level of the Kwacha. The answers ranged from K3700 to the US dollar, to K5000. The modal response was K4000. One NGO found it difficult to determine what the appropriate exchange rate should be. NGOs in general argued for exchange rate stability, to enable them plan their activities effectively. However, there was no consensus on the rate at which it should stabilize. In general, they seemed to prefer depreciation to a level with exchange rate stability, at around K4500 to K5000 to the dollar.

Conclusion

A characteristic of NGOs, even national ones, was dependence on external funding. As the Kwacha appreciated, the domestic value of dollar budgets fell, throwing planned activities into disarray. It is but logical, therefore, that most NGOs did not want an appreciating Kwacha, preferring an exchange rate at a level that perhaps reflects an undervaluation. The NGOs put in place a number of adjustment measures to deal with exchange rate appreciation. Some of the organizations found creative changes. One example is that of shifting from printed publications to a greater use of electronic transmissions and photocopying which contributes to a conservation of the essential project outputs, detracting only slightly from the outer gloss of their presentations.

References

- Aybar, Sedat, and Shruti Patel, Jonathan Stever and John Weeks
2006 Macroeconomic Management during an Oil Boom: Options and Strategies (London: SOAS)
- Bank of Zambia
2003 ff Statistics Fortnightly, various issues.
2006 Report of the Quarterly Survey of Business Opinion and Expectations in the first quarter of 2006, May (Lusaka: Bank of Zambia)
- Bank of Zambia
2005 (March) Report of the Quarterly Survey of Business Opinion and Expectations, Fourth Quarter 2006 (Lusaka: Bank of Zambia)
2007 (April) Report of the Quarterly Survey of Business Opinion and Expectations, Fourth Quarter 2006 (Lusaka: Bank of Zambia)
- Buffie E., C Adam, S O’Connell S, and C Patillo
2004 Exchange Rate Policy and the Management of Official and Private Capital Flows in Africa, IMF Staff Papers, Vol. 51 Special Issue
- Calì, Massimiliano and Dirk Willem te Velde
2007 ‘Is Zambia contracting Dutch Disease?’ ODI Working Paper 279 (London: Overseas Development Institute)
- Central Statistical Office (CSO)
2003-2006 Monthly Press Release on Consumer Price Index, various issues
2003-2006 The Monthly, various issues
- Corden, Max and J.P Neary
1982 ‘Booming Sector and De-industrialisation in a Small Open Economy,’ Economic Journal 92
- Eifert, Gelb and Ramachandran
2006 Business Environment and Comparative Advantage in Africa – Evidence from Investment Climate Data, Working Paper 56 (Washington: Center for Global Development).
- Fischer, Stanley
2001 ‘Exchange Rate Regimes: Is the Bipolar View Correct?’ Meetings of the American Economic Association, January 6 (New Orleans)
<http://www.imf.org/external/np/speeches/2001/010601a.htm>
- Fynn, J and S. Haggblade
2006 Potential Impact of the Kwacha Appreciation and Proposed Tax Provisions of the 2006 Budget Act on Zambian Agriculture, Food Security Research Project (FRSP) and the Zambia National Farmers Union (ZNFU), Working paper No. 16 (July)

- Ghosh, Atish R, Jonathan D Ostry, Anne-Marie Gulde and Holger C Wolf
1996 'Does the Exchange Rate Regime Matter for Inflation and Growth?' Economic Issues No 2
- Gudmundsson M,
2006 The Choice and Design of Exchange Rates, Bank of International Settlements (BIS).
- Kipier, Ahmet and Kesriyeli, Mehtap
1992 The Real Exchange Rate Definitions and Calculations (Ankara: Central Bank of Turkey, 97/1 Research Department, 1992
- International Monetary Fund
2005 The Macroeconomics of Managing Increased Aid Flows: Experiences of Low Income Countries and Policy Implications, (Washington: Policy Development and Review Department)
2006 Country Report No.06/263, Zambia: Fourth Review of the Three-Year Arrangement Under the Poverty Reduction and Growth Facility, Request for Modification of Performance Criteria, and Financing Assurances Review – Staff Report; and Press Release on the Executive Board Consideration.
September 2006, World Economic Outlook Financial Systems and Economic Cycles.
- Liebenthal, Robert
2006 'Memorandum to the National Assembly Committee on Economic Affairs and Labour on the Appreciation of the Kwacha,' (Lusaka: Economic Association of Zambia)
- Ministry of Finance and National Planning
2001-2005 Economic Report (Lusaka: Ministry of Finance and National Planning)
- Mundell, R A
1963 'Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates,' Canadian Journal of Economics and Political Science 29 (November) 475-85
- UNCTAD
2006 Trade and Development Report, Global Partnerships and National Policies for Development (Geneva: UNCTAD)
- Weeks, John, Victoria Chisala, Hulya Dagdeviren, Alemayehu Geda, Alfredo Saad Filho, Terry McKinley and Carlos Oya (Weeks, et. al.)
2006 Economic Policies for Growth, Employment and Poverty Reduction: Case Study of Zambia (Ndola: Mission Press)

People and Organisations Consulted

Name	Title and Organisation
Rafael Aguirre	European Union in Zambia
S.M Arora	TATA Zambia, Acting Chief Executive
J Barnhart	Economist, USAID
T. Bhebhe	African Development Bank, Zambia
Samuel Bwalya	Zambia Revenue Authority, Research and Business Development-Director
R. Chembe	Bank of Zambia
Denies K. Chisenda	Ministry of Finance and National, Director Budget Office
Felix Chizhka	Support to Farmers Association Project, Programme Manager
Aeneas Chuma	United Nations Resident Representative Zambia
Efreda Chulu	Central Statistical Office, Acting Director
Peter Cottan	National Milling Corporation Limited, Managing Director
Coillard Hamushimbi	Zambia National Farmers Union, Liaison Officer
Alan R. Hardness	Sausage Tree Camp Zambia, Director
Peter Henriot	Jesuit Centre for Theological Reflections-Director
Sari Jormanainen	Embassy of Finland
J. Kakoza	IMF, Zambia
John Kalumbi	Central Statistical Office, Deputy Director
Gerhad K. Kangamba	Mines Development Department, Director of Mines
Jennifer Karbo	Economic Commission for Africa, Director
Stein Liyanda	Zambia National Tourist Board, Finance & Administration Manager
Olav Lundstol	Chief Economist, Embassy of Norway
Robert Liebenthal	Consultant and member of Zambia Economic Society
Eva Lovgren	Economist, Embassy of Sweden
Gibson Masumbu	Zambia Business Forum, Director

L.C. Mbewe	Zambia Export Growers Association, Chief Executive
James Mulungushi	Ministry of Finance and National Planning, Director Planning and Economic Management Division
Mick Muffy	Mukushi Farming Block, Tobacco Commercial Farmer
Agness Musunga	Ministry of Finance and National Planning, Acting Director Planning
Oswald Mwewa	Zambia Manufacturers Association, Vice President
David Ndopu	Ministry of Finance and National Planning, Director Economic Technical Co-operation
Mushiba Nyamazana	World Bank-Economist
Emmanuel Mulenga Pamu	Bank of Zambia, Acting Assistant Director, BOP & Debt
Noah Mutoti	Bank of Zambia, Assistant Director Economics Department
Christian Petrauskis	Jesuit Centre for Theological Reflection, Social Conditions Research Project
Nigel Polland	York Farms, Managing Director
Andrew Sardanis	Chaminuka Lodge, Managing Director
Phillip Graf Von Schwerin	German Technical Co-operation, Director, Special Programmes
Julius J. Shawa	Ministry of Agriculture and Co-operatives, Policy and Planning Department-Director
Siazongo D. Siakalenge	Ministry of Commerce, Trade and Industry, Director of Industry
Musiyalela Sitali	Zambia Investment Centre, Marketing Manager
David Thompson	The Lusaka Hotel, Director
Rafael Aguirre Unceta	European Union, Acting Head of Delegation and Head of Operations
Jos Verbeek	World Bank (Lusaka and Washington)
Wilma Viljanmaa	Embassy of Finland
Songolowayo Ziyambo	Zambia National Farmers Union, Executive Director
Flint Zulu	Civil Society for Poverty Reduction (CSPR), Programme Coordinator



United Nations Development Programme
Zambia Country Office
P.O. Box 31966 Lusaka, Zambia
tel: +260-1-250 800
e-mail: registry.zm@undp.org

web: www.undp.org.zm