STUDY ON THE APPROPRIATE EXCHANGE RATE REGIME FOR A COMPETITIVE EXPORT-LED GROWTH STRATEGY FOR GHANA

This report was prepared by Dr. J. S. L. Abbey and Dr. Charles Jebuni of the Centre for Economic Policy Analysis and Dr. Augustine Fritz Gockel and Dr. Susan Hester of the USAID funded Trade and Investment Program for a Competitive Export Economy in response to concerns raised by private sector exporters and MOTIPSD/PSI.

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For electronic copies, contact:
USAID/TIPCEE: researchreports@tipceeghana.org

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ACRONYMS

ADF	—	Augmented Dickey-Fuller
AERC	—	African Economic Research Consortium
AGI	—	Association of Ghanaian Industries
AMA	—	Accra Metropolitan Authority
BEER	—	Behavioral Equilibrium Exchange rate
BOG	—	Bank of Ghana
BWIs	—	Bretton Woods Institutions
CB	—	Central Bank
CEPA	—	Centre for Policy Analysis
CPI	—	Consumer Price Index
DD	—	Demand Deposits
DMBs	—	Deposit Money Banks
ECA	—	Economic Commission for Africa
ERP	—	Economic Recovery Program
EU	—	European Union
FAGE	—	Federation of Associations of Ghanaian Exporters
FCD	—	Foreign Currency Deposits
FEER	—	Fundamental Equilibrium Exchange Rate
FEMO	—	Foreign Exchange Market Operations
FRBNY	—	Federal Reserve Bank of New York
GDP	—	Gross Domestic Product
GFCF	—	Gross Fixed Capital Formation
GIR	—	Gross International Reserves
GNFS	—	Goods and Non-Factor Services
GPRS I	—	Ghana Poverty Reduction Strategy
GPRS II	—	Growth and Poverty Reduction Strategy

HIPC	—	Heavily Indebted Poor Country Initiative
IFS	—	International Financial Statistics
IMF	—	International Monetary Fund
ITL	—	Inflation Targeting Lite
KMA	—	Kumasi Metropolitan Authority
M1	—	Narrow Money Supply (Currency + Demand Deposits)
M2	—	Broad Money Supply (M1 + Quasi-Money)
M2+	—	Broad Money Supply (M2 + FCD)
MDGs	—	Millennium Development Goals
MDRI	—	Multilateral Debt Relief Initiative
MPC	—	Monetary Policy Committee
NDA	—	Net Domestic Assets
NFA	—	Net Foreign Assets
NIR	—	Net International Reserves
PRGF	—	Poverty Reduction and Growth Facility
REER	—	Real Effective Exchange Rate (Trade-weighted)
RER	—	Real Exchange Rate (Bilateral)
RM	—	Reserve Money
RM+	—	Reserve Money including FCD
SAEMA	—	Shama Ahanta East Metropolitan Authority
SEC	—	Securities Exchange Commission
TIPCEE	—	Trade and Investment Program for a Competitive Export Economy
TMA	—	Tema Metropolitan Authority
TOT	—	Terms of Trade
TOR	—	Tema Oil Refinery
UK	—	United Kingdom
USA	—	United States of America
USD	—	United States Dollars
VAR	—	Vector Autoregressive
WDI	—	World Development Indicators
WPI	—	Wholesale Price Index

1.0

INTRODUCTION AND BACKGROUND

Over the last decade, poverty reduction has become the central objective of both national and international development efforts. This is reflected in the Millennium declaration, the Poverty Reduction Strategy Paper (PRSP) process by the Bretton Woods Institutions (BWI) and the institution of the Poverty Reduction and Growth Facility by the International Monetary Fund (IMF)

Growth, especially pro-poor growth, according to the literature, is the most important factor in achieving sustainable poverty reduction. Faster economic growth is seen as the essential precondition for low-income countries to achieve sustainable poverty reduction (Klasen, 2001; ECA, 2006). To be more effective, this growth must be pro-poor.

These changing orientations have also propelled a change in the focus of policy formulation in Ghana. This changing policy direction is seen in the Ghana Poverty Reduction Strategy (GPRS I) and the Growth and Poverty Reduction Strategy (GPRS II) which provide the medium-term framework for Ghana's growth and development.

After a period of economic reforms – starting with the Economic Recovery Programme (ERP) in 1983 – which have generated the longest period of continuous growth in the economy, Ghana sees the need for an accelerated growth strategy.

The GPRS I recognized seven broad areas as critical to the growth and poverty reduction strategy:

- ensuring macroeconomic stability for accelerated growth;
- increasing production and promoting sustainable livelihoods;
- facilitating direct support for equitable human resource development;
- providing special programmes in support of the vulnerable and excluded;
- ensuring gender equity;
- ensuring good governance and the increased capacity of the public sector; and
- the active involvement of the private sector as the main engine of growth and partner with government in nation building.

In GPRS II, in addition to the areas identified earlier, the critical role of a diversified economy and an export-based strategy is emphasized. In both documents Ghana's development strategy envisions an export- and private sector-led growth leading to the attainment of a middle-income status by 2015. The export-led growth strategy requires growth in both traditional and non-traditional exports and does not exclude efficient import substitution. Ghana's strategy, therefore, requires the development of a diversified and competitive domestic production base that will relieve the supply constraints to enable the country exploit her international market potential. Achieving these goals requires a supportive macroeconomic environment – in particular a supportive exchange rate, both in terms of assignment and level, and low and stable inflation.

An exchange rate regime can be considered supportive if it does not discourage exports nor serve as a tax on private sector activity. The problem, however, is that a protracted real exchange rate appreciation shifts relative incentives away from exports to import trade and adversely affects a country's current account balance. It also dampens economic growth.

It is argued that Ghana's exchange rate has appreciated in real terms since 2002. A real exchange rate which is appreciating and potentially hampering growth of the export and import-competing sectors, would raise questions

about the appropriateness of the country's exchange rate policy and management. As such, there is need to study the country's current exchange rate policy and management to determine the exchange regime best suited to the present needs of the country.

Over the last five years, Ghana has also set itself the task of achieving a middle-income status by 2015. Growth rates in excess of 8.0 percent per annum would be needed if this is to be achieved. Considerable levels of investment and supportive macroeconomic and microeconomic environments would be required.

Furthermore, as a result of increasing national and international concerns for poverty reduction, there are promises to scale up aid inflows to Africa. Scaled-up inflows while potentially beneficial raise issues of macroeconomic management of the aid. Consideration of the Dutch Disease and resource curse issues may begin to emerge. Can the aid be spent and absorbed without causing the real exchange rate to appreciate, adversely affecting the foundation of the growth strategy, which is the development of non-traditional exports? Ghana has since 2001 received scaled-up aid inflows; and the increases in aid inflows could likely cause an appreciation in the nominal and real exchange rates if not properly spent and absorbed.

It is in the light of considerations of these concerns that the Ghana Trade and Investment Programme for a Competitive Export Economy (TIPCEE) commissioned this study.

The specific tasks to be undertaken under the project involve:

1. Examining exchange rate trends and their implications for the export sector and import-competing industrialization. This task would include studying the impact of large grant inflows and debt write-offs under the Heavily Indebted Poor Country HIPC Initiative and Multilateral Debt Relief Initiative (MDRI) on the exchange rate.
2. Understanding how the Bank of Ghana currently manages its exchange rate policy vis-à-vis its published objectives. This will entail an analysis of policy trade-offs and credibility of existing exchange rate regime. The

trade-off analysis will include those between:

a. *Exchange rate objectives and inflation objectives*
b. *International competitiveness and low and stable inflation*
c. *Interest rate stability and low and stable inflation*
d. *Exchange rate stability and output growth*

3. Establishing and quantifying the deviation from both internal and long run external balance with time series data; and computing measures of Ghana's competitiveness other than the real effective exchange rate (REER) – the terms of trade, non-fuel terms of trade, changes in productivity, changes in the productivity of the tradable and non-tradable sectors;
4. Determining the effect of external shocks on the demand for non-tradable capital goods (e.g. increase in construction activity and in the price of real estate);
5. Investigating the likely increase in government subsidization of private consumption as a result of external shocks. In this regard, it will be necessary to examine the effect of the changes in the exchange rate on the goods, factor, and asset markets;
6. Examining probable reaction function of private agents to foreign exchange reserves, to inflation, to expected inflation; and
7. Analyzing the impact of the existing foreign exchange policy on competitiveness and make recommendations for alternative regimes.

1.1 Literature Review

Available literature suggests that the exchange rate and the management of the exchange rate are important determinants of an economy's competitiveness, export performance and diversification, and economic growth. The exchange rate is an important economy-wide relative price signaling relative profitability and the need for inter-sectoral resource transfers and factor movements.

Sustained real exchange rate misalignment is associated with lower economic growth. 'Excessive' real exchange rate volatility could induce uncertainty in investors' perceptions and may thereby adversely affect investment in the

long-run economic growth. Razin and Collins (1997) argue that it is exchange rate misalignment that affects growth and therefore ought to be the one included in growth equations and not the levels or volatility of the real exchange rate. They find that overvaluation does have a negative and statistically significant effect on economic growth. *"The effect is also economically significant – the estimated coefficient implies that a 10 percent overvaluation is associated with a decline in real per capita output growth of 0.6 percentage points"* (Razin and Collins, 1997, page 16). The analysis also finds that there are important non-linearities in the relationship between misalignment and economic growth. *"In particular, it is only very high overvaluations that appear to be associated with slower economic growth. Furthermore, moderate to high (but not very high) undervaluation appear to be associated with more rapid economic growth"* (page 19).

Earlier analysis of exchange rate policy concentrated on the harmful effects on economic growth of large overvaluations with huge black market premia. Easterly (2005) warns against using these results in circumstances of moderate misalignments. For moderate misalignment the Easterly (2005) review finds no effects on economic growth.

For Rodrik (2007), undervaluation, irrespective of the extent of undervaluation, is always good for economic growth in developing countries. On the other hand, misalignment may have no such effect in developed countries. As far as Rodrik (2007) is concerned any level of undervaluation is good for growth.

East Asia is frequently cited as a case in which moderately depreciating or undervalued exchange rates were used to promote economic growth. Rodrik (2007) shows that the East Asian experience is not an outlier and applies to African countries as well. Hence developing countries that find ways of increasing the profitability of their tradables are able to achieve higher economic growth. As to the explanation of the link between exchange rate policy and economic growth, Rodrik (2007) attributes it to the institutional weaknesses and market failures in developing countries.

"Tradable economic activities are 'special' in developing countries. These activities suffer disproportionately from the institutional and market failures that keep countries poor. Sustained real exchange rate depreciations increase the relative profitability of investing in tradables, an act in second-best fashion to alleviate the economic costs of these distortions. That is why episodes of undervaluation are strongly associated with higher economic growth."

One of the critical ways in which exchange rates affect growth is through inducing and supporting export diversification programmes. Export diversification is seen as a successful strategy leading to economic transformation. To be successful in generating export diversification, export orientation policies must be sustained. Non-traditional exports are credited with higher income elasticities of demand, less volatile terms of trade, and higher prospects of dynamic productivity gains. Indeed, countries that specialize in exports of primary products have been found to grow less steadily than diversified economies. And those specialized in natural resource exports could suffer the resource curse and collapse after the boom.

Even diversifying, countries that specialize in the types of goods that rich countries export are likely to grow faster than countries that specialize in other goods. Rich countries are those that have latched onto the 'rich-country products', while countries that continue to produce 'poor-country products' could remain poor.

There is evidence that developing countries' ability to diversify depends on their ability to avoid exchange rate overvaluation. Overvaluation can be particularly harmful to non-traditional exports which may be subject to market protection. It can lead simultaneously to more export concentration and over time to specializing away from 'rich-country products' (Elbadawi and Kaltani, 2007).

While there is a wide consensus that macroeconomic stability is a prerequisite for growth, there is concern about the current concept of macroeconomic stability. The concept of macroeconomic stability has changed over time and

has become too limited, for example, with an excessive focus on inflation targeting. It has been mainly concerned with intermediate objectives rather than final objectives such as full employment or sustainable growth (Ocampo, 2004).

In the post-war period, macroeconomic stability meant a mix of external and internal balance, implying full employment and stable economic growth, accompanied by low inflation. Fiscal balance and price stability subsequently moved to centre stage supplanting emphasis on real economic activity. The shift also led to downplaying of the countercyclical role of macroeconomic policy.

Changes in the international economic framework have consigned developing countries to pro-cyclical rules whilst developed countries have some room for countercyclical policies. The main focus for developing countries, in the context of macroeconomic stabilization to promote growth, for Ocampo (2004), should be how to recover the room for maneuver for countercyclical economic policies that are balance-of-payments viable through trade policy or through exchange rate adjustment. One has to remember the concern raised by Friedman (1930) though, that even countercyclical policies can be destabilizing if they are weakly correlated with the state of the economy. Chetty () shows that, using a different definition, every countercyclical policy that does not convert recessions into booms improves economic stability. However, efforts to 'fine tune' the economy by responding to small fluctuations can reduce stability irrespective of the measure of uncertainty used.

Macroeconomic stability should involve multiple dimensions including not only price stability and sound fiscal policies, but also a well-functioning real economy, sustainable debt ratios, and healthy domestic financial and non-financial private sector balance sheets. This also implies that there can be no simple correlations between its various dimensions, and thus multiple objectives and significant trade-offs are intrinsic to the design of 'sound' macroeconomic frameworks.

To be growth-oriented, the concept of macroeconomic stability must be broadened to include growth and other objectives. Secondly, macroeconomic stability to promote growth must be based on countercyclical policies. Third, macroeconomic stability to promote growth has multiple dimensions and trade-offs and one ought to take these into consideration in setting up a macroeconomic framework for growth.

This raises a number of issues. What are the trades-offs among the multiple objectives of macroeconomic stability? What combinations of these various objectives are sustainable?

Real exchange rate fluctuations have costs if the tradables sectors face increasing and other dynamic economies of scale. Appreciating pressures in periods of foreign exchange abundance, as the literature on the Dutch disease illustrates, can lead to long-term de-industrialization effects. Real exchange rate volatility is also costly if entry into the tradables sector has significant fixed costs. In open economies, therefore, the real exchange rate is one of the crucial determinants of investment, growth and employment (Ocampo, 2004).

Not only does exchange rate appreciation have adverse distributional consequences, it also fundamentally frustrates export diversification. Indeed, exports are liable to contract, retreating into a yet narrower range of commodities. In Africa, the classic example of this process came about when foreign exchange earnings from oil wiped out Nigeria's agricultural exports.

1.2 External Shocks, Exchange Rate and Growth

An unstable world environment can adversely affect developing countries through either international goods markets or international capital markets.

Shocks in the goods market can arise from exports, imports, exchange rate and trade shocks. The dominant shock in terms of developing countries has been terms of trade shocks. Capital market shocks could include interest rate changes, capital and aid flows (Dornbusch and Helmes, 1988).

As a result of their dependence on primary commodity exports, terms of trade fluctuations pose a particularly important challenge to developing countries, where they are as twice as large as in developed countries. Terms of trade shocks are known to affect economic performance. Terms of trade instability is also an important source of growth fluctuations accounting for as much as half the output volatility in developing countries (Malik, 2005).

Terms of trade (TOT) shocks may affect savings, investment and output. The effect of TOT shocks on savings depends on the nature of the shock, perception of the shock permanent or temporary and whether the benefits accrue directly to the state or the private sector.

In general, commodity booms have led to high levels of savings, suggesting that agents often viewed the shocks as temporary. The high savings have a pronounced effect on investment rather than consumption. Higher savings as a result of a windfall are generally used to acquire assets, with a large number of countries having no choice except opting for foreign assets (construction booms). Commodity booms have generally led to a rise in public investments such as infrastructure. They have also led to the implementation of grandiose and wasteful projects the so-called construction boom (Malik, 2005). Bevan, Collier and Gunning (1999) would suggest that due to the paucity of domestic assets, public (as in the Tanzanian coffee boom) and private (as in the case of Kenya) construction booms are possible.

The main conclusion of the literature on commodity booms is that the gains to output or income have been at best meager and short-lived, while the costs resulting from negative shocks have been both significant and of larger duration (Foster and Killick, 2006, Malik, 2005). The reason for the failure of commodity booms to generate lasting benefits in terms of output or income growth may include, according to Foster and Killick (2006):

1. Incorrectly assuming that temporary increase in revenues may be sustained;
2. Deterioration in the quality of public expenditure in the boom years;
3. Boom revenues, with rare exceptions, tend to be fully absorbed by the economy.

Collier et al (1999) add that the investment made from commodity booms is often dominated by structures rather than equipment in low returns on investment. The investment windfall may also have been spent on protected import substitution rather than on export diversification.

A more general link between commodity booms and growth may occur through the Dutch Disease effects. This refers to situations where resource booms may lead to increased government spending and an appreciation of the real exchange rate. The real exchange rate appreciation could induce resource shifts across sectors, particularly the non-traded goods sector. This could hurt export competitiveness and lead to de-industrialization.

Such a possibility may also apply to favorable aid inflows. This has raised concerns about the macroeconomic management and effectiveness of aid. In particular the envisaged scaling up of aid to African countries has renewed interest in the possible effects and management of the aid surge. Increased aid and private remittances represent a resource boom and like all resource booms could also lead to concerns about resource curse.

The fundamental question is whether an aid surge may have Dutch Disease effects appreciating the real exchange rate and undermining the growth of exports, especially non-traditional exports. There is evidence in both directions. Rajan and Subramanian (2005) find that large aid inflows have a systematic adverse effect on a country's international competitiveness. Others have found Dutch Disease effects to be weak and unimportant. Reviewing the evidence, Foster and Killick (2006) conclude:

> *"... we regard the issue of whether a large scaling-up of aid is likely to induce Dutch Disease problems as unresolved. There is logic and evidence pointing in both directions and we caution against assuming that a large increase in aid to African countries would not induce this type of macroeconomic difficulty. The microeconomics of how aid is used and its productivity will be crucial determinants, and there is every reason to expect that these would vary widely across countries."* (Foster and Killick, 2006, page 24)

Effectiveness of aid in promoting growth depends on the policy environment, the binding constraint to growth, and the use to which the additional resources are put. Used mainly for social safety net and welfare, it generates no growth. Used under relevant infrastructural development, it crowds out private investment and growth. Stern, Clemens and Bhavnani (2005) find a positive causal relationship between growth-oriented aid and growth. This does not imply that aid has always worked or could not have worked better. The evidence suggests that aid that has been aimed at growth in fact has boosted growth.

Aid works better in countries with strong institutions and a good policy environment but at times can be effective in other situations. The evidence is that absorptive capacity constraints are real but should not be seen as an immutable barrier to growth. Although the impact of aid on growth diminishes as aid increases, in countries with strong institutions and better health, more aid can be absorbed effectively.

This suggests that efforts to strengthen institutions and build human capital can increase returns to aid and help countries effectively absorb larger amounts of aid. Policy discussions should not focus exclusively on determining the limits of aid on growth but rather on how these limits can be expanded and how aid can be made even more effective in supporting economic growth and development.

2.0

TRENDS IN EXCHANGE RATE, COMPETITIVENESS AND GROWTH

A country's external competitiveness can be measured using relative price or production indicators or current account flows. The relative price and productivity indicators include, among others, the real effective exchange rate (REER), relative prices of traded and non-traded goods, unit labour costs, relative real interest rates, the terms of trade and relative productivity. In addition, current account flows involving export growth, market shares and overall current account position of an economy are often used. More recently, business climate and the attractiveness of a country to investors have been used.

In this analysis we use the REER, relative prices, and relative productivity. On the current account indicators we concentrate on export growth and market shares.

2.1 Trends in the Real Effective Exchange Rate (REER)

Trends in the real effective exchange rate (REER) can be used as an indicator of a country's external competitiveness. An overvalued real effective exchange rate reduces the profitability of exports and import-competing activities while providing a subsidy on the consumption of imports.

We thus need to observe trends in the real exchange rate to infer implications for the country's external competitiveness. For this purpose, we compute

Ghana's real effective exchange rate with respect to her major export destinations. The major export destinations for which consistent time series could be obtained were the eight countries, Belgium, France, Italy, Japan, Netherlands, Spain, Switzerland, United Kingdom, and United States of America.

For each of these countries' currencies, we computed a bilateral real exchange rate with the Ghanaian cedi as follows:

$$BRER_{ji,t} = E_{t,i} x P^{*}_{t,r} / P_t$$

where $E_{t,i}$ is the nominal exchange rate in cedis per unit of foreign currency *i* at time *t;* and P_t and $P^{*}_{t,j}$ are respectively the consumer price index for Ghana and that of the bilateral trading partner country at time *t*. In practice, other price indices could have been used – for example, the wholesale price index (the Producer Price Index) and the GDP deflator. The choice of CPI as a measure of price index is based on its ready availability for all the countries (including Ghana).

Having computed the bilateral real exchange rates, we compute the real effective exchange rates using weights $w_1, w_2, \ldots\ldots, w_n$ as follows:

$$MRER_{li,t} = w_1 BRER(UK,t) + w_2 BRER(Netherlands,t) + .w_3 BRER(USA,t) + w_4 BRER(Japan,t) + w_5 BRER(Switerland,t) + w_6 BRER(Italy_n,t) + w_7 BRER(France,t) + w_8 BRER(Spain,t)$$

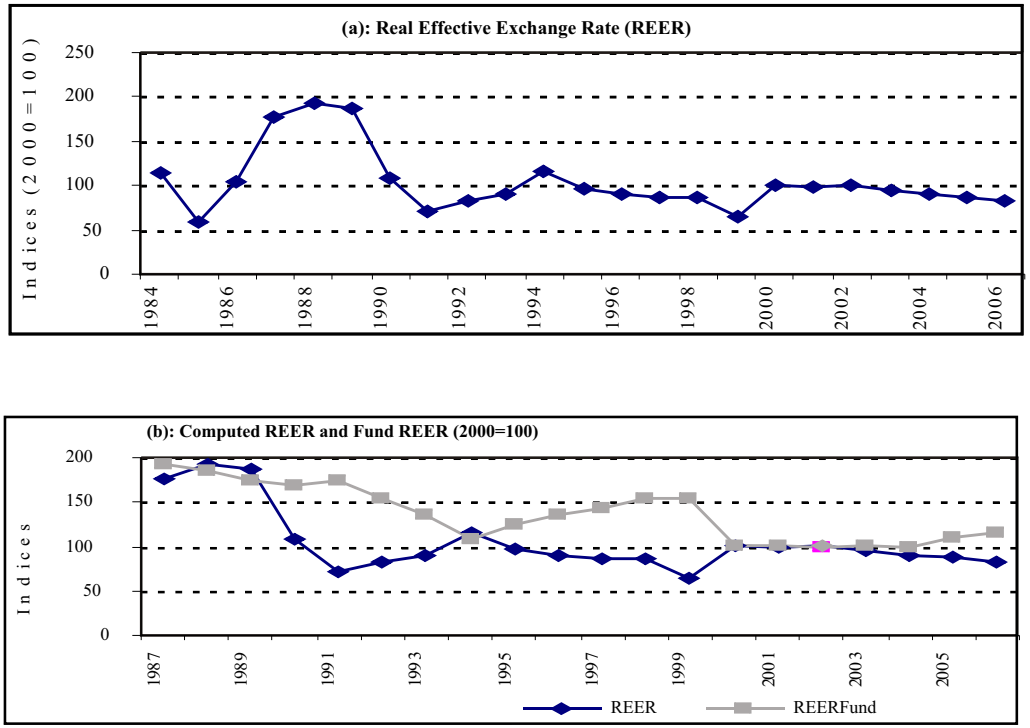
with $0 < w_i < 1$; and $\sum_{i=1}^{8} w_i$

The weights, reflecting exports shares, were as follows: $w_1 = 0.20$, $w_2 = 0.14$, $w_3 = 0.13$, $w_4 = w_5 = 0.07$, $w_6 = w_7 = 0.06$, and $w_7 = 0.04$.

The real effective exchange rate calculations described are converted into indices by taking the year 2000 as the base year. The index of real exchange rate for year 2000 was set at 100. Year 2000 was chosen to make our results comparable with other published REER (see IMF, *International Financial Statistics, Yearbooks*).

Figure 2.1 shows the computed REERs for Ghana. The period covered is 1984-2006. Panel (a) of Figure 2.1 depicts the behavior of the computed real effective exchange rate index. An increase in the index reflects a real depreciation while a reduction is real appreciation.

Figure 2.1: Real Effective Exchange Rate Indices (Year 2000=100.0)



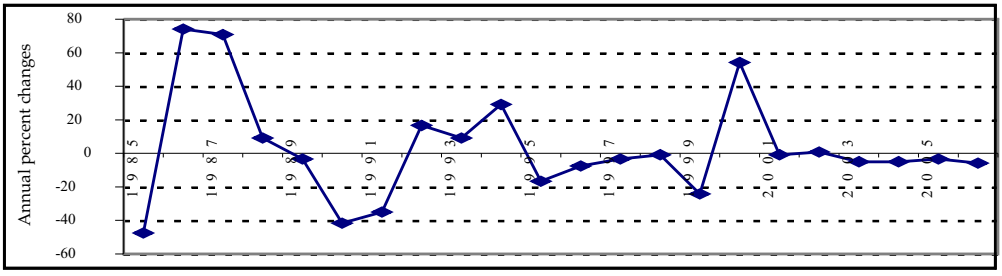
Source: Based on data in Table 1of this Report

Panel (a) of Figure 2.1 portrays a number of interesting properties of Ghana's real effective exchange rate. First, the real exchange rate has experienced significant movements in the twenty three-year period. Second, there are clear distinct breaks in the trend of the exchange rate rapid depreciation up till 1987, stability between 1987 and 1989, rapid depreciation from 1989 to 1991, modest depreciation and then appreciation from 1990 to 1999, stability from 1999 to 2002, and real appreciation between 2002 and 2006. The periods of rapid real depreciation can be explained by rapid nominal depreciation of the

cedi vis-à-vis the trading partners and relatively higher prices in trading partner countries compared to Ghana's at the time.

For comparative purposes, the real exchange rate derived in this research, labeled as REER and that derived by the IMF, termed $REER_{Fund}$, are plotted together in Panel (b) of Figure 1. It should be noted that with the Fund's definition, an increase in the index implies real exchange rate appreciation while a decrease represents real exchange rate depreciation. Both of the charts depict the same pattern in terms of real effective exchange rate. The period of real exchange rate appreciation match each other. In particular, one has to observe the more recent loss of competitiveness as a disincentive by the real appreciation of the exchange rate from 2001 to the present (see Figure 2.1 c). Thus, over the last five years Ghana has lost competitiveness through an appreciating Real Effective Exchange Rate.

Figure 2.1(c): Annual Percentage Changes in the Real Effective Exchange Rate (Appreciation =-ve)



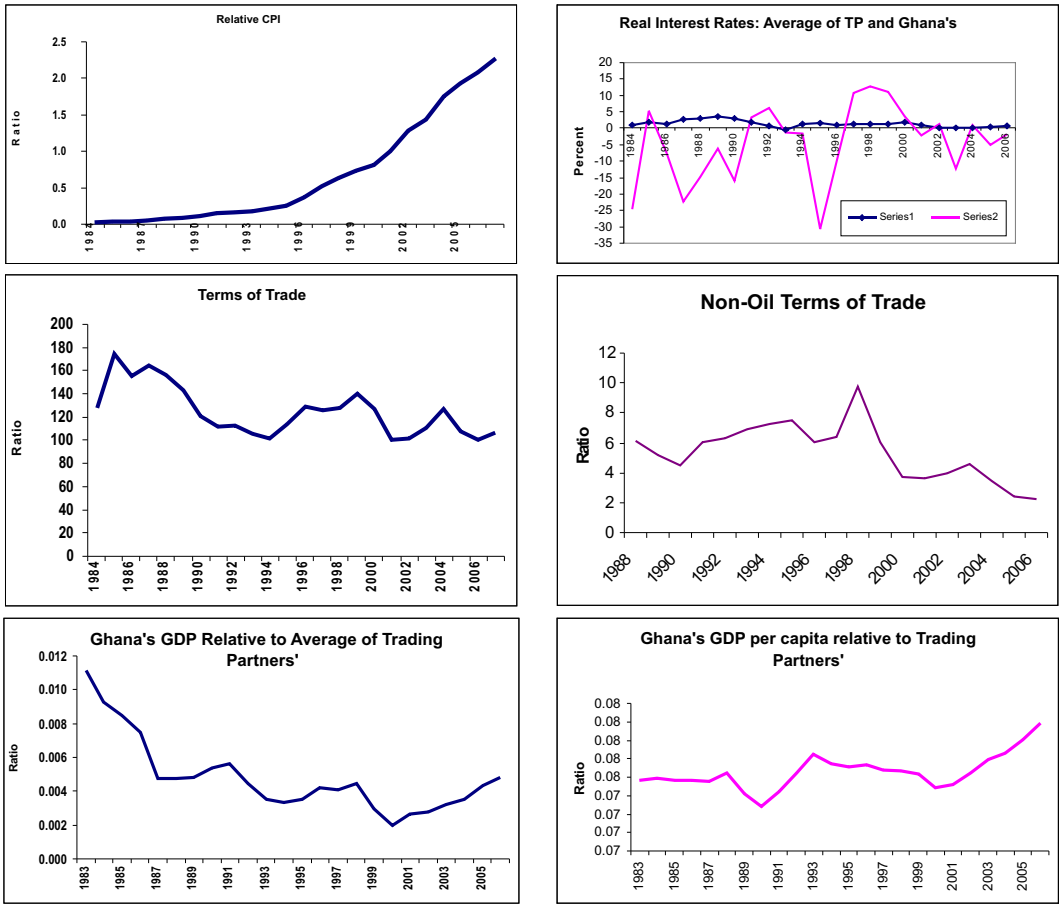
Source: Based on data in Table 1of this report.

Over the last twenty years, the hypothesis that Ghana has had a tendency to maintain a fixed real effective exchange rate (REER) cannot be rejected statistically, although a discernible tendency towards a mild real appreciation with periodic corrections is observed (Panel (b) of Figure 2.1). It is therefore not surprising that the non-traditional exports sector has not been growing as expected, as there has been the tendency to squeeze profit margins, and with the NTE not given the maximum incentives, Ghana may be losing export market shares internationally.

2.2 Measuring Competitiveness

Relative price is measured as Ghana's CPI relative to that of her trading partners. Relative real interest rate compares Ghana's real deposit interest rate (the 91-day Treasury bill rate deflated by the rate of inflation) to that of her trading partners. Terms of trade, is the goods terms of trade as published in the IFS while non-oil terms of trade is proxied by the value of total exports divided by the value of non-oil imports. Relative productivity is measured as Ghana's GDP divided by the average of her trading partners. An alternate measure of productivity is used – Ghana's per capita income divided by the average of her trading partners. These variables are graphed in Figure 2.2 below.

Figure 2.2



Examining trends in the variables, we observe the following. First, real interest rates, relative output and relative per capita income, are much more variable in the years before 2000 than after. Second, regarding relative prices, we see a gently rising trend initially, but a steeper rise from 1995 and even steeper rise after 2001. The trend in relative prices is the combined effect of trading partner country prices that fell consistently and appreciably over the sample period while Ghana's showed variability and even when it fell the extent of decline did not match those of her trading partners.

With regards to the terms of trade, we observe two things – first variability over the sample period and second a trend decline. The non-oil terms of trade shows similar variability and trend decline, albeit with a peak around 1999. For total terms of trade, the changes in the prices of cocoa, gold and oil dominate. Even though with some variability the price of Ghana's non-traditional exports have declined relative to imports. For any given volume of exports the real export earnings must have declined.

Relative output declined up to 2000 amidst some rising spikes. After 2000, we see a reversal of trend – rising relative output. This suggests lower productivity in Ghana compared with her trading partners in the years up to 2000, but higher productivity after that period due largely to rising cocoa output. The pattern observed in relative output is explained by a consistent and marked increase in trading partners' GDP whilst Ghana's only showed modest increases, only from 2001 was the increase appreciable. When productivity is measured by relative per capita GDP, we see a similar pattern.

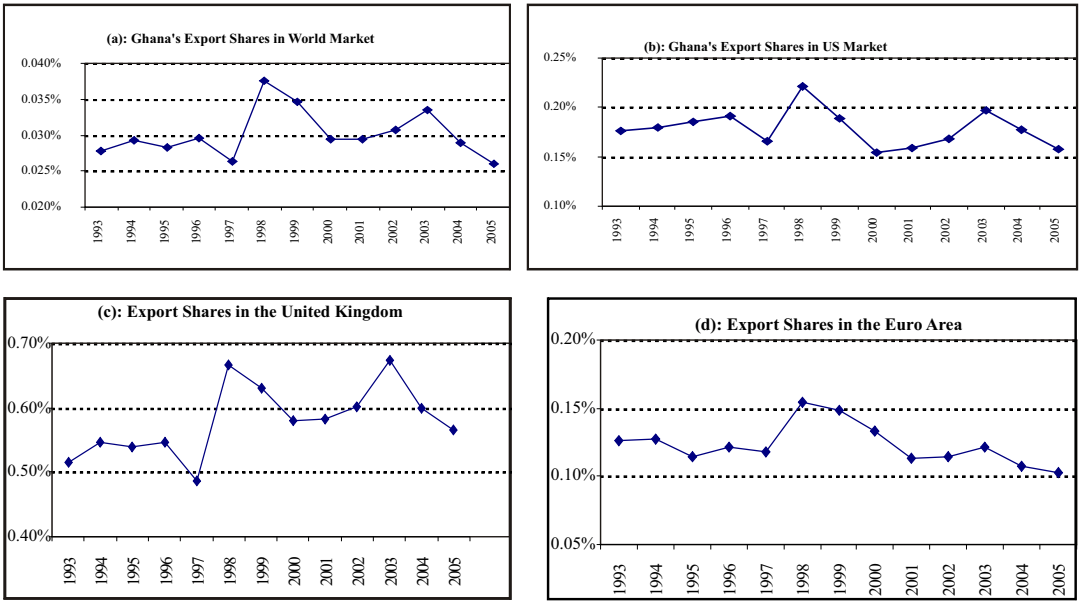
2.3 Export Share Indicators

The export share indicators of competitiveness follow the patterns of the real effective exchange rate in Ghana. In particular, they depict (with a lag of about 3 years) the loss of competitiveness in the more recent period for all of Ghana's traditional trading partners (see Figure 2.3 below).

Over the period 1993-2005, Ghana's export shares in world markets hovered around 0.03 percent on average. Export shares in world markets declined

from a peak of 0.04 percent in 1998 to 0.029 percent in 2000 and 2001; it rose marginally to 0.033 percent in 2003 but had since declined to 0.026 percent in 2005.

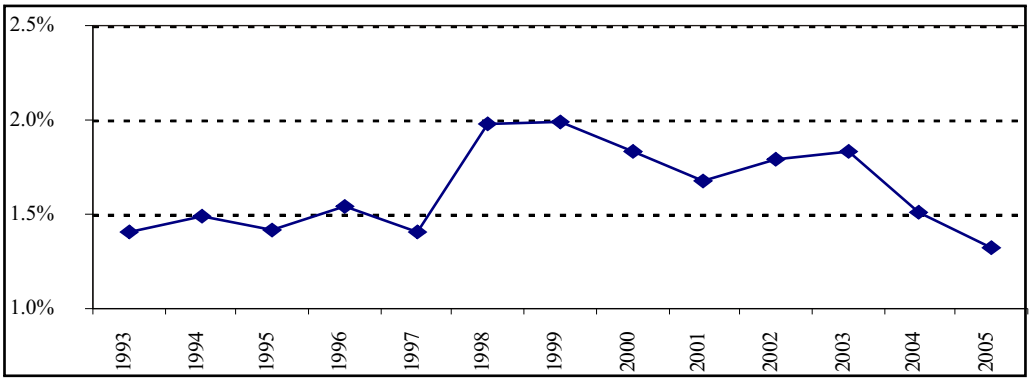
Figure 2.3: Ghana's Export Market Shares in Major Trading Partner Markets, 1993-2005



Source: Based on the World Bank World Development Indicators (WDI) various issues

The pattern is similar in markets of both the United States and the United Kingdom. The decline in market shares in the most recent period is much more serious in the Euro area which has been Ghana's traditional trading partner. For the Euro area, Ghana experienced a continuous decline in market share from 1998. Even in African markets, Ghana appears to have lost competitiveness over the more recent period (see Figure 2.4).

Figure 2.4: Ghana's Export Shares in African Markets



Source: Based on World Bank World Development Indicators (WDI) – various issues

2.4 Macroeconomic Management of Aid and the Dutch Disease

There are disparities in reported aid data from different sources and it is not always easy to reconcile them. Country own reporting of data may be different from international sources based on our self-reporting. For consistency with other studies – IMF (2005), Foster and Killick (2006) and Elbadawi and Kaltani (2007) – we use data reported in various editions of the *World Development Indicators* of the World Bank. The data relating to Ghana is reported in Table 2.5 below:

Table 2.5 shows that Ghana has enjoyed very high levels of aid since 1987. Since that period aid per capita in US dollars has averaged above US$30 for each year, with substantial differences occurring between 1988 and 1991 and since 2003. In terms of GDP aid rose from 8.1 percent of GDP in 1987 to average about 12.0 percent of GDP over the 1988-1999 period before declining almost continuously until 1999. Since reaching the HIPC completion point, the levels of aid have risen again.

Table 2.5: Aid Indicators for Ghana, 1980-2005

	Net Aid US$ million	Aid per capita current US$	Aid/GFCF (%)	Aid/GDP Ratio (%)	Aid/Imports GNFS Ratio (%)	International Reserves (US$ million)	International Reserves (months of imports)	Terms of Trade Changes %
1980	191	17	76.6	4.3	46.9	180.4	5.32	
1984	215	18	70.8	4.9	63.2	131.8	4.65	30.2
1985	196	16	45.4	4.3	37.5	145.2	3.33	-5.9
1986	360	28	65.0	6.3	35.6	148.7	1.76	12.5
1987	413	31	60.7	8.1	32.9	193.6	1.85	-8.3
1988	577	41	98.4	11.1	45.7	200.8	1.91	-7.8
1989	718	50	103.5	13.7	56.2	249.0	2.34	-17.5
1990	563	38	66.3	9.6	37.4	269.3	2.15	-7.5
1991	882	58	84.2	13.4	52.3	497.5	4.15	-0.1
1992	613	39	74.7	9.6	33.2	388.2	2.93	-7.9
1993	624	38	47.1	10.5	28.7	420.4	2.67	-10.9
1994	548	32	42.1	10.1	27.4	592.9	4.13	3.1
1995	651	37	50.3	10.1	30.6	709.9	4.47	7.3
1996	651	36	44.3	9.4	23.4	598.8	3.41	-3.3
1997	494	27	28.9	7.2	13.5	508.5	2.63	-0.7
1998	702	37	40.7	9.4	20.1	483.9	1.59	26.5
1999	609	32	37.9	7.9	15.9	420.1	1.28	-13.4
2000	600	31	50.3	12.1	17.3	233.4	0.83	-16.6
2001	653	33	46.2	12.3	19.0	364.8	1.22	4.8
2002	653	32	47.5	10.6	19.4	640.4	2.19	9.4
2003	907	44	51.9	11.9	22.4	1,425.6	3.86	14.8
2004	1,358	63	54.9	15.3	23.8	1,732.4	3.07	-15.0
2005	1,120	51	36.0	10.4	16.4	1,894.9	3.60	-11.5

Source: World Bank *World Development Indicators* (various issues)

To analyze the impact of aid and address the issues of Dutch Disease, we adopt the IMF (2005) framework. In this framework a distinction is made between Absorption of Aid and Spending of Aid resources.

When aid is transferred to an economy, the foreign exchange may initially be surrendered to the Central Bank and the government may be credited with the value of the aid in domestic currency. Utilizing the foreign exchange is referred to as 'absorption' and depends on the Central Bank's exchange rate and monetary policy. Utilizing the domestic currency equivalent is referred to as 'spending'.

Absorption is defined as the extent to which non-aid current account deficit widens in response to an increase in aid flows. This measure captures the quantity of net imports financed by an increment in aid, which represents the real transfer of resources enabled by aid. Absorption captures both the direct and indirect increase in imports financed by aid, i.e., direct purchases of imports by the government, as well as second-round increases in net imports resulting from aid-driven increases in government or private expenditures. Absorption reflects the aggregate impact of the macroeconomic policy response to higher aid inflows, encompassing monetary, exchange rate, and fiscal policies.

Absorption can be defined and understood in terms of the balance of payments identity:

$$\text{Current Account} + \text{Capital Account} \approx \Delta\text{Reserves}$$

Breaking the current and capital accounts into their aid and non-aid components, and re-arranging items, the following identity is produced:

$$\text{Aid Inflows} \approx \Delta\text{Reserves } \Delta$$
$$(\text{Non-Aid Current account} + \text{Non-Aid Capital Account})^{1}$$

Thus an increase in aid can serve some combination of three purposes: an increase in the rate of reserve accumulation; an increase in non-aid capital outflows; or an increase in the non-aid current account deficit. The rate of absorption of an increase in aid is defined as the change in the non-aid current account deficit as a share of the change in aid inflows[2]:

$$\text{Absorption} = \Delta\ (\text{Non-Aid Current Account Deficit})/\Delta\text{Aid}$$

[1] The non-aid current account balance is the current account balance excluding official grants and interest on external public debt, while non-aid capital account balance is the capital account net of aid-related capital flows, such as loan disbursements and amortization.

[2] With this definition, aid that finances capital outflows is not absorbed. This makes sense insofar as aid that flows back out of the country does not transfer real resources to the country. However, there are particular circumstances in which aid that finances capital outflows can be thought of as allowing an increase in absorption relative to a particular counterfactual that is relative to what might have happened without the aid.

For a given fiscal policy, absorption is controlled by the central bank, through its decision about how much of the foreign exchange associated with aid to sell, and through its interest rates policy, which influences the demand for private imports via aggregate demand. The mechanism will depend on the exchange rate regime, but under any regime, the monetary authority can choose to accumulate reserves or to make the foreign exchange available for importers. In the extreme case where central bank uses the full increment in aid to bolster international reserves and does not increase net sales of foreign exchange, none of the extra aid will be absorbed.

Spending is defined as the widening in the government fiscal deficit net of aid that accompanies an increment in aid:

$$\text{Spending} = \Delta (G-T)/ \Delta \text{Aid}$$

Spending captures the extent to which the government uses aid to finance an increase in expenditures or a reduction in taxation. Even if the aid is used to finance an increase in expenditures, government can choose whether or not to increase the overall fiscal deficit as aid increases. The aid-related increases in expenditures could be on imports or domestically-produced goods and services. Analyzing spending is important because of the natural focus on the budget as a policy variable, and also because of the importance of tensions between the fiscal policy response to aid and broader macroeconomic objectives with respect to the exchange rate and inflation.

These definitions of absorption and spending take into account, by construction, the *fungibility* of aid. For example, if the foreign exchange associated with a particular grant is sold by the central bank, but overall net sales of foreign exchange do not increase, this does not constitute an increase in absorption, because no extra foreign exchange is available to finance an increase in net imports. Similarly, if the government allocates a new grant to financing a domestic project that was earlier financed from different sources,

[3] The deficit net of aid is equal to total expenditure (G) less domestic revenue (T), and financed by a combination of net aid and domestic financing: G-T = Non-Aid fiscal deficit = Net Aid + Domestic Financing

this does not constitute an increase in spending, since the non-aid fiscal deficit remains unchanged.

There is a four-way combination identified with this framework by Foster and Killick (2006). These are reproduced in Box 1 below with their policy implications.

Absorption and spending are distinct though related concepts and policy choices. If aid comes in kind, or if the government spends aid dollars directly on imports, spending and absorption are equivalent, and there is no impact on macroeconomic variables like the exchange rate, the price level, and the interest rate.[4] This paper concentrates on the more difficult and empirically relevant case where aid dollars are gifted to government, which immediately sells them to the central bank.

Subsequently the government decides how much of the local currency counterpart to spend on domestic projects, while the central bank decides how much of the aid-related foreign exchange to sell on the market and spending differs, in general, from absorption.

[4] Strictly speaking, this is true only if the gifted or directly imported good is one of which there was no existing effective demand! If, as in the more normal situation, the good was already demanded domestically, then increasing the good's supply would depress the price of tradables relative to non-tradables, leading to real appreciation

Box 1: Four-way Classification of Absorption and Spending Aid

i. **Neither absorb the foreign exchange, nor spend the counterpart**. The aid is saved, with the foreign exchange added to reserves. The counterpart is used by government to reduce its domestic indebtedness but there is no change in the level of demand or the growth of the economy.

ii. **Spend the counterpart without absorbing the foreign exchange**. If the foreign exchange is added to reserves but government spends the counterpart on local goods and services, the aid increases the monetary base and raises domestic demand, which is inflationary unless there is spare capacity in the economy. If there is spare capacity, government could anyway have loosened fiscal or monetary policy to bring it into use, and it can be argued that anything achieved by the aid could have been done equally well without it, by relaxing macroeconomic policy. Spending without absorbing is thus analogous to deficit financing, the macroeconomic effects of which are rather well understood (Roemer, 1989).

iii. **Absorb the foreign exchange without spending the counterpart**. If government saves the domestic currency counterpart but the foreign exchange is sold to finance increased net imports, the effect of the aid on the macro-economy will be deflationary, taking demand out of the economy as foreign exchange is sold for domestic currency and is then used to finance increased net imports. This can be a sound use of aid if the budget deficits and inflation need to be reduced. It may be an effective way of assisting the growth of the private sector, via reduced use of the inflation tax and less crowding-out in credit markets.

iv. **Fully absorb the foreign exchange and spend the counterpart**. If the aid is entirely spent on additional imports, then the foreign exchange reserves and the government budget deficit are unchanged. The economy enjoys a boost through increased net imports and there is no effect on the domestic supply-demand balance. Unless all the aid is used to finance government imports that would not otherwise have been purchased, absorbing all the foreign exchange in higher net imports may require an appreciation of the real exchange rate, to persuade purchasers to switch enough demand from domestic to foreign goods and services.

A key point highlighted by the four-way classification is that *it is the absorption of the foreign exchange that is critical*, since it is only when additional foreign resources enter the economy that aid has an impact on the levels of production, consumption and investment that the economy can attain.

Three recent studies have analyzed the Ghanaian situation with respect to aid, aid management and the possible consequences in terms of the Dutch Disease. We reproduce the data and analyses in Table 2.6 below. We also provide in the Appendix details of the annual changes in the extent of spending and absorption using the methodology discussed above.

Table 2.6: Absorbing and Spending Aid – Some Research Findings on Ghana

IMF (2005) Study	**Pre-Aid Surge**	**Aid Surge**	**Difference**	**Incremental**
Period Covered	**1999-2000**	**2001-2003**		**Aid Absorbed? Spent?**
Net Aid Inflows (% of GDP)	1.3	6.8	5.5	
Non-Aid CA Balance (% of GDP)	-13.4	-3.4	10.0	Not Absorbed
Non-Aid KA Balance	9.9	2.1	-7.8	0%
Change in Reserves (-=increase)	2.2	-5.4	-7.6	
Allocation of Net Budgetary Aid				
Net Aid Inflows	1.3	7.3	6.0	Not Spent
Revenue (excluding grants)	17.1	19.0	1.9	7.0%
Expenditure (excl external Interest)	27.0	29.3	2.3	
Overall Fiscal balance before Aid	-9.9	-10.3	-0.4	
Foster and Killick (2006)	**Foster and Killick (2006) Study**			**Incremental**
Period Covered	**1998-2000**	**2001-2003**	**Difference**	**Aid Absorbed? Spent?**
Net Aid Inflows	1.3	6.8	5.5	Not Absorbed
Non-Aid Current Account Balance	-13.4	-3.4	10.0	Reserves increased by more
Non-Aid Capital Account Balance	9.9	2.1	-7.8	than the value of incremental
Change in Reserves (-=increase)	2.2	-5.4	-7.6	aid, current account improves
Allocation of Net Budgetary Aid				capital account deteriorates
Net Fiscal Aid Inflows	1.3	7.0	5.7	7% Not Spent
Revenue (excluding grants)	17.1	19.0	1.9	
Expenditure	27.0	29.3	2.3	
Overall Fiscal Balance before grants	-9.9	-10.3	-0.4	
Elbadawi and Kaltani (2007)	**Elbadawi and Kaltani (2007) Study**			**Incremental**
Period Covered	**1996-1999**	**2000-2003**	**Difference**	**Aid Absorbed? Spent?**
Change in Net Aid	8.5	11.8	3.3	
Change in Non-Aid CA Balance	-18.4	-15.3	3.1	0% Absorbed
Change in Non-Fiscal Balance	-11.5	-10.8	0.7	0% Spent
Period Covered	**2000-2003**	**2004-2007**	**Difference**	
Change in Net Aid	11.8	13.9	2.1	
Change in Non-Aid CA Balance	-15.3	-18.0	-2.7	86% Absorbed
Change in Non-Fiscal Balance	-10.8	-14.0	-3.2	100% Spent

Sources: IMF (2005), Foster and Killick (2006) and Elbadawi and Kaltani (2007)

All three studies regard the late 1990s as the pre-aid surge period in Ghana. Both the Foster and Killick (2006) study (which is partly based on the Fund's and the ODI-commissioned works) and the IMF (2005) study, regard 2001-2003 as the aid-surge period.

All the studies agree that for the period 2001-2003, increased aid to Ghana was neither spent nor absorbed. In the third period 2004-2007, used by Elbadawi and Kaltani (2007), aid was fully spent and absorbed. In spite of this Elbadawi and Kaltani (2007) surprisingly observe that "*the high aid flows did not lead to real exchange rate appreciation until 2005 and only since 2006 do we see some mild overvaluation cropping up*" (Elbadawi and Kaltani, 2007, page 9). This is contrary to the evidence and analyses here (see Box 1 and footnote 4). The real effective exchange rate had been appreciating since 2002.

What is important is that when the aid was spent and absorbed, the real effective exchange rate appreciated, creating the potential for the Dutch Disease effects even within the short-run framework. Indeed as our work, reported in the previous section indicated the real appreciation started in the pre-aid surge period of 2001-2003, not only in the second period of 2004-2007 as contended by Elbadawi and Kaltani (2007). The real appreciation also continued beyond 2005 and was not mild or slight.

Thus over the last five years, the management of aid and exchange rate policies have given room for concern about Dutch Disease effects. This may arise in part from the composition of expenditure from aid and the use of the exchange rate as a nominal anchor within the context of disinflation policy and now inflation targeting. Moreover, as Foster and Killick (2006) draw attention to, there is a distinction between short-run and long-run analysis. While in the short-run analysis it is justifiable to take institutions as given and to disregard the supply side effects of aid inflows, for the longer term, both factors need to be taken into consideration.

It must be observed that for the first aid-surge period the aid was neither absorbed nor spent. In part this must have been the result of the need to

accumulate reserves as buffer against external shocks as well as to avoid Dutch Disease problems. The inflow of aid was perceived as transitory. Moreover, the recent shift in the use of aid raises concerns. There is an increasing preoccupation with using aid directly for poverty reduction and meeting the Millennium Development Goals (MDGs) of the United Nations. As indicated earlier, using aid for direct productive investment activities promotes growth while the humanitarian spending, while important, may not enhance growth. One implication of the shift is that non-tradables became the more favoured output, increasing the danger of the Dutch Disease effects.

Moreover, of the four countries (Ghana, Ethiopia, Tanzania and Mozambique) studied by the IMF (2005) and Foster and Killick (2006), there was no evidence of aid being channeled to the private sector, or it being utilized within the public sector for the explicit purpose of promoting private sector development (IMF, 2005, Foster and Killick, 2006).

3.0

EXCHANGE RATE POLICY AND MANAGEMENT PRACTICES IN GHANA

The centrality of an appropriate exchange rate policy for Ghana's development strategy cannot be doubted. The pursuit of such an appropriate exchange rate policy may however be doubted. Inflation targeting, the political desire for a strong and stable currency, a monetary policy stance aimed at compensating for fiscal laxity while reducing interest rates, and an upsurge in both public and private external remittances make the current exchange rate management more complicated than would have been with a single objective of maintaining external competitiveness. External financial institutions exerting pressures for a pro-cyclical exchange rate policy, including the need to respond to external shocks, limit the autonomy of the Central Bank and narrow the room for maneuver to foster higher economic growth.

Over the years, exchange rate policy has been used in pursuit of several objectives, all of which have been consistent with the objective of maintaining Ghana's external competitiveness. In the immediate post Independence period when Ghana pursued an ambitious industrial policy, the exchange rate was seen as an instrument of industrial policy. A nominally fixed exchange rate was expected to make equipment and raw materials cheap in local currency terms. This was supposed to promote investment and production in the industrial sector. It failed. Industrial investment in the public sector

increased but productivity was low and uncompetitive. This reflected in the typical import substitution industrialization (ISI) syndrome (Krueger, 1971). Johnson (1970) described the situation and policy response as it applied to other countries:

> "*Economic analysis shows that where a developing country undertakes expansionary development programs with a fixed exchange rate, it will be forced eventually to use its fiscal and trade policy instruments to compensate for the inappropriateness of the fixed exchange rate*."

Even though there was a brief attempt at liberalizing the trade and exchange rate regime between 1967 and 1971, this was terminated and Ghana returned to a fixed exchange rate regime.

Fears of the effects of a depreciating currency on industrial costs and inflation resulted in the exchange rate being fixed. As the exchange rate got increasingly overvalued, inflation rose in spite of the fixing. The real issues were laxed fiscal and monetary policies. The exchange rate could also not compensate for them and the available reserves did not allow domestic demand pressure to be vented on imports.

The introduction of the Economic Reform Programme (ERP) in 1983 changed the nature of exchange rate policy. The objectives of policy were to restore and maintain Ghana's external competitiveness. In particular, sectoral export targets were designed and the exchange rate devalued to levels that will ensure and encourage the achievement of the export targets.

This system was eventually liberalized into a flexible exchange rate system. As seen from the data presented in Table 3.1, the real exchange rate depreciated considerably during this period.

Table 3.1: Nominal and Real Exchange Rates, Inflation and Real GDP Growth, 1960-2006

Year	Cedi-Dollar Exchange Rate	Average Annual Inflation	REER Changes (-=depreciation)	Real GDP Growth Rate (%)	Year	Cedi-Dollar Exchange Rate	Average Annual Inflation	REER Changes (-=depreciation)	Real GDP Growth Rate (%)
1960	0.71	0.9	-0.4	7.6	1983	30.00	62.73	-32.8	0.7
1961	0.71	6.2	-5.2	3.2	1984	50.00	94.12	-61.4	5.3
1962	0.71	5.9	-8.8	5.3	1985	60.00	14.61	-27.3	4.4
1963	0.71	5.6	-3.6	2.7	1986	90.00	18.04	-42.5	4.2
1964	0.71	15.6	-18.8	2.8	1987	176.00	33.54	-22.9	6.5
1965	0.71	15.8	-18.5	0.7	1988	229.89	36.01	-4.8	4.7
1966	0.71	22.7	-9.4	0.6	1989	303.03	27.29	-5.9	2.9
1967	1.02	14.8	33.3	1.6	1990	344.83	31.47	-0.2	5.1
1968	1.02	-9.7	9.4	0.4	1991	390.63	28.87	3.7	3.7
1969	1.02	10.7	-4.3	3.4	1992	520.83	11.96	-10.6	4.9
1970	1.02	6.5	1.5	7.0	1993	619.67	17.72	-13.2	3.8
1971	1.82	9.2	-4.4	5.2	1994	1,052.63	24.23	-17.6	3.3
1972	1.28	10.0	29.2	-2.5	1995	1,449.28	40.43	14.9	4.0
1973	1.15	17.5	-8.3	2.9	1996	1,754.39	59.38	9.0	4.6
1974	1.15	18.4	1.3	6.9	1997	2,272.73	34.41	6.1	4.2
1975	1.15	29.7	-17.9	-12.4	1998	2,325.58	10.30	8.2	4.7
1976	1.15	56.3	-35.9	-3.5	1999	3,535.14	12.40	0.5	4.4
1977	1.15	116.3	-51.2	2.3	2000	7,047.65	25.20	-35.5	3.7
1978	2.75	73.2	1.0	8.1	2001	7,321.94	32.90	0.6	4.2
1979	2.75	73.2	8.9	-3.5	2002	8,438.82	14.80	-0.6	4.6
1980	2.75	37.0	-13.6	0.7	2003	8,852.32	26.70	2.4	5.2
1981	2.75	93.7	-57.9	-2.8	2004	9,054.26	12.62	-0.5	5.6
1982	2.75	64.6	-12.5	-8.4	2005	9,130.82	15.12	19.9	5.8
1983	30.00	62.73	-32.8	0.7	2006	9,175.51	10.91	-1.1	6.2

Source: Based on data form IMF International Financial Statistics (various edition)

What is important to observe from the current debate is that in spite of both the nominal and real depreciation in the exchange rate, the rate of inflation declined. Indeed for both periods of real exchange rate depreciation, 1967-1974 and 1984-1992, the rate of inflation decreased while for all the periods of the fixed the fixed exchange rates the annual average rate of inflation fluctuated and tended to rise (see Table 3.1).

The fundamental issues determining these are:

1) the fiscal stance;
2) the monetary stance;
3) the openness of the economy; and
4) the availability of external assistance/aid.

Thus, there is an illusion that controlling the exchange rate alone can curb inflation. Unless this is backed by supportive fiscal and monetary policy and external resources within the context of an open economy, however, as may be discerned from Johnson (op cit), this strategy only breeds a crisis in the long-run. Availability of substantial external resources within an open economy allows a country to import to maintain a low level of inflation even within the context of increasing fiscal laxity i.e., it allows the economy to both spend and absorb substantial foreign exchange resources.

Presently the Bank of Ghana (BOG) is committed "*to pursue sound monetary and financial policies aimed at price stability and create an enabling environment for sustainable economic growth*" (Bank of Ghana website Mission Statement of the Bank).

The BOG has numerous responsibilities which sometimes require it to take actions that countervail against its arguably most important function, which is controlling the growth of reserve money and therefore inflation.

There are also disconcerting issues regarding the management of the current exchange rate regime and the disinflation policy of using the exchange rate as a nominal anchor and the associated loss of competitiveness in international markets of Ghanaian exports on account of appreciation in the real exchange rate.

Until recently, significant portions of central government fiscal deficits were financed on the domestic market through the issue of inflation-linked bonds and Treasury bills. During the past several years, one source of quasi-fiscal activity for the Central Bank has been associated with the relatively high cost of conducting open market operations and sterilizing strong capital inflows. The period 2002-2004 experienced rapid growth in the broad monetary aggregates as a result of both expansionary fiscal policies and foreign inflows from official and private sources. The Bank engaged in heavy open-market operations during this period to rebuild international reserves from 1.9 months of imports to 3.9 months and to withdraw excess liquidity to reduce

inflationary pressures. The cost of these operations were high, as short-term interest rates reached 40 percent in mid-2003 the equivalent of 0.5 percent of GDP in 2003, rising to 1.0 percent of GDP in 2004 (Chivakul and York, 2006).

3.1 Monetary Policy Objectives

The monetary policy objectives of the Bank of Ghana have traditionally included price stability, promoting growth, preventing financial crisis, and stabilizing the real exchange rate. Although some of these objectives are consistent with each other some are not; for example, the objective of price stability often conflicts with the objective of interest rate stability. While the central bank may place varying weights to these objectives, it seemed to have placed greater emphasis on the objective of low inflation in recent times.

3.2 Monetary Policy Targets

Monetary policy targets, as distinct from final objectives, are proximate goals goals that are not objectives in and of themselves but which, if attained, will work towards achieving the longer-term objectives of policy.

Table 3.2: Central Government Fiscal Balance and Gross International Reserves (% of GDP)

	FISCAL DEFICITS 1/		PRIMARY BALANCE 2/		DOMESTIC FINANCING 3/		GROSS RESERVES 4/	
	Targets	Actual	Targets	Actual	Targets	Actual	Targets	Actual
2000	-5.0	-9.7	2.5	2.6	2.9	8.5	2.8	1.1
2001	-9.7	-9.0	4.0	3.8	0.9	2.3	3.0	1.3
2002	-7.0	-6.7	3.1	2.4	0.3	4.8	2.0	1.9
2003	-4.3	-4.4	1.8	2.3	0.0	0.6	3.2	3.2
2004	-1.6	-3.6	1.6	0.7	-1.4	0.1	3.9	3.3
2005	-2.6	-3.0	2.6	3.4	-1.1	-1.7	3.9	3.2
2006	-3.6	-7.5	0.8	-4.8	0.1	4.9	3.2	3.1

Notes: 1. Includes foreign grants 2/ refers to domestic primary balance 3/ includes net savings due to inflation-linked bonds
4/ measured in months of imports cover

Source: IMF Country Reports on Ghana from 2000-2007

Within the Bank of Ghana's monetary management framework, there are basically three targets: the ultimate or final target; the intermediate target, and the operating target. Since the ultimate goal of the Bank is to maintain price stability, the final target is the inflation rate.

The intermediate target is money supply, which is derived from the quantity theory of money. In Ghana the narrow money supply (M1) – defined as currency plus demand deposits – was used as the intermediate target for the greater part of the period prior to 1984. However, as quasi money (savings and time deposits) grew and became increasingly a near perfect substitute for demand deposits, the Central Bank switched to using broad money supply (M2) – defined as narrow money plus quasi-money – as the intermediate target. In response to the rapid growth of foreign currency deposits on the balance sheets of Deposit Money Banks (DMBs) and the need to monitor them as a potential source of inflation, the Bank currently uses M2+ (the sum of M2 and foreign currency deposits (FCD) as the intermediate target.

The operational target of the Bank used to be the net domestic assets (NDA) when net foreign assets (NFA) was not considered a major source of liquidity injection, since during this period export earnings and bilateral and multilateral flows were low. The major source of liquidity injection then was net claims of the banking system on Government and the private sector. Thus, targeting NDA was considered appropriate in restraining credit to Government as well as credit to the rest of the economy.

When exports recovered, foreign inflows became a major source of liquidity injection and so the sole concentration on NDA became inadequate. The Central Bank consequently shifted to the use of Reserve Money (RM) as its operating target, which had been observed to be linked (though not necessarily linearly) to the intermediate target. It is also noteworthy that under the PRGF facility agreed with the IMF, a performance criterion for the monetary sector has been shifted from RM to NDA on account of the fact that inflationary pressures in 2000 emanated mainly from domestic credit creation. Domestic debt/GDP ratio has since 2003 served as the nominal fiscal anchor.

Table 3.4: Inflation and Real GDP Growth Rates, 1998-2007

	Reserve Money Growth (RM+)		Growth in Broad Money (M2+)		Net Domestic Assets (NDA)		Velocity (GDP/M2+)	
	Targets	Actual	Targets	Actual	Targets	Actual	Targets	Actual
2000	15.1	52.6	20.0	46.5	18.9	49.1	5.0	4.6
2001	28.5	31.3	34.1	41.2	16.1	13.5	5.0	4.6
2002	18.7	42.6	25.2	50.7	6.6	22.9	4.9	3.9
2003	22.2	33.4	25.0	38.1	-7.2	21.4	4.4	3.6
2004	20.4	18.8	19.2	25.9	2.4	12.1	3.2	3.3
2005	17.8	18.2	23.5	14.3	15.9	19.3	3.3	3.4
2006	17.6	36.8	18.3	38.8	-2.9	43.9	3.4	2.8

Source: Based on data from Bank of Ghana and IMF Country Reports (various)

The monetary management of the Bank has been fraught with challenges that, at times, have made targets unattainable. Over the period 2000-2006, all the targets set for the monetary aggregates, without exception, were not achieved. Except for 2005, broad monetary aggregates (M2+) and reserve money (RM+) deviated from their targets, on average, by 59 percent and 75 percent respectively, while the NDA targets had been consistently missed in all the years, except for 2001. In addition, the velocity of money in circulation has followed a gently declining trend (Table 3.3).

3.3 Inflation Targeting

The Bank of Ghana has since 2000 been building capacity for moving toward a formal inflation targeting framework for its monetary policy operations. In a Press Release dated May 22 2007, the Governor observed that the Bank had been pursuing an inflation targeting regime for the last few years and chosen to publicly announce this in line with its mandate of delivering price stability under the Bank of Ghana Act 2002 (see MPC Press Release of May 22 2007).

Many of the institutional conditions for the inflation targeting (IT) framework, including central bank independence, development of liquidity instruments, procedures for inflation targeting regime such as operating Monetary Policy Committee (MPC), and inflation modeling and forecasting, are all in place. Regarding the policy conditions, however, the Bank has moved to preclude

fiscal dominance by legally restricting Central Bank's financing of the deficit (in practice there has not been any in recent years), and to accelerate financial sector development. The latter would enhance the effectiveness of monetary policy instruments, strengthening the relationship between interest rates and inflation.

Given its managed floating exchange rate regime, the monetary policy regime is most appropriately characterized as inflation targeting lite. Stone (2003) defines inflation targeting lite regimes as ones where the central bank "*announces a broad inflation objective but owing to its relative low credibility is unable to maintain inflation as the foremost policy objective. The relatively low credibility reflects the vulnerability to large economic shocks and financial instability and a weak institutional framework*." (Stone, 2003, p. 8).

The Fund considers the present monetary regime as an inflation targeting "lite" regime. In addition to the primary objective of targeting inflation, in its view a secondary operational exchange rate objective seems to be pursued. The exchange rate of the cedi to the US dollar has been kept relatively stable since 2004, helping to anchor inflation expectations. In IMF Country Report No. 07/210 of June 2007, the IMF observed that "*for the IT to be fully effective, the exchange rate needed to be flexible*".

The adoption of the "inflation targeting lite" regime is, according to the Fund, probably because it is a transitional regime aiming at bringing inflation into single digits and maintaining financial stability, including through a relatively interventionist exchange rate policy, until the implementation of structural reforms in support of a single nominal anchor.

The Bank of Act (612) of 2002, which established the independence of the Bank of Ghana and gave birth to the MPC, also reinforced the Bank as an "inflation-targeting central bank". However, the framework adopted by the MPC at the time was a hybrid in the sense that it was not an explicit inflation targeting framework. Rather it was an informal inflation-targeting rule which mimicked an explicit inflation targeting regime with a focus on the fiscal

framework of government, but in which monetary aggregate targeting was still important (Blankson and Abradu-Otoo, 2006).

A number of studies have used this framework to explore the relationship between monetary growth, exchange rates and inflation in Ghana. One of such studies had observed that although monetary aggregates were important determinants of price movements in Ghana, other equally important factors included exchange rate depreciation, exogenous shocks in domestic food supplies, petroleum price changes and government fiscal deficits. Using a Vector Autoregressive (VAR) methodology, Bawumia and Abradu-Otoo (2003) find that in the long-run inflation is positively related to money supply growth and the exchange rate, while negatively related to real income. Specifically, a 1 percent increase in M2+ will raise inflation by 0.41 percent; a 1 percent depreciation of the cedi will increase inflation by 0.3 percent while a 1 percent increase in real income reduces inflation by 0.25 percent. Furthermore their findings suggest that inflation adjusts to its "equilibrium value" fairly rapidly and that while the impact of the exchange rate on inflation is transmitted within a month, real income and money supply growth impact on the goods markets within 2 and 4 months respectively. (CEPA find a 4-6 month lag with respect to money supply growth).

Stabilizing prices permanently has long-run benefits to society and helps increase trend growth of real output in an economy. However, bringing inflation down involves short-term costs associated with a corresponding loss in output referred to in the literature as 'sacrifice ratio' the percentage loss of real output to the change in trend inflation. In other words, the sacrifice ratio is the cumulative losses in output that an economy must endure to reduce average inflation, on a permanent basis, by one percentage point.

Table 3.4: Inflation and Real GDP Growth Rates, 1998-2007

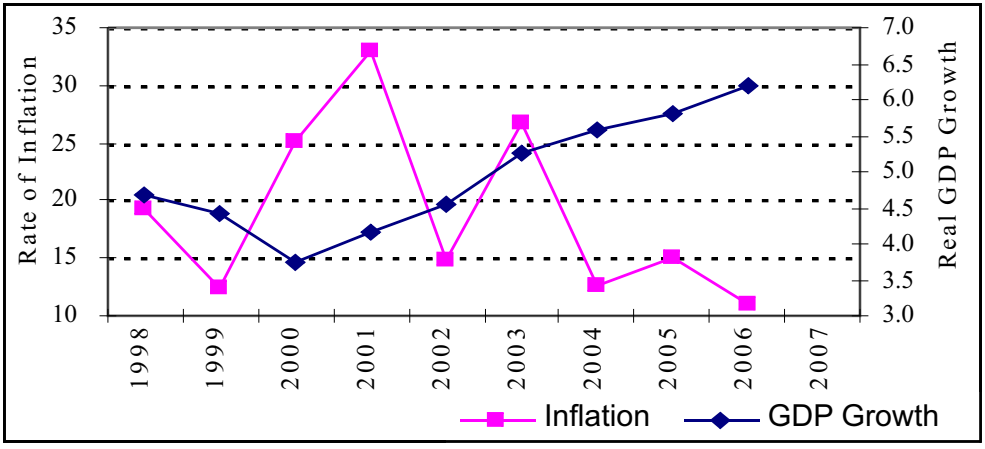
	AVERAGE INFLATION		REAL GDP GROWTH	
	Target	Actual	Target	Actual
1998	15.5	19.3	5.6	4.7
1999	10.0	12.4	5.5	4.4
2000	20.5	25.2	4.0	3.7
2001	33.0	32.9	4.0	4.2
2002	15.9	14.8	4.5	4.6
2003	15.1	26.7	4.7	5.2
2004	8.0	12.6	5.2	5.6
2005	6.0	15.1	5.8	5.8
2006	5.0	10.9	6.0	6.2
2007	9.4	n/a	6.5	n/a

Source: IMF Country Reports on Ghana, 2000-2007 (various issues)

Inflation in Ghana has certainly been on a downward trend since 2001. Average inflation over the past six years (2001-2006) amounted to 18.8 percent per annum, compared with 31.8 percent per annum for the six-year period 1995-2000. Historical data shows that average inflation declined from 32.9 percent in 2001 to 10.9 percent in 2006 but in all these years, inflation outcomes exceeded annual set targets (see Table 3.4).

Over the same period, economic performance has improved, with real GDP growth averaging 5.3 percent per annum.

Figure 3.1: Average Inflation and Real GDP Growth Rates in Ghana, 1998-2007



The favorable trend together with the gains in the general macroeconomic trends has renewed interest in the short-run tradeoff between economic stability and growth. A recent study by Kinful (2007) which examined the short-run tradeoff between economic stability and growth showed that a permanent one percentage reduction in inflation results in an output loss of about 5 percent. The study concludes that "in small open economies such as Ghana's both supply and demand pressures during periods of disinflation can affect the size of output losses and the change in inflation" (Kinful, 2007). His estimates of the sacrifice ratio show that these are relatively low. This may be informing the Central Bank's preoccupation with disinflation alone.

3.4 Exchange Rate Policy and External Payments

The goals of the Central Bank have evolved over the last decade. As noted earlier, the Bank of Ghana Act 2002 empowers the Bank of Ghana to "*promote monetary measures by stabilizing the value of the currency within and outside Ghana*" and direct its policies towards ensuring sustainable current accounts and external payments position. However, the Bank of Ghana also appears concerned about economic growth and competitiveness even as its set targets for the external sector continued to be missed year after year.

Ghana accepted the obligations under Article VIII of the Articles of Agreement of the IMF effective February 21 1994. Accordingly, the country maintains a flexible exchange rate regime – de facto described as a managed float with no pre-announced path for the exchange rate. Under this regime, the US dollar is the officially used currency for international transactions. Moreover, foreign exchange market intervention by the Central Bank under this regime is expected to be limited to short-term smoothening subject to the achievement of an international reserves target. Consequently, the Bank of Ghana is committed not to undertake any action that would inhibit changes to the exchange rate as determined by the fundamentals of market forces. Ghana's exchange rate policy is consequently free of restrictions on making payments and transfer for current international transactions.

The exchange rate has since continued to be market-determined, with intervention expected to be limited to smoothing short-term fluctuations for purposes of achieving set targets of net international reserves (NIR) accumulation. A purely market-determined exchange rate is pro-cyclical and as discussed earlier can frustrate efforts at economic growth.

In the current policy environment, official policy documents indicate that Ghana will maintain a flexible market-determined exchange rate in order to maintain the external competitiveness of Ghana's export products, with the Central Bank only intervening to smooth out minor fundamentals.

At the same time the Growth and Poverty Reduction Strategy (GPRS II) sets as one of the objectives of exchange rate policy a nominal depreciation of 4.0 percent per annum in a situation where inflation is targeted to be 9.0 percent per annum or less. Surely, unless Ghana's trading partners' rate of inflation was to exceed 9.0 percent, the objective is to ensure an appreciating real exchange rate.

Moreover, several budget statements have seen a stable and strong exchange rate as part of the achievement of Central Government. In the context where the central government policymaking apparatus sees an appreciating exchange rate to be desirable and effective, the Central Bank policy of maintaining competitiveness is not credible.

In 2006, the new Foreign Exchange Act (Act 723 of 2006) eased some specified capital controls. Both residents and non-residents can freely acquire capital market instruments, except that if banks wish to acquire more than 10 percent of an issue, they must have prior approval from the Bank of Ghana. To issue bonds on the domestic market, non-residents must also have approval from both the Bank of Ghana and the Securities and Exchange Commission (SEC). At the same time, there are still many restrictions on non-resident activity in the money market. Non-residents can only invest freely in instruments with maturity of 3-year or longer with all other money-market transactions being either prohibited or requiring the Bank of Ghana's approval.

The liberalization of capital controls allowed foreign investors to buy cedi-denominated 5-year-maturity treasury bonds issued in December 2006.

The Fund is of the view that provided good macroeconomic policies continue, the risks of sudden capital reversals are presently limited, because "*most of the inflows are concessional resources or long term foreign direct investment. However, increasing non-concessional borrowing in the future would increase such risks, underlining the importance of prudent borrowing and enhanced debt management and monitoring*". In the light of these developments, therefore, the Fund has been calling for a gradual easing of the high surrender requirements for the main export items and elimination of direct sales of foreign exchange to the Tema oil Refinery (TOR) once the latter is privatized, suggesting that this would make room for market expansion. The Bank of Ghana, however, maintains that the high surrender requirements on cocoa export proceeds has the purpose of ensuring foreign exchange repatriation by the state-owned Ghana Cocoa Board and the prevention of the exchange rate volatility that would result from the lumpiness of those proceeds (and also gold proceeds) if sold directly to the foreign exchange market; some relaxation might be possible over time (see IMF Country Report No. 07/210, June 2007, pp.11-13 for details).

3.5 Exchange Rate Policy and International Reserves Targets

Over the years, the Bank has set targets for the external sector in terms of export earnings, the trade balance, current and capital accounts of the balance of payments and its expectations regarding the gross international reserves. Table 3.5 presents set targets for the external sector over the period 2000-2006, which are put beside the actual outcomes for the respective external sector aggregates.

Table 3.6: Gross International Reserves, 2000-2006

	Gross International Reserves		Gross International Reserves		Current Account Balance	
	(US$ million)		(months of imports)		(percent of GDP)	
	Targets	Actual	Targets	Actual	Targets	Actual
2000	616	264	2.8	1.1	-2.5	-7.6
2001	730	344	3.0	1.3	-2.4	-5.8
2002	629	632	2.0	1.9	6.4	0.5
2003	1,095	1,427	3.2	3.2	-1.7	1.7
2004	1,541	1,816	3.9	3.3	0.6	-2.7
2005	1,971	1,951	3.9	3.2	-4.0	-7.1
2006	2,084	2,325	3.2	3.1	-6.5	-8.2

Source: IMF Country Reports on Ghana (various editions, 2000-2007)

As indicated in Table 3.5, except for 2003, the gross international reserves (GIR) targets in terms of imports of goods and services were missed for every single year since 2000. Gross International Reserves position rose steadily from 1.1 months of imports in 2000 to 1.9 months of imports in 2002; it further rose to 3.2 months of imports in 2003, remaining virtually stagnant at that level in 2004 through 2006.

Table 3.7: External Sector Indicators for Ghana, 1984-2006

Annual percentage changes	1984-89	1990-92	1993-94	1995-98	1990-98	1999-01	2002	2003	2004	2005	2006
Exports f.o.b.	11.3	7.0	11.5	15.4	11.7	-3.7	10.2	20.1	12.7	0.7	31.3
Imports f.o.b.	12.8	13.2	5.0	18.0	13.5	0.4	-4.1	20.1	31.9	24.4	22.0
Export Volume	10.6	8.6	12.5	8.5	9.4	2.9	-2.1	-6.8	14.5	-0.9	14.9
Import Volume	11.1	9.0	4.3	21.0	13.3	-2.1	-6.8	6.9	13.8	14.1	11.9
Terms of Trade	0.2	-5.2	-0.9	8.7	2.0	-8.4	9.4	14.8	-15.1	-6.9	4.8
Nominal Effective Exchange rate	-36.9	-5.1	-17.8	-17.9	-13.6	-26.6	-20.9	-15.5	-8.7	7.1	-8.3
Real Effective Exchange Rate	-27.5	-2.3	-15.4	9.6	0.0	-11.5	-11.2	2.4	-0.5	19.9	-1.1
Cedis per US dollar depreciation	49.1	20.1	44.4	22.7	26.7	51.8	15.3	4.9	2.3	0.9	0.5
Percent of GDP											
Trade Balance (-=deficit)	-1.6	-5.5	-8.8	-7.6	-7.2	-17.7	-11.1	-10.3	-17.0	-23.7	-22.0
Current Account Balance (Incl. Official grants)	-1.9	-4.2	-7.1	-5.4	-5.4	-8.6	-0.5	1.7	-2.7	-7.0	-8.2
Current Account Balance (Excl. Official grants)	-4.5	-7.3	-11.1	-8.7	-8.8	-11.7	-4.1	-3.5	-8.8	-12.3	-11.2
Overall Balance of Payments	0.9	0.8	1.9	1.5	1.3	-1.9	0.4	6.6	-0.1	2.9	4.2
Memorandum Items											
Gross International Reserves (US$ million; end -period)	178	382	507	593	504	308	632	1,427	1,816	1,951	2,325
(months of imports :GNFS)	2.8	3.2	3.4	3.2	3.3	1.1	1.9	3.2	3.3	3.2	3.1
Cocoa Bean Exports											
Value (US$ million)	409	305	273	442	359	398	386	692	984	754.3	n/a
Volume (000's metric tons)	190	238	251	294	266	335	311	355	620	494	595
World Market Prices											
Cocoa Beans (US$ per ton)	2,136	1,279	1,094	1,506	1,339	1,183	1,260	1,949	1,587	1,525	1,658
Gold (US$ per ounce)	384	364	370	3349	359	277	309	364	410	445	612
Brent Crude (US$ per barrel)	20.4	21.0	16.4	17.3	18.4	23.5	25.0	28.9	38.2	54.4	66.1

Source: IMF Country reports on Ghana (various editions)

In order to protect its international reserves position, in the face of mounting inflationary pressures, the Bank of Ghana allowed the cedi to depreciate in real terms from mid-1993. The demand-dampening effect of this policy, together with favorable exports performance and increased proceeds from Ghana's divestiture program contributed to a narrowing of the deficit on the current account (including official grants) to 4.9 percent of GDP in 1994. Largely due to improved terms of trade and recovery in cocoa exports, the deficit on the current accounts narrowed in the period following period 1995-98. On average, while exports in 1990-98 decreased in volume terms by 9.4 percent per annum (compared with 10.6 percent per annum in 1984-89), import volumes increased from 11.0 percent per annum in 1984-89 to 13.3

percent per annum. Over the same period, even though the gross international reserves was maintained at 3 months of imports – the recommended level for developing countries – both the trade and current account deficits widened, while the exchange rate appreciated in real terms by less than half percentage points per annum, on average (see Table 3.6 above).

Matters came to a head during the three-year period, 1999-2001. In the first quarter of 1999 Ghana experienced a terms of trade shock consisting of high international market prices on her crude oil imports and low world market prices for her major export commodities (gold and cocoa). To compound the balance of payments implications further, there was an intensification of the shock in year 2000, which was characterized by a tripling of crude oil prices on world markets to over US$30 per barrel, a sharp descent of world cocoa prices to a 27-year low, followed by a slump in the price of gold to below US$300 per ounce. On a cumulative basis, the terms of trade deteriorated, on average, by almost 8.5 percent leading to one of the worst trade deficits – an average of 17.7 percent of GDP during the period. Similar magnitudes of trade deficits were recorded in 2004, but these widened to 23.7 percent of GDP in 2005 and 22 percent of GDP in 2006 (see Table 3.6).

The terms of trade shock was also compounded by loss of fiscal discipline and weak monetary and financial management in the run-up to the well-contested elections in December 2000. These excesses brought Ghana to the brink of a financial crisis by the close of 2000: the currency depreciated sharply in the course of the year – halving its value against the US dollar in 12 months; the overall balance of payments (on official settlement basis) worsened from a surplus of 1.3 percent of GDP at end-1998 to a deficit of 2.4 percent GDP; the gross international reserves was sharply depleted down to just about four weeks of imports.

Ghana's terms of trade has improved tremendously since the beginning of 2001 on a cumulative basis by over 38% between 2000 and 2003. Even though these developments helped narrow the deficits on the trade account, increased external financial inflows were still required to cover potential

current account deficits. In 2001, the first year of the new Administration, the country experienced one of its worst trade deficits (20.6 percent of GDP) since economic reforms in 1983. A substantial increase in external assistance led to an improvement in the balance of payments as the overall deficit narrowed to 0.9 percent of GDP on account of exceptional programme support – mainly, programme grants, concessional loans and deferred loan repayments. These inflows, amounting to US$364 million, moderated the adverse performance of exports on the balance of payments. In 2002 and 2003, however, deficits on the current account (excluding official transfers) were covered in part by increased inflows of private transfers, official grants and long-term concessional loans, and debt relief from Paris Club and other bilateral creditors. The latter relief was in accordance with the terms of Ghana's Decision Point agreement under the enhanced HIPC Initiative signed in May 2003. These external inflows contributed to massive buildups of the gross international reserves of the Bank of Ghana (equivalent to about 3.2 months of imports at end-2003) and the gradual elimination of external payments arrears. In addition, Ghana's external debt service indicators improved significantly over the three years up to 2005, when Ghana reached Completion Point with its implications for debt cancellation, debt relief and MDRI grant flows.

Table 3.8: Net and Gross International Reserves Position (US$ million)

Net International Reserves (- = Accumulation)	2000	2001	2002	2003	2004	2005	2006
Target	-50	-192	-156	-130	-100	-130	-160
Actual	194	-200	-158	-679	-184	-309	-537
Gross International Reserves (months of Imports of GNFS)							
Target	2.8	3.0	2.0	3.2	3.9	3.9	3.2
Actual	1.1	1.3	1.9	3.2	3.3	3.2	3.1

Source: IMF Country Reports on Ghana (various issues from 2000-2007)

Except for 2000, the targeted accumulations of net international reserves (NIR) were exceeded in all the years beginning from 2001, with substantial accumulations in 2003 through 2006 far in excess of the targets (see Table 3.7). In 2003, net international reserves (NIR) was about US$550 million higher

than programmed; in 2004, it was US$84 million higher and also US$170 million higher in 2005. In 2006 net international reserves exceeded the target by US$377 million. Bumper cocoa crops in 2004 and 2006, together with strong and higher world market prices for cocoa and gold, and increased donor inflows since 2003, were important contributory factors. In September 2003, gross international reserves (GIR) passed the US$1.0 billion mark for the first time in Ghana's history, and estimated to have reached US$2.3 billion at end-December 2006.

4.0

PRIVATE SECTOR REACTION TO EXCHANGE RATE CHANGES

4.1 Background

Ghana's industrial policy from Independence has been based on the import-substitution industrialization (ISI) strategy. This strategy was developed on the recommendations contained in the pioneering report by Sir Arthur Lewis: Industrialization and the Gold Coast. For a newly-independent under-developed country the prospect of rapid industrialization based on its endowment of surplus unskilled labour was naturally attractive.

Pursuit of the strategy resulted in the emergence of indigenous private enterprises employing unsophisticated rudimentary technologies in low value-added manufacturing activity and highly dependent on imported raw materials. Very little has changed over the years as Ghana has not developed viable domestic raw material substitutes. Agriculture is yet to be modernized. The sector and manufacturing have been the laggards – with growth rates lower than that of overall GDP, resulting in continued loss of shares in national output.

An aspect of the high import dependence of importance to this study is that the typical domestic private enterprise (in the tradable sector) tends to view the nominal exchange rate as a key determinant of the cost of production. Consequently, in Ghana producers and consumers alike would welcome an

overvalued currency as the preferred exchange rate policy. Moreover, consistent with the small-country hypotheses, the typical Ghanaian enterprise is a price-taker in international markets and the domestic currency price of a tradable good may be viewed as determined by the world market price, the exchange rate and the import tariff – conceived to stand for the tariff-equivalent of quotas and other trade barriers. In this framework, the observed policy package preference of producers in the tradables sector is the combination of an overvalued exchange rate (to lower production costs) and high import tariffs (to raise the product price).

These peculiar features of the industrial landscape in Ghana contributed to the difficulties encountered in interpreting the responses to the questionnaire in the sample survey. As would be discussed below, the real exchange rate (RER) is the variable that impacts on production incentives. Nominal exchange rate changes may neither generate nor sustain corresponding real exchange rate changes. For example, in recent years the nominal exchange rate has been kept stable or followed a mildly depreciating trend but the RER has since 2001 been appreciating. In the public mind (including businesses) the resultant 'tax' on profits and profitability is blamed on reduction of import tariffs associated with a "rapid trade liberalization" policy.

4.2 Analytical Framework

The analytical framework of this part of the study is based on the assumption that private enterprise reactions to exchange rate changes depend to a large extent, on their impact on the prices of tradables, costs of production, and investment. The basic premise is that enterprises – producing for export markets, domestic markets or for both – respond to incentives (that are the determinants of profits and profitability). Therefore responses to exchange rate changes are only indirect – determined by the extent to which these changes impact on the relevant production incentives.

In this framework, firms are assumed to be profit maximizers acting in economically rational ways in their own interests' subject only to market conditions. In pursuit of the profit objective, the typical firm responds to

incentives that affect input costs and/or product prices. It is in this sense that enterprises are deemed to respond only indirectly to exchange rate changes i.e., to the extent they impact on incentives.

Further complications arose for analyses based on field surveys because of the fact that changes in key variables the real exchange rate may occur for other than nominal exchange rate changes. For example, IMF staff has argued that the long-run equilibrium real exchange rate (ERER) in the Ghanaian economy has followed an appreciating path in recent years. Consequently, even though the actual RER has also appreciated, there has been nonetheless significant misalignment, resulting in higher than targeted rate of inflation as the means of restoring equilibrium.

In other word, the official choice of the determining pair – the nominal exchange rate, and the rate of inflation by the monetary authority – represents a position of disequilibrium. Specifically, from their viewpoint, the preferred level of the nominal rate is too high – making the cedi undervalued. Maintaining that level, by implication, means that the target rate of inflation (single digit) is too low and must adjust.

In this analytical framework, nominal exchange rate changes impact on production incentives only to the extent that they *generate and sustain* changes in the actual RER. In other words, if a nominal depreciation generates and sustains a real depreciation, there will be forces at work that would impact on incentives and evoke appropriate responses in the tradables sector. In the macro-economy, the expectation is that these forces, in their effects on incentives, production and consumption, would result in an improvement in the current account of the balance of payments. But as noted above, in the real world where *all other things* may not remain unchanged – the important analytic ceteris paribus assumption does not hold – nominal depreciations could correspond to real appreciation, creating seemingly perverse reactions on the part of enterprise managers.

In a general equilibrium sense, an RER appreciation (depreciation) is equivalent to a consumption subsidy (tax) and a production tax (subsidy) on

tradables. This is seen from the fact that an RER appreciation caused by nominal exchange rate appreciation (holding all other tings, including inflation, as given) would mean cheaper-priced imports in the domestic currency – hence constituting a consumption subsidy. On the production side, the nominal appreciation and cheaper-priced imports, apply to both inputs and products. On account of domestic inputs, however, the cost reduction, at least, in the short-run (so as to leave out substitution consideration) would be only partial – the lower import intensity of production the more partial the cost-reducing effect. Product prices, on the other hand, would be expected to fall fully in proportion to the rate of appreciation. The net effect is therefore a squeeze on profitability and hence the resultant tax on production.

The analysis holds mutatis mutandis in the case of RER depreciation occasioned by a nominal depreciation.

The study is focused on enterprises in the manufacture of tradables. Consequently, the field survey was to elicit reaction responses of enterprises, not comments, to exchange rate changes. The above analysis in the production context surmises to the following:

(i). A real exchange rate appreciation corresponds to a potential tax on profits and profitability in the tradables sector. Imports of raw materials, other inputs as well as finished goods become cheaper in domestic currency terms. As price-takers in international markets, the domestic the domestic price of imported products falls in proportion to the rate of appreciation of the exchange rate on impact and keeping all other things equal. Production costs also fall because of imported inputs and hence only partially-averaging less than the rate of appreciation. Hence the net result is a tax on import-competing enterprises.

For exporting enterprises, also assumed to be price-takers, by assumption the foreign exchange price of the product remains unchanged. The domestic currency equivalent, however, falls by the rate of appreciation. Production costs again fall on average by less than the rate of appreciation and hence the tax on exporters.

(ii). A depreciation of the RER occasioned by a nominal depreciation of the exchange rate – all other things assumed equal – corresponds to a subsidy or enhancement of profits and profitability in the tradables sector.

Again, as a result of the depreciation, the domestic currency price of imports – of inputs and finished products – all rise in proportion to the rate of depreciation. For the import-competing producer, the domestic price of the product rises fully by the rate of depreciation while production costs rise only partially resulting in a production subsidy equivalent to an enhancement of profits and profitability.

Similarly for the exporter, world market price of the product is unchanged but the domestic currency value of the price rises fully by the rate of depreciation of the nominal exchange rate. Production costs also rise but only partially – by less than the rate of depreciation. The net result is a production subsidy – an enhancement of profits and profitability.

It is important to note that the potential production tax caused by the appreciation of the exchange rate and the potential subsidy caused by the depreciation of the exchange rate are both *inversely correlated with the import intensity of production*. The subsidy is *larger*, the *smaller* is the import intensity of production; again, the tax is *higher* the *smaller* is the import intensity.

In the Ghanaian context characterized by depreciation of the exchange rate (appreciations are relatively rare) and high import dependence, the typical impact of exchange rate changes in the public mind is one of a most welcome production subsidy, all other things unchanged. However, on account of the typically high import dependence the subsidy would be small. In public discourse, the weight of opinion would appear to favor the tax of appreciation. This seemingly perverse preference, however, suggests that all other things do not remain unchanged in real life, at least not over extended periods. Consequently, the considerably high cost reductions (on account of high

import dependence) occasioned by an appreciation is advocated. This leaves room for political lobbying to obtain effective tariff increases – either of the nominal tariff of the quota and other trade-barrier equivalent tariff. This could therefore lead to responses that would otherwise appear irrational in the analytical world of ceteris paribus.

Finally, the subsidy or tax implications of the RER changes hold equally for exporters and import-competing enterprises. Therefore, they remain applicable to enterprises producing for both domestic and export markets as well.

Leaving aside the peculiarities of the Ghanaian tradables sector, however, there remain two other important factors that need some further attention:

- Input structure – imported versus domestic – of production across various sub-sectors or activities in the tradables sector; and
- Different levels of tariffs in different sub-sectors or activities.

Import intensity in production of tradables could vary across sub-sectors and activities. The discussions above point to the importance of the import intensity for the size of the tax or subsidy involved. And enterprises can be expected in real life – where the ceteris paribus assumption does not hold rigidly – to find ways to circumvent costly burdens and behaving in ways inconsistent with the analytic deductions in the world in which the ceteris paribus assumption holds sway.

Again in a multi-product world, tariffs and tariff equivalents of quotas and other trade barriers would normally differ and so would their effects on the domestic price of the product. Sub-sectors and activities may also differ in their capacity for lobbying decision-makers to effect required changes in these tariffs. Conceptually, the responses of enterprises in different sub-sectors and activities in the tradables sector to the same exchange rate change in the real world need not be the same.

4.3 Statistical Issues

A field survey was conducted of both exporting and import-competing firms, as well as producers of manufactures for the domestic market in order to obtain their reactions to exchange rate policy.

High non-response in empirical investigations in Ghana (as in many other developing countries) is becoming notoriously problematic, implying extremely high and biased "estimates" which would dwarf quantifiable sampling errors. This growing trend may be attributable to poor documentation of the historical experience, unwillingness on the part of population sampling units to report on aggregates such as incomes, expenditure on certain types of goods, and profit margins for fear of being used for taxation purposes.

In Ghana, the rights and freedoms granted by the Constitution and the rule of law appear to have empowered private enterprises to defend what they see to be their right from intrusive enquiries and business secrets. This may result in non-cooperation on the part of firms and could be a reason for the high non-response rate in the current CEPA survey.

But there could be other reasons as well that may be peculiar to the survey. First, primary data gathering, particularly from establishment surveys, is costly and time-consuming. In many instances pre-arranged appointments for interviews were often not kept; interviewers were often asked to come at a later date for numerical data; there may be frequent reassignments of interview dates and the long waiting times to meet officials of companies could prove irksome and time-consuming.

Secondly, the timing of the survey could be important. The CEPA survey was scheduled to be completed within one week, 19-27 November 2007, a peak period, which is a very busy period of the year – pre-Xmas sales boom not conducive for most manufacturing firms, resulting in delays in completing the questionnaire.

4.3.1 The Survey Methodology

The sampling frame for the survey was a list of manufacturing firms provided by TIPCEE. The list consisted of one hundred and forty four (144) firms involved in various manufacturing activities nationwide classified by size of employment and categorized as small, medium, and large. The list also classifies manufacturing firms, mainly producers of import substitutes and non-traditional exporters, by the dominant activity – agro-processing, textiles, plastics and rubber products, metals, iron and steel, wood and furniture, pharmaceuticals, and paper products.

In the determination of the appropriate sample size to use in the survey, attention was focused on the medium and large-sized firms concentrated in Accra, Tema, Kumasi, and Takoradi and a target of about 30 percent of this was set for onsite interviews. There were ninety five (95) medium and large-sized firms in the coverage area and consequently thirty (30) of these firms, representing 31.6 percent of the total, were selected from the list. A preliminary assessment concluded that the small enterprises could have difficulty with the questionnaire. The concentration on four large settlements was on cost – time and labor – considerations.

4.3.2 Selection of the Sample

The selection process followed a systematic random sampling approach that took account of the types of products produced by manufacturing firms and the locality of concentration. Using this approach, the number of manufacturing firms selected by locality is presented in Table 4.1 below:

Table 4.1: Number of Firms in Sampling Frame and selected Firms by Locality

	Number of Firms in Sample		**Number of Firms Selected**	
City/Metrop olitan Area	Actual	% of Total	Actual	% of Total
Kumasi (KMA)	18	18.9%	6	20.0%
Sekondi -Takoradi (SAEMA)	15	15.8%	3	10.0%
Accra Metropolis (AMA)	27	28.4%	9	30.0%
Tema Metropolis (TMA)	35	36.8%	12	40.0%
Total No. of Firms	95	100.0%	30	100.0%

[Allowance was also made for the possibility of non-response by selecting twenty (20) additional medium and large-sized firms to cater for replacements in the likelihood of non-cooperation of selected firms.]

4.3.3 Questionnaire Design

A five-page questionnaire was designed to collect basic primary data from the selected import-competing firms and producers of non-traditional exports. The questionnaire itself is in three parts, the first of which is about the general characteristics of the firm, including the postal address, the legal status, employment size and whether or not it produced for either the domestic or export markets or for both markets.

The second part of the questionnaire is focused on production and sales made by firms over the past five years and attempts to elicit firms' reactions to what they believe to be the most important causes of expansions and/or declines in production and sales levels in recent times.

The last part of the questionnaire is about the cost structure of production, capacity utilization and firms' reactions to the loss of competitiveness, lower cedi value of import substitutes, exchange rate changes and to changing costs of raw materials.

4.3.4 Field Operations

Primary data collection involved administering the questionnaire, and personal interviews of the designated representatives of the selected firms. This was to be completed within one week. In order to elicit cooperation in the field, an official letter of introduction from CEPA was given to all interviewers introducing the subject matter and the need for the survey.

The experience with the field survey had brought home to CEPA the importance of eliciting cooperation of respondents and this was to minimize non-responses and encourage cooperation. Given the shortness of the time allotted for the field survey, it was neither possible to get the appropriate supporting letters of introduction from the Ministry of Trade and Industry and PSI nor from the federation of Associations of Ghanaian Exporters. The

responses achieved in the survey reflected the inadequacy of the letters that CEPA provided to interviewers.

A total of twelve (12) out of the thirty (30) companies targeted for interviews completed questionnaires administered in the survey. This meant an overall response rate of 40.0 percent, implying a non-response rate of 60 percent. There were wide variations if responses are considered on the basis of dominant industrial activity or sub-sectors. Table 4.2 presents the number of firms selected by dominant activity and the response rates of these firms.

Table 4.2: Selected Number of Firms and Response rates by Manufacturing Activity

Manufacturing Activity	Number of Firms Listed	Number of Firms Selected	Percentage Selected from List	Number of Respondent Firms	Response Rate (% of Selected)
Agro-Processing	19	6	31.6%	5	83.3%
Plastic and Rubber Products	13	6	46.2%	3	50.0%
Textiles	7	2	28.6%	1	50.0%
Wood and Furniture Products	17	4	23.5%	1	25.0%
Metals	26	6	23.1%	1	16.6%
Iron and Steel	1	1	100.0%	1	100.0%
Printing Publishing & Paper Processing	2	2	100.0%	0	0.0%
Pharmaceuticals	10	3	30.0%	0	0.0%
All Manufacturing Activities	**95**	**30**	**31.6%**	**12**	**40.0%**

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Industries, November 2007

As reported in Table 4.2, the highest response rate of 100 percent was registered in the Iron and Steel sub-sector. Agro-processing followed with 83.3 percent. Textiles and Rubber and Plastic Products came next each with 50 percent response rate. The Wood and Furniture Products and Metals follow with response rates of 25 percent and 16.6 percent respectively. As shown in Table 4.1, no responses were recorded in the remaining sub-sectors Printing, Publishing and Paper Processing and Pharmaceutical Products.

4.3.5 Findings from the Survey

Even though a representative sample survey was conducted to obtain reactions of import-competing and exporting firms' to exchange rate policy in Ghana, the time period was rather short and the response rate was not encouraging. It was also not very clear whether respondent firms were answering the questions from the respective companies' perspective or whether they were own judgmental reactions of those answering the questions. In any case the responses were inconsistent.

We therefore replace the responses with some cogent presentations from a few companies in Appendix II of this study. A summary of the responses is also presented in the same Appendix.

5.0

THE EXCHANGE RATE AND ECONOMIC GROWTH

Two broad approaches to equilibrium exchange rate estimation may be used in terms of the extent of to which a country's real effective exchange rate (REER) is consistent with its economic fundamentals.

The Fundamental Equilibrium Exchange Rate (FEER) approach defines the equilibrium exchange rate as that which is consistent with macroeconomic balance involving both internal and external balance. This approach aims at calculating exchange rates for a particular set of conditions and therefore abstracts from short-run cyclical conditions and temporary factors and focuses on economic fundamentals (Clark and MacDonald, 1998). The FEER, because of its reliance on variables that persist over the medium to long-run, is regarded as a normative one which pertains under ideal economic conditions.

The alternative to FEER is the Behavioral Equilibrium Exchange rate (BEER). This involves the direct econometric estimation of a model of the behavior of the real effective exchange rate. Misalignment in this case is measured as deviation of the actual real exchange rate from the value given by the estimated equilibrium relationship. A number of more recent researches on the estimation of the equilibrium exchange rate in Ghana have used this method (Iossifov and Loukoinova, 2007 and Elbadawi and Kaltani, 2007). We adopt the BEER method here even though we also refer to results using other methods.

5.1 Estimation of the Real Exchange Rate (RER)

The real exchange rate, as noted, is a determinant of a country's competitiveness in international markets. As such, it is a signal to producers and consumers of export goods, import goods and non-traded goods. Overvalued real exchange rates mean cheaper imports and dearer exports in export markets than ought to be. This reduces the profitability of export and import competing products.

5.1.1 The Determinants of the RER Adjustment in Ghana

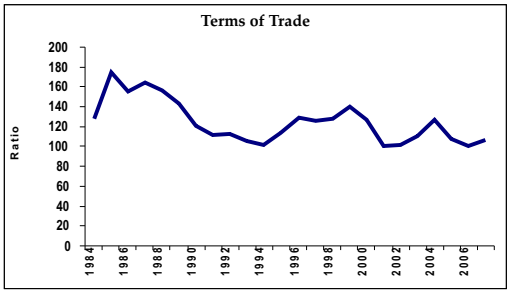
In this section, we investigate the determinants of real exchange rate adjustment in Ghana. To do this, we first compute Ghana's equilibrium real exchange rate as a function of its fundamentals as derived from economic theory.

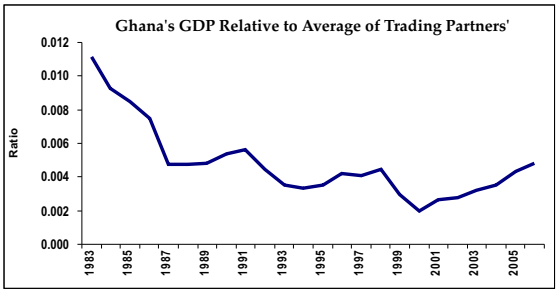
We estimate a single equation reduced-form behavioral model of the real exchange rate that attempts to account for the role of important variables such as terms of trade, productivity differentials (the Balassa-Samuelson effect), and government consumption expenditure as well as other factors influencing longer-run equilibrium. Drawing from the general empirical literature on RER behavior and in particular from Elbadawi and Soto (2005) and based on data availability, we estimate an empirical model for Ghana of the following general form:

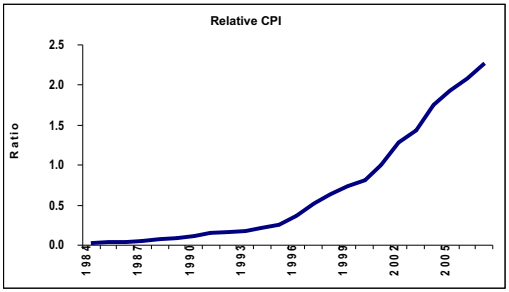
$$REER = g(TOT, PROD, GCEP, AID, NPC) \quad (5.1)$$

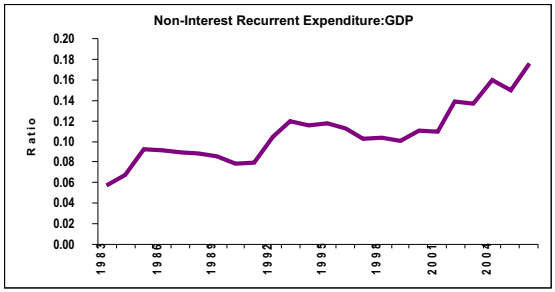
where REER is the real effective exchange rate as published in the International Financial Statistics (IFS) where an increase means an appreciation; TOT is the terms of trade as published in the IFS; PROD is productivity differentials and measured as average GDP of trading partners divided by that of Ghana's; GCEP reflects noninterest recurrent government expenditure relative to GDP; AID is measured by net aid relative to GDP; while NPC captures net private transfers relative to GDP, and ε is the error term.

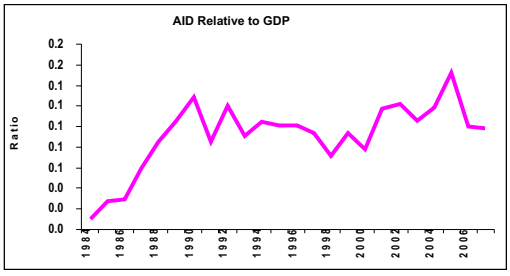
5.1 Estimation of the Real Exchange Rate (RER)

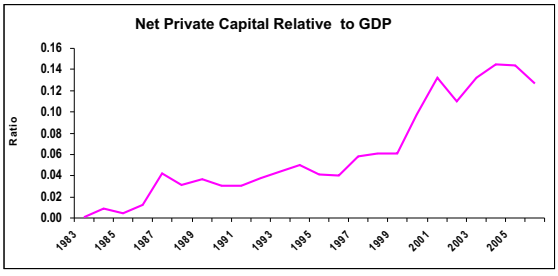












The government consumption variable as a share of GDP can be positively or negatively signed. It is expected to be positively signed, i.e. have an appreciating effect on the real exchange rate, if government expenditure is directed mainly towards non-traded goods and negatively signed if directed mainly towards traded goods directly or indirectly. Terms of trade, measured as the ratio of export to import price, is also expected to have an appreciating effect on the exchange rate. The terms of trade works through the wealth effect, and predicts that in case of positive terms of trade shock, there will be an increase in domestic demand, prices of non-tradables and appreciation of the

exchange rate. Similarly, the expected sign of net private capital, net aid are positive, as a higher aid or net capital flow should allow an appreciation of the real exchange rate.

The model is estimated using annual data over the 1984-2006 period. Data sources are primarily the Bank of Ghana and the International Monetary Fund (IMF). Plots of the variables used are shown in Figure 5.1 (Trends in Fundamental Variables used in Estimation).

The next requirement is whether the variables to be used in the analysis are stationary, and if they are non-stationary standard econometric techniques are rendered invalid. The variables were used in the model in their log form. Formal stationarity tests were conducted using the Augmented Dickey Fuller (ADF) testing procedure. The results are reported in Appendix Table 5.1a and Appendix Table 5.1b. The null hypothesis of a unit root cannot be rejected for the levels of the variables, while the first differences are confirmed stationary at the 95 percent for most and at 90 percent for the remaining. The first order stationarity I(1) status of the variables is consistent with findings from other studies of the real exchange rate; and makes the Johansen methodology the appropriate one to use. Estimations are done with the IMF's measure of real effective exchange rate to enable comparability of our results with those of other studies.

5.1.2 Estimation Results

We began the analysis by estimating an unrestricted Vector Autoregressive (VAR) model that includes a trend and two lags of the dependent and the various combinations that included the most important REER determinants as shown in Equation (1) above. For each of these models, we select the appropriate order of the VAR and test for the statistical significance of time trend. We then estimate the appropriately specified cointegration VAR, where we first test for the number of cointegrating relations. The results are shown as Appendix Table 5.2. We found one cointegrating relationship, though two were found on occasions. Once a satisfactory vector error correction model (VECM) specification was identified, ad hoc specification tests were

performed by adding the explanatory variables dropped in previous rounds, one at a time to test for their significance.

The preferred model includes two lags of the log of the real exchange rate, terms of trade, relative output, government non-interest recurrent expenditure, and aid. Appendix Table 5.2 shows the maximal Eigen value test results for the number of cointegrating relationships. The result shows the existence of one cointegrating vector amongst the variables at the 95 percent significance level. The result thus points to the existence of a long run relationship between the real effective exchange rate, Ghana's GDP relative to her trading partners, government's non-interest recurrent expenditure, and aid.

Next, we estimate the long-run structural relationship between the explanatory variables and the real exchange rate. The results are shown in equation (5.2) as follows:

$$\log(REER_{Fund}) = \underset{(0.2555)}{0.47004}\ \log(TOT) + \underset{(0.071237)}{0.35259}\ \log(rptb) - \underset{(0.11448)}{0.40956}\ \log\left(\frac{GCEP}{GDP}\right) - \underset{(0.10922)}{0.41037}\left(\frac{Aid}{GDP}\right) - \underset{(0.054849)}{0.0055065}\ Trend \qquad (5.2)$$

where the standard errors are shown in parentheses.

A negative coefficient implies that an increase in the explanatory variable results in real depreciation of the equilibrium REER; while a positive coefficient implies that an increase in the explanatory variable results in real appreciation of the equilibrium REER. Since the variables are expressed in logs, the coefficient can be interpreted as the long-run elasticity of the REER with respect to these variables.

As expected, we find that the terms of trade has a positive (an appreciating) relationship with the real exchange rate. This implies that a favorable terms of trade has the tendency to lead to an appreciation of the exchange rate. The

relative productivity term that measures the Balassa-Samuelson effect also has the expected positive (an appreciating) relationship with the real exchange rate. This implies that when Ghana expands more rapidly compared with the average rate of expansion of the country's trading partners results in a real appreciation of the cedi. Government consumption, on the other hand, has a negative (a depreciating) impact on the real exchange rate, while aid also has a negative (a depreciating) effect on the real exchange rate. The negative effect of government consumption on the real exchange rate suggests that the bulk of government consumption is used directly or indirectly towards traded good while the negative effect of aid on the real exchange rate suggests that aid might not have been absorbed for most of the period.

The sizes of coefficients found suggest the following. In the long run, a one-percentage point increase in the TOT is associated with a 0.47 percentage point appreciation of the real exchange rate. A one percentage point increase in the differential between Ghana's GDP and the average of her trading partners is associated with a 0.35 per cent appreciation in the real exchange rate. A one-percentage point rise in non-interest recurrent expenditure relative to GDP is associated with 0.41 percent depreciation in the real exchange rate while a one-percentage point rise in aid has a similar depreciating effect on the real exchange rate. Furthermore, we find, though insignificantly, that Ghana's real exchange rate exhibits a long run tendency to depreciate by 0.01 percent independent of developments in the fundamentals. These results are also consistent with findings for Ghana and other developing countries – Jebuni and Stryker (1999), Morrissey et al. (2004), Youngblood and Apaloo (2005), Elbadawi and Soto (2005) and Iossifov and Loukoinova (2007). The results show that the long run impact of terms of trade, fiscal policy and aid are much more important than the effect of productivity. This may be because there has been very little productivity changes over the period.

Next, we estimated the error correction model associated with the long run real exchange rate equation. The model deals with the short-run dynamics of

exchange rate adjustment and also enables us to determine the speed of adjustment of the exchange rate to its equilibrium path.

The equation passes all the diagnostic tests. The results are shown in Appendix Table 5.3 in the Appendix III. We find that the fundamentals do not have significant short run effects. An important parameter in this model – the equilibrium real effective exchange rate correction term that measures the speed of adjustment of the real effective exchange rate to its equilibrium level is correctly signed. The speed of adjustment of –0.65 suggests a relatively fast rate of convergence to equilibrium following disequilibrium. This speed of adjustment is in line with the –0.7 found in Elbadawi and Kaltani (2007) in using a mean group estimator. It however varies from the finding of -0.28 in Youngblood and Apaloo (2005) and -0.20 in Jebuni and Stryker (1999). The difference between our finding and those of Youngblood and Apaloo is explained by differences in sample. Youngblood and Apaloo sample covers 1965 to 2004, which includes 20 years of a fixed exchange rate regime-meaning minimal, if any, movements in the exchange rate. On the other hand, the variation in results between ours and Jebuni and Stryker (1999) is explained by the differences in the sample coverage and data frequency: 1980 to 1998 and the data in quarterly frequency for the later as against 1983 to 2006 by this research and in annual frequency in out study.

5.2 Real Exchange rate Misalignment and Growth

In this section we estimate the extent to which misalignment in the real effective exchange rate affects economic growth. As discussed earlier, misalignment using the BEER approach is the deviation of the actual real effective exchange rate from the BEER as given by our estimated equation. We estimate the effect of the deduced misalignment in the real effective exchange rate on growth while controlling for the typical growth determining variables. The equation to be estimated is of the form:

$$y = \beta_0 + \beta_1 rermis_t + \beta_2 \inf_t + \beta_3 aid_t + \beta_4 fd_t + \beta_5 GCEP_t + \varepsilon_t$$

where *t* is time index, *y* is per capita GDP growth, *remis* is misalignment in the real effective exchange, *inf* is inflation, *fd* is measure of financial development, and GCEP is non interest government expenditure. Similar variables are used in Elbadawi and Kaltani (2007).

Given that the variables are integrated of order 1, I(1), we use the Johansen (1995) cointegration methodology. Testing for the number of cointegrating relationships, we find the existence of one cointegrating relationship amongst the variables. Estimating the long run relationship, we find all variables, including real effective exchange rate misalignment, signed as expected. Real effective exchange rate misalignment and inflation are negatively signed as expected while index of financial market development is positively signed as expected. Aid and government consumption are also positively signed in line with some findings in the literature (e.g. Elbadawi and Kaltani, 2007).

Given degree of freedom limitations, we estimate two models that have a mix of these variables. Interestingly, we find robustness in the results as shown in Appendix Table 5.4 and Appendix Table 5.5 in Appendix III. Appendix Table 5.4 shows the preferred results. We find real effective exchange rate misalignment having the strongest effect on growth. A one-percentage point misalignment in the real effective exchange rate depresses economic growth by 0.25 percent. Financial sector development – measured by the ratio of broad money to GDP – causes a 0.2 percent rise in economic growth with every percentage point improvement in that variable. With regard to aid, a one-percentage point rise in the variable causes a 0.05 per cent rise in growth, while a one-percentage point rise in inflation depresses growth by 0.1 percentage points. The estimate also showed the tendency of growth to fall by 0.01 percent annually, independent of developments in growth determinants.

In the second model that replaces inflation with non-interest government expenditure, the direction and size of effects of real exchange rate misalignment, financial sector development and aid remain as discussed above. The added variable, government consumption expenditure, has a positive but insignificant effect on growth.

We next estimate the shot run error correction model associated with the preferred long run estimate shown in Appendix Table 5.4. The results are shown in Appendix Table 5.6. The results show all the variables being statistically insignificant at conventional levels; with real effective exchange rate misalignment showing the highest degree of insignificance. The most important term in the equation, the error correction term, estimated at –0.25, is correctly signed and suggests moderate speed of convergence to equilibrium following a disequilibrium growth. The model diagnostics are all satisfactory.

5.3 Aid Real Exchange Rate Misalignment and Economic Performance

We probe further into the effect of exchange rate misalignment on growth. We do this by including some interactive terms specifically, the interaction of real effective exchange rate misalignment and aid. We had intended to probe the role of a second interactive term - the interaction of real effective exchange rate misalignment and financial market development - when the first interactive term is controlled for. However, limited data observations debar us from doing this.

Appendix Table 5.7 shows the results of the estimation when the interaction of real effective exchange rate misalignment and aid is included in the model. All the variables i.e. real exchange rate misalignment, financial sector development, aid, and inflation as well as time trend maintain the same direction of effect on growth as previously found. In terms of size of effect, we find these variables, with the exception of aid, showing more sizeable effect on growth; aid now has a reduced coefficient of 0.005 compared with a coefficient of 0.05 in the model without the interactive term. The interactive term, with a coefficient of –1.99, shows a sizeable negative effect on growth.

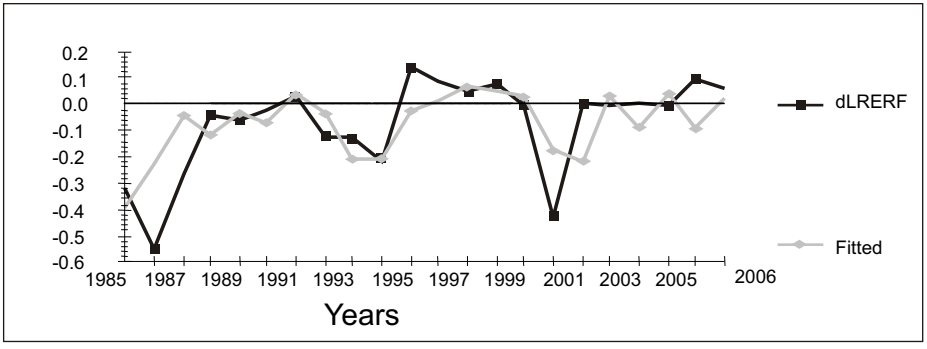
The results show that though aid on its own has a positive effect on growth, the effect does not remain unchanged when the exchange rate is misaligned. In the environment of exchange rate misalignment, the effect of aid is dampened. Furthermore, the interaction of exchange rate misalignment with aid depresses growth.

With real exchange rate misalignment as an indicator of bad policy environment, the results corroborate major findings of aid effectiveness in the literature. First, aid is more effective in a good policy environment. Second, in a bad policy environment, the effectiveness of aid has diminishing returns.

5.4 Investigate how aligned or misaligned Ghana's REER is

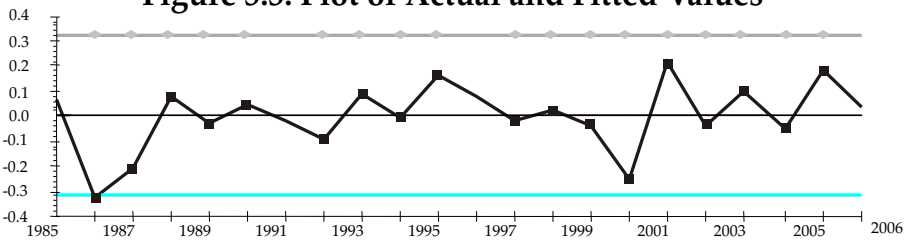
Using the long run estimation results of the above model, we construct indices of the equilibrium real exchange rate as the fitted equilibrium real effective exchange rates. The equilibrium real effective exchange rate series are shown as the fitted in Figure 5.2.

Figure 5.2: Plot of Actual and Fitted Values



According to the estimates, the real effective exchange rate has from 2002 shown a tendency of appreciation compared with the equilibrium values, particularly after 2004. In contrast, from 1986 to 1988 and from 1999 to 2000, the real exchange rate was more depreciated than consistent with the fundamentals. Over 1994 to 1995, the real exchange rate appeared to be exactly in line with the equilibrium values for those periods. Figure 5.3 plots the real effective exchange rate minus equilibrium exchange rate, indicating the extent of misalignment of the real exchange rate.

Figure 5.3: Plot of Actual and Fitted Values



Years

6.0

CONCLUSIONS

Ghana expects to develop into a middle income country within the next decade. This is expected to be achieved through an export- and private sector-led growth strategy. This involves the development of a diversified production and export base. The diversification of export is a critical plank of this strategy.

Among other things success in this direction will require a supportive macroeconomic environment involving an appropriate combination of monetary, fiscal, exchange rate and trade policies.

Macroeconomic stability is a precondition for this growth. Macroeconomic stability involves multiple dimensions including not only price stability and sound fiscal policies, but also a well-functioning real economy, sustainable debt ratios, and healthy domestic financial and non-financial private sector balance sheets. However, over the years, under pressure from high financial instability, macroeconomic stability has evolved to include inflation targeting. The concerns about steady growth, employment generation, etc. have been ignored. In this context, monetary and exchange rate policy are used to compensate for fiscal laxity in order to achieve the inflation targeting objectives. These tend to make official statements about exchange rate policy contradictory and less credible.

A supportive exchange rate regime is required for the success of the development strategy:

1) Appropriate exchange rate promotes export diversification;

2) Exchange rate misalignment retards growth while mild undervaluation promotes both growth and export diversification;
3) The relationship between growth and inflation is non-linear. At lower levels of inflation, disinflation has a higher cost in terms of growth.

Furthermore, as a result of increasing national and international concerns for poverty reduction, there are promises to scale up aid inflows to Africa. Scaled-up inflows while potentially beneficial raise issues of macroeconomic management of the aid. Consideration of the Dutch Disease and resource curse issues may begin to emerge.

Available literature suggests that the exchange rate and the management of the exchange rate are important determinants of an economy's competitiveness, export performance and diversification, and economic growth. The exchange rate is an important economy-wide relative price signaling relative profitability and the need for inter-sectoral resource transfers and factor movements.

Sustained real exchange rate misalignment is associated with lower economic growth. 'Excessive' real exchange rate volatility could induce uncertainty in investors' perceptions and may thereby adversely affect investment in the long-run economic growth.

Overvaluation does have a negative and statistically significant effect on economic growth. The effect is also economically significant – the estimated coefficient implies that a 10 percent overvaluation is associated with a decline in real per capita output growth of 0.6 percentage points. The analysis also finds that there are important non-linearities in the relationship between misalignment and economic growth. In particular, it is only very high overvaluations that appear to be associated with slower economic growth. Furthermore, moderate to high (but not very high) undervaluation appear to be associated with more rapid economic growth. These patterns are not peculiar to East Asia but also Africa and Ghana. Our own studies support the relationship between exchange rate misalignment and growth.

One of the critical ways in which exchange rates affect growth is through inducing and supporting export diversification programmes. There is evidence, including Ghana, that developing countries' ability to diversify depends on their ability to avoid exchange rate overvaluation. Overvaluation can be particularly harmful to non-traditional exports.

The main conclusion of the literature on commodity booms is that the gains to output or income have been at best meager and short-lived, while the costs resulting from negative shocks have been both significant and of larger duration. The reason for the failure of commodity booms to generate lasting benefits in terms of output or income growth may include:

1) Incorrectly assuming that temporary increase in revenues may be sustained;
2) Deterioration in the quality of public expenditure in the boom years;
3) Boom revenues, with rare exceptions, tend to be fully absorbed by the economy.

Also, investment made from commodity booms is often dominated by structures rather than equipment in low returns on investment.

A more general link between commodity booms and growth may occur through the Dutch Disease effects. This depends to a large extent on whether the aid is absorbed or spent. In the period since 2002 when the aid was both spent and absorbed, the real effective exchange rate appreciated. Thus over the last five years, the management of aid and exchange rate policies have given room for concern about Dutch Disease effects. This may arise in part from the composition of expenditure from aid and the use of the exchange rate as a nominal anchor within the context of disinflation policy and now inflation targeting.

Over the last twenty years, the hypothesis that Ghana has had a tendency to maintain a fixed real effective exchange rate cannot be rejected statistically, although a discernible tendency towards a mild real appreciation with periodic corrections is observed. It is therefore not surprising that the non-traditional exports sector has not been growing as expected, as there has been

the tendency to squeeze profit margins, and with the non-traditional export sector not given the maximum incentives, Ghana may be losing export market shares internationally.

The export share indicators of competitiveness follow the patterns of the real effective exchange rate in Ghana. In particular, they depict (with a lag of about 3 years) the loss of competitiveness in the more recent period for all of Ghana's traditional trading partners. The decline in market shares in the most recent period is much more serious in the Euro area which has been Ghana's traditional trading partner. For the Euro area, Ghana experienced a continuous decline in market share from 1998. Even in African markets, Ghana appears to have lost competitiveness over the more recent period.

The centrality of an appropriate exchange rate policy for Ghana's development strategy cannot be doubted. The pursuit of such an appropriate exchange rate policy may however be doubted. Inflation targeting, the political desire for a strong and stable currency, a monetary policy stance aimed at compensating for fiscal laxity while reducing interest rates, and an upsurge in both public and private external remittances make the current exchange rate management more complicated than would have been with a single objective of maintaining external competitiveness. External financial institutions exerting pressures for a pro-cyclical exchange rate policy, including the need to respond to external shocks, limit the autonomy of the Central Bank and narrow the room for maneuver to foster higher economic growth. There are credibility issues arising from official statements and practice.

Productivity changes differed markedly between the three categories of firms interviewed in the survey. Asked to account for the most important factors for these productivity changes, firms producing exclusively for the domestic market were of the view that adjusting to changing labour costs and market share were the two dominant factors. On the other hand, firms producing for export markets thought that adjusting to loss of competitiveness, profit margins and market share were important, while the consensus in firms

producing for both markets was that adjusting to changing costs of raw materials and labour costs were important factors.

Findings from the CEPA survey show that while the costs of production increased for firms producing essentially for both the export and domestic markets in the last five years, the reverse was true in the case of firms producing solely for the for the export markets. This means, according to our findings, that the increased costs might have originated more from domestic than foreign sources.

Estimation results show that the terms of trade has a positive (an appreciating) relationship with the real exchange rate. The relative productivity term that measures the Balassa-Samuelson effect also has the expected positive (an appreciating) relationship with the real exchange rate. Government consumption, on the other hand, has a negative (a depreciating) impact on the real exchange rate, while aid also has a negative (a depreciating) effect on the real exchange rate. The negative effect of government consumption on the real exchange rate suggests that the bulk of government consumption is used directly or indirectly towards traded good while the negative effect of aid on the real exchange rate suggests that aid might not have been absorbed for most of the period.

The sizes of coefficients found suggest that in the long run, a one-percentage point increase in the TOT is associated with a 0.47 percentage point appreciation of the real exchange rate. A one percentage point increase in the differential between Ghana's GDP and the average of her trading partners is associated with a 0.35 per cent appreciation in the real exchange rate. A one-percentage point rise in non-interest recurrent expenditure relative to GDP is associated with 0.41 percent depreciation in the real exchange rate while a one-percentage point rise in aid has a similar depreciating effect on the real exchange rate. Furthermore, we find, though insignificantly, that Ghana's real exchange rate exhibits a long run tendency to depreciate by 0.01 percent independent of developments in the fundamentals.

The speed of adjustment of –0.65 suggests a relatively fast rate of convergence to equilibrium following disequilibrium. This speed of adjustment is higher than found in other studies.

We also find real effective exchange rate misalignment having the strongest effect on growth. A one-percentage point misalignment in the real effective exchange rate depresses economic growth by 0.25 percent. Financial sector development measured by the ratio of broad money to GDP – causes a 0.2 rise in economic growth with every percentage point improvement in that variable. With regard to aid, a one-percentage point rise in the variable causes a 0.05 per cent rise in growth, while a one-percentage point rise in inflation depresses growth by 0.1 percentage points.

The relationship between growth and inflation, however, may be non-linear. Other results suggest that a permanent one percentage point reduction in inflation results in an output loss of about 5 percent.

The results show that though aid on its own has a positive effect on growth, the effect does not remain unchanged when the exchange rate is misaligned. In the environment of exchange rate misalignment, the effect of aid is dampened. Furthermore, the interaction of exchange rate misalignment with aid depresses growth.

With real exchange rate misalignment as an indicator of bad policy environment, the results corroborate major findings of aid effectiveness in the literature. First, aid is more effective in a good policy environment. Second, in a bad policy environment, the effectiveness of aid has diminishing returns.

REFERENCES

Baah-Nuakoh, A, Charles D. Jebuni, Abena Oduro, and Yaw Asante (1996): ***Export Manufactures from Ghana: Is Adjustment Enough?*** Overseas Development Institute, Regent's Park, London

Bank of Ghana (2006): ***Foreign Exchange Act 2006 (Act 723)***

Bank of Ghana (2002): ***Bank of Ghana Act 2002 (Act 612)***

Bawumia, Mahamadu and Phillip Abradu-Otoo (2003): "Monetary Growth, Exchange Rates and Inflation in Ghana: An Error Correction Analysis", *Bank of Ghana Working Paper* WP/BOG/09/03-27 (January)

Bawumia, Mahamadu and Joseph Atta-Mensah (2003): "A Simple Vector Error Correction Forecasting Model for Ghana", *Bank of Ghana Working Pape*r WP/BOG-MAFSD-03/02/001 (February)

Bevan, David, Paul Collier and Jan Willem Gunning (1999): ***The Political Economy of Poverty, Equity and Growth: Nigeria and Indonesia***, Oxford University Press, New York

Blankson and Phillip Abradu-Otoo (2006): "IMF Financial Programming and the Bank of Ghana's Monetary Management Models", Paper presented at CEPA-PARP Training Workshop on Macroeconomic Modeling and Public Accounts Management, Miklin Hotel, East Legon, Accra 20-27 March 2006

Chivakul, Mali and Robert C. York (2006): "Implications of Quasi-Fiscal Activities in Ghana", *IMF Working Paper* N0. WP/06/24 (January)

Chetty, Raj (): When do Countercyclical Policies Increase Economic Stability? Web site edition: email chetty@econ.berkerley.edu

Clark, Peter B. and Ronald MacDonald (1998): "Exchange rates and Economic Fundamentals: A Methodological Comparison of BEERs and FEERs", *IMF Working Paper* WP/98/67 (May)

Clements, Benedict, Rina Bhattacharya and Tom Quoc Nguyen (2003): "External Debt, Public Investment and Growth in Low-Income Countries", *IMF Working Paper* WP/03/249 (December)

Collier, Paul, Jan Gunning and Associates (1999): ***Trade Shocks in Developing Countries***, Eds, Oxford University Press, Oxford (vols. 1 & 2).

Dickey, David and W.A. Fuller (1979): "Distribution of the Estimators for Autoregressive Time Series with a Unit Root", *Journal of the American Statistical Association*, Vol.74 pp. 427-431

Dornbusch, Rudiger, F. Leslie and C.H. Helmers (1988): ***The Open Economy: Tools for Policymakers in Developing Countries***, Eds., Oxford University Press, New York

Easterly, William (2005): "*National Policies and Economic Growth*" in Philippe Aghion and Stephen Durlauf, editors, ***Handbook of Economic Growth***, Elsevier

Economic Commission for Africa (2006): ***National Strategies for Poverty Reduction and Implementation of the Millennium Development Goals: An Issues*** *Paper*, Presented at the African Plenary, Cairo, Egypt, March 26-28

Edwards, Sebastian (1989): ***Real Exchange Rates, Devaluation, and Adjustment***, Cambridge, Massachusetts, MIT Press

Elbadawi, Ibrahim and Linda Kaltani (2007) ***Scaling-up Aid for Ghana: Maintaining Competitiveness, Avoiding the Dutch Disease, and Accelerating Growth***, Ghana CEM Technical Review Growth Workshop on Meeting the Challenge of Accelerated and Shared Growth, May 2-3

Elbadawi, Ibrahim and Raimundo Soto (2005): "Theory and Empirics of Real Exchange Rates in Sub-Saharan Africa and Other Developing Countries", *World Bank Working Paper*

Elbadawi, Ibrahim and Raimundo Soto (1997): "Real Exchange Rates and Macroeconomic Adjustment in Sub-Saharan Africa and Other Developing Countries", *Journal of African Economies*, Vol. 6 No. 3 (AERC Supplement) pp. 74-120

Foster, Mick and Tony Killick (2006): "What Would Doubling Aid do for Macroeconomic Management in Africa? *ODI Working Paper* 264 (April), Overseas Development Institute, London

International Monetary Fund (2007): ***Ghana 2007 Article IV Consultation Staff Report, Public Information Notice on the Executive Board Discussion and Statement by the Executive Director for Ghana***, *IMF Country Report* No. 07/210 (June)

International Monetary Fund (2006): ***Ghana: Fourth and Fifth Reviews Under the Three-Year Arrangement Under the Poverty Reduction and Growth Facility and Request for Waiver of Nonobservance of Performance criteriaStaff Report and Press Release on the Executive Board Discussion for Ghana***, IMF Country Report N0. 06/228 (June)

International Monetary Fund (2005): "***The Macroeconomics of Managing Increased Aid Inflows: Experiences of Low-Income Countries and Policy Implications***", Policy Development and Review Department, IMF, Washington D.C.

Iossifov, Planen and Elena Loukoinova (2007): "Estimation of a Behavioral Equilibrium Exchange Rate Model for Ghana", *IMF Working Paper* WP/07/155 (July)

Jebuni, Charles and Dirck Stryker (1999): "*Ghana Monetary and Exchange Rate Policy*", paper presented at Workshop on Equity and Growth through Economic Research (EAGER): Trade Regimes and Growth, organized by AIRD, Cambridge Massachusetts

Johnson, H.G. (1970): "*Fiscal Policy and the Balance of Payments*", in M.C. Taylor (Ed.) ***Taxation for African Economic Development*** (Hutchison Educational limited, London)

Kinful, Emmanuel (2007): "Estimation of Short-run Tradeoffs between Stability and Output", *Bank of Ghana Working Paper* WP/BOG/10/09/07 (Special Studies Office, Research Department)

Klasen, Stephen (2001): "In Search of the Holy Grail: How to achieve Pro-Poor Growth? Paper commissioned by Deuttsche Gesellschaft fur Technische Zusammenarbeit (GTZ), University of Munich, (July 1 2001)

Klitgaard, Thomas (1999): "Exchange Rates and Profit Margins: The Case of Japanese Exporters", *FRBNY Economic Review*, pp. 41-54 (Federal Reserve Bank of New York, April)

Krueger, A. (1978): ***Liberalization Attempts and Consequences***, National Bureau of Economic Research (NBER), Cambridge, Massachusetts

Mackenzie, G.A. and Peter Stella (1996): "Quasi-Fiscal Operations of Public Financial Institutions, *IMF Occasional Paper* No. 142 (International Monetary Fund, Washington D.C.)

Malik, Adeel (2005): "Macroeconomic Effects of Commodity Shocks: A review of Issues", unpublished mimeo, Centre for the Study of African Economies, Oxford University, Manor Road, Oxford

Morrissey, Oliver, Tim Lloyd and Maxwell Opoku-Afari (2004): "*Real Exchange rate Response to Capital Inflows: A dynamic Analysis of Ghana*", paper prepared for the International Conference on Ghana's Economy At the Half Century organized by ISSER and Cornell University at University of Ghana, Accra July 18-20

Ocampo, Jose Antonio (2004): *A Broad View of Macroeconomic Stability*, Paper presented at Seminar on "*From the Washington Consensus towards a New Global Governance*", Universal Forum for Cultures, Barcelona, 24-25 September 2004

Prasad, Eswar, Raghuram Rajan and Arvind Subramanian (2007): "Foreign Capital and Economic Growth", *Brookings Papers on Economic Activity*, Vol. 1 (March)

Rajan, R. and A. Subramanian (2005): "What Determines Aid's Impact on Growth?" *IMF Working Paper* 05/126, June (International Monetary Fund, Washington D.C.)

Razin, Ofair and Susan M. Collins (1997): "Real Exchange Rate Misalignments and Growth", Research Paper, Georgetown University and the Brookings Institution (June)

Rodrik, Dani (2007): "The Real Exchange Rate and Economic Growth: Theory and Evidence", Research Paper, John F. Kennedy School of Government, Harvard University (August)

Stella, Peter (1997): "Do Central Banks Need Capital?" *IMF Working Paper* WP/97/83 (International Monetary Fund, Washington D.C., July)

Stone, Mark, R. (2003): "Inflation Targeting Lite", *IMF Working Paper* WP/03/12 (International Monetary Fund, Washington D.C., January)

World Bank (2007): ***World Development Indicators***, Washington D.C.

Youngblood, Curtis and Lawrence Apaloo (2005): "*Estimating Ghana's Equilibrium Real Exchange Rate, 1965-2004*", paper presented at Workshop on TIRP Findings organized by the USAID, Accra October 2005 at the Centre for Policy Analysis (CEPA), Accra

APPENDICES

Appendix I (a): Aid, Non-Aid Flows and Absorption, 1990-2006 (US$ million)

	Non-Aid Flows Current A/c	Non-Aid Flows Capital A/c	Aid Flows (Reserve Changes)	Aid Flows (Overall Balance)	Change in Non-Aid Current A/c	Change in Aid Flows (Overall Bal)	Absorption
1990	-542.9	-6.4	597.5	667.4	-	-	-
1991	-573.2	34.9	766.5	709.1	-30.3	41.7	-0.7
1992	-699.0	-112.5	702.2	687.1	-125.8	-22.0	5.7
1993	-929.9	259.9	702.2	713.2	-230.9	26.1	-8.8
1994	-577.7	183.5	566.7	557.8	352.2	-155.4	-2.3
1995	-537.6	323.6	331.0	463.1	40.1	-94.7	-0.4
1996	-656.6	-136.5	682.0	774.2	-119.0	311.1	-0.4
1997	-839.5	-6.6	755.8	870.8	-182.9	96.6	-1.9
1998	-954.9	53.7	876.6	1,000.5	-115.4	129.7	-0.9
1999	-731.0	56.5	610.7	734.5	223.9	-266.0	-0.8
2000	-627.2	65.3	375.2	495.8	103.8	-238.7	-0.4
2001	-680.0	88.3	723.1	887.5	-52.8	391.7	-0.1
2002	-313.5	50.0	539.1	303.5	366.5	-584.0	-0.6
2003	-376.2	293.0	868.4	589.2	-62.7	285.7	-0.2
2004	-946.5	170.0	1,083.3	763.5	-570.3	174.3	-3.3
2005	-1,425.0	754.0	833.5	980.0	-478.5	216.5	-2.2
2006	-1,536.0	856.0	1,051.8	1,217.0	-111.0	237.0	-0.5

Appendix I (b): Government Non-Aid Fiscal Deficit, Net Aid and Spending, 1990-2006 (¢ billion)

	Non-Aid Fiscal Deficit	Domestic Financing	Net Aid	Change in Non-Aid	Change in Net Aid	Spending
1990	-102	-28	129.9			
1991	-109	-52	160.8	-7.2	30.9	-0.2
1992	-356	144	211.6	-246.7	50.8	-4.9
1993	-546	45	500.9	-190.5	289.3	-0.7
1994	-646	-39	684.8	-99.7	183.9	-0.5
1995	-775	-28	803.1	-128.8	118.3	-1.1
1996	-1,373	531	841.6	-597.8	38.5	-15.5
1997	-1,642	775	867.0	-269.1	25.4	-10.6
1998	-1,768	862	906.3	-126.5	39.3	-3.2
1999	-2,023	1,290	733.0	-254.8	-173.3	1.5
2000	-2,714	2,319	395.0	-691.0	-338.0	2.0
2001	-5,547	862	4,685.0	-2,833.0	4,290.0	-0.7
2002	-3,952	2,100	1,852.0	1,595.0	-2,833.0	-0.6
2003	-5,292	-82	5,374.0	-1,340.0	3,522.0	-0.4
2004	-7,590	393	7,197.0	-2,298.0	1,823.0	-1.3
2005	-6,739	-1,541	8,280.0	851.0	1,083.0	0.8
2006	-14,482	215	14,267.0	-7,743.0	5,987.0	-1.3

Appendix II: Summary of Survey Findings

General Characteristics, Legal Status and Employment Size

Out of the twelve (12) respondent companies, ten (10) are registered as "Limited Liability" and one is a subsidiary of a multinational company and the other one is a family business. Ten of the respondent firms produce for both the domestic and export markets; one firm produces exclusively for export markets, while another is a typical import-competing firm producing exclusively for the domestic market. Employment size varies from one manufacturing activity to another and ranges from 100 permanent employees in the Metals to 434 in the Textiles industry.

In order that the findings effectively inform any meaningful policy reforms, the survey findings are analyzed below to draw out differences in perceptions between the three broad categories of firms, namely:

- firms producing exclusively for the domestic market;
- firms producing exclusively for export markets; and
- firms producing for both domestic and export markets.

Production, Sales and Profit Margins

As indicated earlier, firms may adjust to exchange rate changes through productivity changes. While productivity in terms of output per labour increased for firms producing exclusively for export markets and the domestic market respectively, it decreased in the case of firms producing for both markets. On the other hand, productivity in terms of output per capital increased for all categories of firms.

Factors Accounting for Productivity Changes

Productivity changes differed markedly between the three categories of firms interviewed in the survey. Asked to account for the most important factors for these productivity changes, firms producing exclusively for the domestic market were of the view that adjusting to changing labour costs and market share were the two dominant factors. On the other hand, firms producing for export markets thought that adjusting to loss of competitiveness, profit margins and market share were important, while the consensus in firms producing for both markets was that adjusting to changing costs of raw materials and labour costs were important factors.

Appendix Table 4.1: Factors Accounting for Productivity Changes

Scale: 1-6; with 6=most influential; and 1=least influential factor	**Producing for the Domestic Market**	**Producing for the Export Market**	Producing for Both Markets
(a) Adjust to changing costs of raw materials	1	4	5
(b) Adjust to changing labour costs	4	3	4
(c) Adjust to exchange rate changes	6	3	2
(d) Adjust to loss of competitiveness	2	6	3
(e) Adjust to profit margins	3	5	4
(f) Adjust to market share	5	4	4

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

Appendix Table 4.1 presents the reactions of firms, in terms of their ranking of possible factors accounting for productivity changes, using a scale of 1-6. A score of 6 indicates that the factor is the most influential, while a score of 1 the least influential factor.

As shown in Table 4.1 adjusting to changing costs of raw materials is not an important factor accounting for productivity changes of firms producing solely for the domestic market. Surprisingly, however, adjusting to exchange rate changes was considered the least important factor by exporting firms a sharp contrast with firms producing solely for the domestic market.

Factors Accounting for Changing Levels of Production

Findings from the survey also reveal that not all the firms interviewed experienced expansions in annual production and sales levels. While the numerical data on production and sales provided by the firms show some inconsistencies, the perceptions of a few firms are that annual declines in output and sales were registered over the past five years. These perceptions are presented in terms of the rankings of responses to certain alternating choices in Appendix Table 4.2 below.

Table 4.2: Factors Accounting for Increased, Decreased and Stable Levels of Production

Factors Accounting for Increased levels of Production	Producing for the Domestic Market	Producing for the Export Market	Producing for Both Markets
(a) Availability of local Inputs	7	3	4
(b) Availability of foreign inputs	4	4	5
(c) Availability of finance	1	6	5
(d) Better cedi value of exports (exchange rate)	2	6	5
(e) Increased domestic demand	3	1	6
(f) Better prices on domestic market	6	1	5
(g) Improved world market prices	5	6	3
(h) Low prices of local inputs	8	5	2
Factors Accounting for Decreased/Stable Levels of Production			
(a) Lack of local inputs	5	0	5
(b) Lack of foreign inputs	7	0	3
(c) low prices on domestic markets	4	0	5
(d) High prices of local inputs	3	0	4
(e) High cost of foreign inputs	2	0	5
(f) Competition from imports	1	0	5
(g) High cost of labour	6	0	4

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

As to why production levels increased over the past five years, firms producing exclusively for the domestic market thought that the ready availability and low prices of local raw materials and inputs and better prices on the domestic market were the main drivers. On the other hand, firms producing exclusively for export markets ranked the availability of finance,

better cedi value of exports and improved world market prices very highly with a score of 6 each, while firms producing for both markets attributed the increased levels of production over the past five years to increased domestic demand for their products, better prices on domestic market, better cedi value of exports, and availability of foreign inputs (see Table 4.2).

Moreover, within the same category of firms whose production levels had either decreased or remained unchanged, the blame was put on high cost of foreign inputs and competition from imports.

Pricing Decisions when faced with Persistent Rise in Cedi Value of Foreign Exchange
In the CEPA survey, firms were asked about what they would normally do when they are faced with persistent rise in the cedi value of exports. Firms producing solely for the domestic market opted to lower the cedi value of import substitutes, while firms producing mostly for export markets would prefer to keep the price of exports and import-substitutes unchanged (see Appendix Table 4.3).

Appendix Table 4.3: Ranking Pricing Decisions of Categories of Firms

Scale:1-2; with 2=most likely option, and 1=least likely option	**Domestic Market**	**Export Market**	**Both Markets**
(a) Lower the cedi value of exports	1	1	1
(b) Lower the cedi value of import substitutes	2	1	1
(c) Keep the cedi price of exports unchanged	n/a	2	2
(d) Keep the cedi price of import substitutes unchanged	n/a	1	2

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

Reacting to Conflicting Objectives in the face of Real Appreciation of Foreign Exchange
As suggested in the literature, firms react to real appreciation in the exchange rate by cutting down on production, increasing sales, or striking a balance between competing goals. Indications from the survey show that firms producing solely for export markets have a preference to either strike a balance between competing goals or increase

foreign sales. Firms which produce for both markets would in addition prefer to increase domestic sales. Building up inventory as a short-term measure is not an option that these firms prefer; neither do they prefer to cut back on the production of exports nor of import substitutes (see Table 4.4).

Appendix Table 4.4: Reacting to Stable Profit Margins and Export Sales

Scale:1-6; with 6= most likely action and 1=least likely action to take	Producing for the Domestic Market	Producing for the Export Market	Producing for Both Markets
(a) reduce production of exports	n/a	1	3
(b) reduce production of import substitutes	n/a	1	2
(c) Increase domestic sales	n/a	1	4
(d) increase foreign sales	n/a	4	5
(e) Build up of inventory as short-term measure	n/a	1	3
(f) Strike a balance between competing goals	n/a	6	4

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

4.3.3 Production Costs and Capacity Utilization

Findings from the CEPA survey show that while the costs of production increased for firms producing essentially for both the export and domestic markets in the last five years, the reverse was true in the case of firms producing solely for the for the export markets. This means, according to our findings, that the increased costs might have originated more from domestic than foreign sources.

Appendix Table 4.5: Production Cost Trends and Factors accounting for Increased Levels

	Producing Domestic Market	Producing for Export Market	Producing for Both Markets
(a) Production Costs Increased, Decreased, Unchanged?	Increased	Decreased	Increased
(b) Factors Accounting for Increased Production Costs			
(i) High Prices of local raw materials and inputs	3	n/a	4
(ii) High costs of foreign raw materials and inputs	1	n/a	4
(iii) 'Excessive' utility price hikes (water and electricity)	2	n/a	5
(iv) High replacement value of new machines (depreciation costs)	4	n/a	3

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

In accounting for the increased production costs, findings from the survey show some weak inverse correlation as to the determinants between firms producing for the domestic market and firms producing for both markets. Using a scale of 1-5, firms producing solely for the domestic market gave higher scores for high depreciation costs and high prices of local raw materials and inputs. In contrast, firms producing for the domestic and export markets gave higher scores to 'excessive utility prices (water and electricity), high costs of foreign raw materials and inputs but lower scores to depreciation costs (see Appendix Table 4.5).

Production Costs Structure

A summary of the structure of production costs of all three categories of firms derived from the survey is presented in Appendix Table 4.6. The data are percentage shares of costs incurred by firms and include local raw material input costs, foreign input costs, the cost of utilities (electricity and water) and wages and salaries.

Appendix Table 4.6: Firms' Shares of Input Costs in Total Operating Costs

	Producing for Domestic Market	Producing for Export Market	Producing for Both Markets
(a) Local Raw Materials and Inputs	20.0%	75.0%	n/a
(b) Foreign Raw Materials and Inputs	75.0%	n/a	n/a
(c) Cost of Utilities (electricity and water)	n/a	n/a	20.0%
(d) Wages and Salaries	n/a	18.0%	75.0%
	95.0%	93.0%	95.0%

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

Appendix Table 4.6 shows that there is a uniquely dominant cost input present in each of the cost structures of the three categories of firms. In order to bring out the differences and their implications, each category of firms is considered separately in what follows:

Firms Producing for the Domestic Market

- Raw material Inputs dominate in the import-competing sector with the foreign component by as much as 75 percent. Consequently, the exchange rate becomes an important determinant of costs.
- According to the data from the survey, there has been some tendency for the share of the foreign (domestic) inputs costs to fall (rise) over time, which is consistent with real appreciation (depreciation) of the cedi. Domestic inputs share rose from 18.9 percent in 1999 to 26.1 percent in 2006. The foreign inputs share declined from 75.9 percent in 1999 to 67.1 percent in 2006.

Firms Producing for Export Markets

- Local raw materials amounted to 75 percent of the total production costs while wages and salaries amounted to 18 percent. Together local raw materials and wages and salaries constitute 93 percent of total operating costs.
- Domestic input costs have apparently risen faster than the wage bill.

Thus the percentage share of the domestic input costs rose from 70.6 percent in 1999 to 85.9 percent in 2006, while the wage bill share declined from 23.2 percent in 1999 to 10.3 percent in 2006.

- With real appreciation, the profitability of exporting firms was declining and thus the export share decline is understandable.

Firms Producing for Both Markets

- The cost of utilities (20 percent) and the wage bill (75 percent) dominate the cost structure;
- The exchange rate has only an indirect effect on electricity tariffs and over the period, wage increases have dominated. Consequently, the share of the wage bill has risen from 58.0 percent in 1999 to 80.3 percent in 2006. Electricity's share declined from 36.3 percent in 1999 to 15.4 percent in 2006.

Adjustments in the face of Real Exchange Rate Appreciation on Costs (US Dollar terms)

Real exchange rate appreciations are said to escalate firms' production costs (in US dollar terms) towards the average production costs of domestic competitors. In the CEPA survey, therefore, firms were required to rank on a scale of importance the choices they would most likely take when faced with such a situation. The reactions of the three broad categories of firms are summarized in Appendix Table 4.7 below.

Table 4.7: Adjusting to Effect of Real Exchange Rate Appreciation on Costs

	Producing for the Domestic Market	Producing for the Export Market	Producing for Domestic and Export Markets
(a) Adjust to changing costs of raw materials mix	6	7	7
(b) Adjust to changing labour cost	4	3	5
(c) Adjust to exchange rate changes	1	8	6
(d) Adjust to loss of competitiveness	2	8	5
(e) Adjust to profit margins	3	8	5
(f) Adjust to market share	5	4	5
(g) Lower the cedi value of import substitutes	7	n/a	4
(h) Keep the cedi value of import substitutes unchanged	8	n/a	3

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

Using a scale of 1-8, with 8 being the most likely action to take, firms producing solely for the domestic market (import-competing firms) indicated that they would most likely keep the cedi value of import substitutes, lower the cedi value of imports, and adjust to changing costs of raw materials mix, in that order. Firms producing solely for export markets, however, indicated that they would most likely adjust to exchange rate changes, loss of competitiveness and profit margins.

The most likely actions for firms producing for both markets were a combination of the options of the latter two categories of firms. Specifically, they indicated that they would most likely adjust to changing costs of raw materials mix and exchange rate changes. Interestingly, however, adjustment to changing labour cost, loss of competitiveness, adjustments to profit margins and adjustment to market shares were ranked equally with a score of 5 by this last group of firms.

Obstacles to Expand or go into Exporting

Indications from the survey are that while firms would normally wish to expand and go into exporting, they face a number of obstacles for doing so

effectively. Asked to rank these constraints in terms of importance, firms producing for the domestic market specified the most important constraints to include, in order of importance, information about potential markets, credit and working capital, and inadequate water supply (see Appendix Table 4.8).

On the other hand, firms producing for both the domestic and export markets indicated that the most important constraints (in order of importance) were high costs of imported raw materials, high replacement costs of equipment, high costs of producing for exports and frequent interruptions of electricity and unreliable energy supply.

Appendix Table 4.8: Constraints to Production Expansion and Exporting

	Producing Domestic Market	Producing for Both Markets
(a) high price of local raw materials	2	5
(b) High price of imported raw material	1	8
(c) high cost of replacement of equipment (depreciation cost)	3	7
(d) cannot obtain credit and working capital	8	4
(e) high costs of producing for exports	6	7
(f) unable to attract management with requisite skills	5	2
(g) frequent interruptions of electricity supply	4	7
(h) inadequate water supply	7	3
(i) do not have information about potential markets	9	3

Source: CEPA Survey of Non-Traditional Exporters and Import-Competing Firms, November 2007

Appendix III: Results of Estimation

Appendix Table 5.1a: Tests of the Order of Integration

Variable	Lag Length	ADF Statistic	Additional Regressors	Null Hypothesis	Inference
Lreer	1	-2.16	Constant and Trend	I(1)	At least I(1)
Lreerf	1	-3.04	Constant and Trend	I(1)	At least I(1)
Ltot	0	-2.24	Constant and Trend	I(1)	At least I(1)
Lrcpi	1	-1.39	Constant and Trend	I(1)	At least I(1)
Lrpci	0	-1.44	Constant and Trend	I(1)	At least I(1)
Lropt	1	-1.84	Constant and Trend	I(1)	At least I(1)
Laid	1	-2.43	Constant and Trend	I(1)	At least I(1)
Laidl	1	-2.26	Constant and Trend	I(1)	At least I(1)
Lniregdp	0	-2.42	Constant and Trend	I(1)	At least I(1)
Lnpccgdp	0	-2.77	Constant and Trend	I(1)	At least I(1)

Notes: Unit Root tests 1983 to 2006
Critical values: -3.6331 (constant and trend included)
* Indicates rejection of the null hypothesis at the 5% significance level

Variable	Lag Length	ADF Statistic	Additional Regressors	Null Hypothesis	Inference
Dlreer	1	-3.15*	Constant	I(0)	I(1)
Dlreerf	1	-2.98	Constant	I(1)	I(1) at 10% SL
Dltot	0	-3.76*	Constant	I(1)	I(1)
Dlrcpi	1	-2.82	Constant	I(1)	I(1) at 10% SL
Dlrpci	0	-3.25*	Constant	I(1)	I(1)
Dlropt	1	-2.98	Constant	I(1)	I(1) at 10% SL
Dlaid	1	-6.88*	Constant	I(1)	I(1)
Dlaidl	1	-2.98	Constant	I(1)	I(1) at 10% SL
Dlniregdp	1	-3.58*	Constant	I(1)	I(1)
dlnpccgdp	1	-3.11*	Constant	I(1)	I(1)

Notes: Unit Root tests 1984 to 2006
Critical values: -3.0115 (constant)
* Indicates rejection of the null hypothesis at the 5% Significance Level (SL)

Appendix Table 5.2

Cointegration with unrestricted intercepts and restricted trends in the VAR
Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

22 observations from 1985 to 2006. Order of VAR = 2.
List of variables included in the cointegrating vector:
LRERF LTOTF LROPTB LNIREGDP LAIDLCGDP
Trend
List of eigenvalues in descending order:
.85141 .74486 .71683 .45602 .11615 0.00

****

Null	Alternative	Statistic	95% Critical Value	90%Critical Value
r = 0	r = 1	41.9448	37.8600	35.0400
r<= 1	r = 2	30.0505	31.7900	9.1300
r<= 2	r = 3	27.7578	25.4200	23.1000
r<= 3	r = 4	13.3944	19.2200	17.1800
r<= 4	r = 5	2.7163	12.3900	10.5500

****

Appendix Table 5.3

ECM for variable LRERF estimated by OLS based on cointegrating VAR(2)

****

Dependent variable is dLRERF
22 observations used for estimation from 1985 to 2006

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
Intercept	1.8075	1.4882	1.2146[.243]
dLRERF1	.19303	.24523	.78714[.443]
dLTOTF1	-.18821	.36304	-.51842[.612]
dLROPTB1	.24031	.21960	1.0943[.291]
dLNIREGDP1	-.16974	.39986	-.42450[.677]
dLAIDLCGDP1	.088704	.16807	.52777[.605]
ecm1(-1)	-.64962	.52803	-1.2303[.238]

****

List of additional temporary variables created:
dLRERF = LRERF-LRERF(-1)
dLRERF1 = LRERF(-1)-LRERF(-2)
dLTOTF1 = LTOTF(-1)-LTOTF(-2)
dLROPTB1 = LROPTB(-1)-LROPTB(-2)
dLNIREGDP1 = LNIREGDP(-1)-LNIREGDP(-2)
dLAIDLCGDP1 = LAIDLCGDP(-1)-LAIDLCGDP(-2)
ecm1 = 1.0000*LRERF -.47004*LTOTF -.35259*LROPTB + .40956*LNIREGDP +
.41037*LAIDLCGDP + .0055065*Trend

****

R-Squared	.44241	R-Bar-Squared	.21937
S.E. of Regression	.15849	F-stat. F(6, 15)	1.9836[.132]
Mean of Dependent Variable	-.074698	S.D. of Dependent Variable	.17938
Residual Sum of Squares	.37677	Equation Log-likelihood	13.5223

Akaike Info. Criterion	6.5223	Schwarz Bayesian Criterion	2.7036
DW-statistic	2.1845	System Log-likelihood	101.1947

****

Diagnostic Tests

****

* Test Statistics *	LM Version	*	F Version	
* A:Serial Correlation	*CHSQ(1)=	1.1929[.275]	*F(1,14)=	.80264[.385]
* B:Functional Form	*CHSQ(1)=	.099494[.752]	*F(1,14)=	.063602[.805]
* C:Normality	*CHSQ(2)=	2.2293[.328]	*	Not applicable
* D:Heteroscedasticity	*CHSQ(1)=	1.0048[.316]	*F(1,20)=	.95713[.340]

****

Appendix Table 5.4

ML estimates subject to exactly identifying restriction(s)
Estimates of Restricted Cointegrating Relations (SE's in Brackets)
Converged after 2 iterations
Cointegration with unrestricted intercepts and restricted trends in the VAR

****

20 observations from 1987 to 2006. Order of VAR = 2, chosen r =1.
List of variables included in the cointegrating vector:
Y rermis LM2GDP LAIDLCGDP INFLN
Trend

****

List of imposed restriction(s) on cointegrating vectors:
a1=1;

****

	Vector 1
Y	1.0000
	(*NONE*)
rermis	.24479
	(.12155)
LM2GDP	-.20460
	(.050941)
LAIDLCGDP	-.053935
	(.024827)
INFLN	.10135
	(.039179)
Trend	.011502
	(.0024607)

****

LL subject to exactly identifying restrictions= 145.5827

****

Appendix Table 5.5

ML estimates subject to exactly identifying restriction(s)
Estimates of Restricted Cointegrating Relations (SE's in Brackets)
Converged after 2 iterations
Cointegration with unrestricted intercepts and restricted trendsin the VAR

****

20 observations from 1987 to 2006. Order of VAR = 2, chosen r =1.
List of variables included in the cointegrating vector:
Y rermis LM2GDP LAIDLCGDP LNIREGDP
Trend

****

List of imposed restriction(s) on cointegrating vectors:
a1=1;

****

	Vector 1
Y	1.0000
	(*NONE*)
rermis	.24530
	(.049395)
LM2GDP	-.19414
	(.075326)
LAIDLCGDP	-.023071
	(.015851)
LNIREGDP	-.017793
	(.033286)
Trend	.010436
	(.0028805)

****

LL subject to exactly identifying restrictions= 156.9882

****

Table 5.6

ECM for variable YD100 estimated by OLS based on cointegrating VAR(2)

****

Dependent variable is dYD100
20 observations used for estimation from 1987 to 2006

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
Intercept	.51415	.36132	1.4230[.178]
DY	.041296	.28159	.14665[.886]
drermis	-.0089894	.027630	-.32535[.750]
dLM2GDP1	-.094833	.053042	-1.7879[.097]
dLAIDLCGDP1	-.028711	.018579	-1.5454[.146]
dINFN	.024627	.028721	.85746[.407]
ecm1(-1)	-.24999	.17679	-1.4141[.181]

List of additional temporary variables created:
dY = YD100-YD100(-1)
dY = YD100(-1)-YD100(-2)
drermis = rermis(-1)-rermis(-2)
dLM2GDP1 = LM2GDP(-1)-LM2GDP(-2)
dLAIDLCGDP1 = LAIDLCGDP(-1)-LAIDLCGDP(-2)
dINFLN = INFLND100(-1)-INFLND100(-2)
ecm1 = 1.0000*YD100 + .24479*rermis -.20460*LM2GDP -.053935*LAIDLCG
DP + .10135*INFLN + .011502*Trend

R-Squared	.40324	R-Bar-Squared	.12781
S.E. of Regression	.014887	F-stat. F(6, 13)	1.4641[.265]
Mean of Dependent Variable	.0010300	S.D. of Dependent Variable	.015940
Residual Sum of Squares	.0028810	Equation Log-likelihood	60.0748
Akaike Info. Criterion	53.0748	Schwarz Bayesian Criterion	49.5897
DW-statistic	2.3415	System Log-likelihood	145.5827

Diagnostic Tests

* Test Statistics *	LM Version *	F Version
* A:Serial Correlation	*CHSQ(1)= 2.9625[.085]	*F(1,12)= 2.0866[.174]
* B:Functional Form	*CHSQ(1)= .29186[.589]	*F(1,12)= .17771[.681]
* C:Normality	*CHSQ(2)= 1.7431[.418]	* Not applicable
* D:Heteroscedasticity	*CHSQ(1)= 1.3549[.244]	*F(1,18)= 1.3081[.268]

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Appendix Table 5.7

ML estimates subject to exactly identifying restriction(s)
Estimates of Restricted Cointegrating Relations (SE's in Brackets)
Converged after 2 iterations

Cointegration with unrestricted intercepts and restricted trendsin the VAR

****

20 observations from 1987 to 2006. Order of VAR = 2, chosen r =1.

List of variables included in the cointegrating vector:

Y RERMIS LM2GDP LAIDLCGDP INFLN

INT1 Trend

****

List of imposed restriction(s) on cointegrating vectors:

a1=1;

****

	Vector 1
Y	1.0000
	(*NONE*)
Rermis	5.3190
	(2.4735)
LM2GDP	-1.2121
	(.49772)
LAIDLCGDP	-.0059041
	(.026957)
INFLN	.30864
	(.10031)
INT1	1.9902
	(.95359)
Trend	.068234
	(.027590)

****

LL subject to exactly identifying restrictions= 234.5553

****