

Report No. 40934-GH

Ghana

Meeting the Challenge of Accelerated and Shared Growth

Country Economic Memorandum

(In Three Volumes) Volume II: Background Papers

November 28, 2007

PREM 4
Africa Region



Document of the World Bank

CURRENCY EQUIVALENTS

Currency Unit = cedis
Cedis= US\$0.0001

FISCAL YEAR

January 1—December 31

ACRONYMS AND ABBREVIATIONS

AAF	Automatic Adjustment Formula
AAGDS	Accelerated Agricultural Growth and Development Strategy
ACP	African, Caribbean and Pacific
AfDB	African Development Bank
AGI	Association of Ghana Industries
AICD	Africa Infrastructure Country Diagnostic
BOT	Operate and Transfer
BPO	Business Process Offshoring
BST	Bulk Supply Tarrif
CC	Co-operative College
CDF	Comprehensive Development Framework
CEM	Country Economic Memorandum
CEPA	Center for Policy Analysis
CERs	Carbon Emission Reductions
CMB	Cocoa Marketing Board (renamed Ghana Cocoa Board or Cocobod)
COCOBOD	Ghana Cocoa Board
CODAPEC	Cocoa National Disease and Pest Control Committee
CPIA	Country Policy and Institutional Assessment
CRC	Central Road Corridor
CWIQ	Core Welfare Indicator Questionnaire
CWSA	Community Water and Sanitation Agency
DAC	Development Assistance Committee
DAES	Directorate of Agricultural Extension Services
DAs	District Assemblies
DC	District Assemblies
DFE	Dynamic Fixed-Effects
DGIRH	Directorate General for the Inventory of Hydraulic Resources
DOC	Department of Cooperatives
DPs	Development Partners
DSA	Debt Sustainability Assessment
DSM	Distribution Service Margins
DWSTs	District Water and Sanitation Teams
EC	European Commission
ECG	Electricity Company of Ghana
ECOWAS	Economic Community of West Africa States
EDF	Extension Development Fund
ERP	Economic Recovery Program

ETA	Electronic Technology Act
FAO	Food and Agriculture Organization of the United Nations
FASDEP	Food and Agriculture Sector Development Policy
FBO	Farmer-Based Organizations
FDI	Foreign Direct Investment
FEER	Fundamental Equilibrium Exchange Rate
GASCO	Ghana Association of Stevedoring Companies
GCC	Ghana Co-operatives Council
GCNet	Customs and Trade facilitation e-government application
GDP	Gross Domestic Product
GHA	Ghana Highway Authority
GIS	Geographic Information System
G-JAS	Ghana - Joint Assistance Strategy
GLSS	Ghana Living Standards Survey
GMES	Ghana Manufacturing Enterprise Survey
GMM	Generalized Method of Moments
GNI	Gross National Income
GoG	Government of Ghana
GPHA	Ghana – Port Harbour Authority
GPHA	Ghana Port Harbour Authority
GPRS	Ghana Poverty Reduction Strategy
GSP	Generalized System of Preferences
GSS	Ghana Statistical Service
GT	Ghana Telecom
GWCL	Ghana Water Company Ltd
GWEP	Guinea Worm Eradication Program
HD	Human Development
HHI	Herfindahl-Hirschman index
HIPC	Heavily Indebted Poor Countries
HP	Hodrick-Prescott
ICA	Investment Climate Assessment
ICOR	Incremental Capital Output Ratio
ICT	Information and Communication Technology
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
IMF	International Monetary Fund
IOCT	Incremental Output-Capital Ratio
IPP	Independent Power Producer
ISP	Internet Service Provider
ISSER	Institute of Statistical, Social and Economic Research (University of Ghana)
IT	Information Technology
ITES	IT Enabled Services
ITU	International Telecommunications Union
JTC-IWRM	Joint Ghana-Burkina Technical Committee on Integrated Water Resources Management
KWh	Kilowatt hour
LBC	Licensed Buying Company
LCU	Local Currency Unit

LDB	Live data base
M or m	Million
M2	Ratio of Money to quasy-money
MAMS	A Computable General Equilibrium Model for MDG Simulations
MBB	Marginal Budgeting for Bottlenecks
MCA	Millenium Challenge Account
MDBS/PRSC	Poverty Reduction Support Credit
MDG	Millenium Development Goal
MDRI	Multilateral Debt Relief Initiative
MENA	Middle East and North Africa
MG	Mean Group
MIC	Middle-Income Countries
MMYE	Ministry of Manpower, Youth and Employment
MoE	Ministry of Energy
MP	Members of Parliament
MPS	Meridian Port Services
MRPH	Ministry of Railways, Ports and Harbours
MRT	Ministry of Roads and Transport
MTC	Ministry of Transport and Communication
MW	Mega Watt
MWH	Ministry of Works and Housing
MWRWH	Ministry of Water Resources, Works and Housing
NCA	National Communications Authority
NDPC	National Development Planning Commission
NEAP	National Environmental Action Plan
NED	Northern Electricity Department
NEF	National Electrification Funds
NEP	National Electrification Project
NEPAD	New Partnership for Africa's Development
NGOs	Non Gouvernemental Organization
NITA	National Information Technology Agency
NTP	National Communications Authority
O&M	Operation and Maintenance
ODAs	Official Development Assistance
PMG	Pooled Mean Group model
PPP	Public Private Partnership
PPRC	Producer Price Review Committee
PRSC	Poverty Reduction Support Credit
PSI	Presidential Special Initiative
PURC	Public Utilities Regulatory Commission
RCA	Revealed Comparative Advantage
RDSP	Road Sector Development Program
RDSP	Road Sector Development Program
REA	Rural Electrification Agency
REER	Real Effective Exchange Rate
REF	Rural Electrification Fund
RELC	Research/ Extension Liaison Committees
RER	Real Exchange Rate
RPED	Regional Program on Enterprise Development
RSDP	Road Sector Development Program
SAM	Social Accounting Matrix

SAT	Submarine Fiber-optic Cable
SBI	Sustainable Budget Index (Botswana)
SHEP	Self-Help Electricity Program
SIP	Strategy Investment Plan
SMLE	Small, Medium and Large Enterprise
SMS	Short Message Service
SNO	Second National Operator
SOEs	State Owned Enterprises
SPS	Stringent Sanitary and Phyto-sanitary
SSA	Sub-Saharan Africa
SWAp	Sector-Wide Approach
TFP	Total Factor Productivity
TMP	Telenor Management Partner
TMS	Tropical Manioc Selection
TOT	Terms of Trade
TUC	Trades Union Congress
UEMOA	<i>Union économique et monétaire ouest africaine</i> (West African Economic and Monetary Union)
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
US	United States
USAID	United States Agency for International Development
UW	Upper West region
VALCO	Volta Aluminum Company
VBTC	Volta Basin Technical Committee
VoLP	Voice over Internet Protocol
VRA	Volta River Authority
WAGP	West African Gas Pipeline
WAPGOco	West African Gas Pipeline Company
WAPP	West African Power Pool
WATTFP	West Africa Transport and Transit Facilitation Project
WB	World Bank
WBES	World Business Environment Survey
WDI	World Development Indicators
WDR	World Development Report
WESTEL	Western Telesystems
WIAD	Women in Agricultural Development
WRC	Water Resources Commission

Vice President:	Obiageli K. Ezekwesili (AFRVP)
Country Director:	Mats Karlsson (AFCF1)
Sector Director:	Sudhir Shetty (AFTPM)
Sector Manager:	Antonella Bassani (AFTP4)
Task Team Leader:	Zeljko Bogetic (AFTP4)

TABLE OF CONTENTS

1. INFRASTRUCTURE FOR ACCELERATED GROWTH IN GHANA: NEEDS AND CHALLENGES. 10	
INTRODUCTION	10
WHY INFRASTRUCTURE MATTERS TO GHANA.....	11
BENCHMARKING GHANA’S INFRASTRUCTURE AND SPENDING	18
ASSESSING INVESTMENT NEEDS	36
POLITICAL ECONOMY OF INFRASTRUCTURE POLICY AND INSTITUTIONS.....	43
CONCLUSION AND POLICY RECOMMENDATIONS	60
REFERENCES	62
APPENDIX 1: AN ASSESSMENT OF THE ENERGY CRISIS	64
APPENDIX 2: INCENTIVE-BASED PERFORMANCE CONTRACTS FOR SOES	65
APPENDIX 3: MDGs FOR THE ELECTRICITY SECTOR	66
APPENDIX 4: GPRS TRANSPORT CG RESULT MATRIX.....	67
2. GHANA’S AGRICULTURAL POTENTIAL: HOW TO RAISE AGRICULTURAL OUTPUT?..... 68	
INTRODUCTION	68
THE ROLE OF AGRICULTURE IN GHANA’S STRUCTURAL TRANSFORMATION.....	70
RECENT SECTOR PERFORMANCE: TRENDS IN PRODUCTION	73
THREATS TO SOURCES OF GROWTH AND OPPORTUNITIES TO STEP-UP PERFORMANCE	84
DISTRIBUTIONAL ASPECTS: NORTH AND SOUTH; LARGE AND SMALL FARMS.....	97
FUTURE INSTITUTIONAL SUPPORT TO THE AGRICULTURAL SECTOR.....	99
CONCLUSIONS AND RECOMMENDATIONS	100
REFERENCES	102
APPENDIX 1: COMPOSITION OF EXPORTS 2006	104
APPENDIX 2: HAYAMI-RUTTAN TYPOLOGY USING OFFICIAL EXCHANGE RATES.....	105
APPENDIX 3: RURAL POVERTY RATES 1991 – 2006.....	106
APPENDIX 4: AREA AND PRODUCTION OF FOOD CROPS 1994 – 2005.....	107
APPENDIX 5: PRODUCER PRICES AND PRODUCTION LEVELS 1960 – 2007.....	107
APPENDIX 6: HORTICULTURAL EXPORTS, 2005 AND 2006	108
APPENDIX 7: SIMULATION RESULTS FOR YIELD GROWTH: PRODUCER BENEFITS.....	109
APPENDIX 8: THE GLOBAL MARKET FOR ORGANIC COCOA	110
APPENDIX 9: WHOLESALE PRICES OF FOOD STAPLES 1997 – 2005 (CONSTANT 1997 CEDIS).....	111
APPENDIX 10: RAINFALL PATTERNS BY REGION 1998 – 2006.....	112
APPENDIX 11: IRRIGATION SCHEMES, RANKED BY SIZE OF DEVELOPED AREA	113
APPENDIX 12: THE VALUE OF PROCESSED COCOA-BASED EXPORTS 2004 – 2006	114
APPENDIX 13: RECOMMENDED ACTIONS TO IMPROVE THE COCOA VALUE CHAIN	115
3. INVESTMENT CLIMATE	116
INTRODUCTION	116
INVESTMENT CLIMATE SURVEY AND ASSESSMENT.....	116
ENTERPRISE PERFORMANCE.....	120
PERCEPTIONS ABOUT INVESTMENT CLIMATE	123
ASPECTS OF THE INVESTMENT CLIMATE.....	127
CONCLUSIONS.....	137
REFERENCES	139

4. SCALING-UP AID FOR GHANA: MAINTAINING COMPETITIVENESS, AVOIDING THE DUTCH DISEASE, AND ACCELERATING GROWTH.....	141
SUMMARY.....	141
INTRODUCTION.....	141
MACROECONOMIC MANAGEMENT OF AID FLOWS.....	144
EMPIRICAL MODEL OF THE REAL EXCHANGE RATE.....	147
AID, REAL EXCHANGE RATE MISALIGNMENT, AND ECONOMIC PERFORMANCE	153
CONCLUSIONS AND POLICY IMPLICATIONS.....	160
REFERENCES	170
APPENDIX 1: COMPUTING THE EQUILIBRIUM REAL EXCHANGE RATE AND RER MISALIGNMENT INDEXES.....	186
APPENDIX 2: DEFINITIONS AND SOURCES OF VARIABLES USED IN REGRESSION ANALYSES	189
APPENDIX 3: COUNTRY AND PERIOD COVERAGE	191
5. OPTIONS FOR EXPORT DIVERSIFICATION AND FASTER EXPORT GROWTH IN GHANA.....	192
SUMMARY.....	192
INTRODUCTION.....	193
SLOW EXPORT DIVERSIFICATION: SOME DEVELOPMENT PERSPECTIVES	195
EXPORT DIVERSIFICATION AND EXPORT GROWTH – WHY A DIFFERENT APPROACH MAY BE NEEDED	196
GHANAIAN EXPORTS MAY NEED A RICHER PRODUCT MIX	198
PRESIDENTIAL SECTOR INITIATIVES: ARE THE GOVERNMENT’S CHOICES EFFICIENT?	203
INCOME ENHANCING EXPORT DIVERSIFICATION STRATEGY: NEED FOR SECTOR SPECIFICITY	205
WHY SECTOR-SPECIFICITY MATTERS FOR GHANA.....	208
CONCLUSIONS.....	209
REFERENCES	212

LIST OF FIGURES

Figure 1.1: Household access to electricity, 2000.....	21
Figure 1.2: Household access to water, 2000.....	21
Figure 1.3: Fixed and mobile competition.....	23
Figure 1.4: Ghana’s infrastructure compared with international destinations	24
Figure 1.5: Household access to improved water and sanitation, 1997, 2003	26
Figure 1.6: Infrastructure trends in PPIs and ODAs	29
Figure 1.7: Trends in PPIs and ODAs in the energy sector	30
Figure 1.8: Trends in PPIs and ODAs in the telecom sector	30
Figure 1.9: Trends in PPIs and ODAs in the transport sector	31
Figure 1.10: Trends in ODAs in the water sector	33
Figure 1.11: Ghana - Urban water tariffs	43
Figure 1.12: Ghana - Areeba mobile retail call prices, 2000–06	46
Figure 1.13: Ghana vs. other countries: Price of international outgoing call to the US (mobile).....	46
Figure 2.1: Composition of Exports; 2006.....	69
Figure 2.2: Trends in Land and Labor Productivity 1981: 2003 for a selection of SSA Countries	71
Figure 2.3: Trends in Agricultural GDP 1970 – 2005	72
Figure 2.4: Trends in Food-Crop Production, 1994 – 2005.....	75
Figure 2.5: Determinants of the Choice of LBCs	78
Figure 2.6: Index of World Cocoa Prices; 2001/02 – 2010/11	79
Figure 2.7: Area under Cocoa Production and Average Yields; 1990 – 2004.....	80
Figure 2.8: Fish Exports; 2001 – 2006.....	83

Figure 3.1: Few low-income countries in Sub-Saharan Africa have successfully diversified into manufacturing	118
Figure 3.2: Manufacturing in Ghana compared with the “manufacturing” of comparator countries	119
Figure 3.3: Labor productivity is relatively low in Ghana.....	121
Figure 3.4: Labor productivity is particularly low among small enterprises in Ghana.....	122
Figure 3.5: SMLEs and microenterprises perceive electricity and access to finance as main constraints	125
Figure 3.6: Managers responses were similar for SMLEs and microenterprises.....	126
Figure 3.7: SMLE firms in Ghana report much higher losses due to outages than in more successful manufacturers in Africa and Asia.....	128
Figure 3.8: All firms in Ghana report much higher losses due to outages than in the more successful manufacturers in Africa.....	129
Figure 3.9: Vis-à-vis the comparator countries, access to credit is comparatively low in Ghana	131
Figure 3.10: Financial sector is less well developed in Ghana than it is elsewhere in Sub-Saharan Africa or in most comparator countries.....	132
Figure 3.11: Access to credit is especially tight for microenterprises and other small enterprises.....	132
Figure 3.12: Larger firms have better access to credit in Ghana than large firms in many countries in Sub-Saharan Africa	133
Figure 3.13: Although inflation remains high in Ghana, on average it has been lower since 2005 than over much of the previous decade.....	136
Figure 3.14: Although concern about macroeconomic instability is low, inflation remains higher in Ghana than in most of the comparator countries	137
Figure 4.1: Ghana's Aggregate Net Aid and Real Effective Exchange Rate	181
Figure 4.2: Herfindahl-Hirschman Index of Aid Sectoral Concentration in SSA, 2000-03	181
Figure 4.3: Herfindahl-Hirschman Index of Aid Donor Fragmentation in SSA, 2000-03	182
Figure 4.4: Ghana's actual and Equilibrium RER, 1980-07*.....	182
Figure 4.5: RER Misalignment for Ghana and Comparator Countries.....	183
Figure 4.6: RERMIS under Various Scenarios.....	183
Figure 4.7: Impact of a one-standard-deviation change in RER misalignment on growth under various aid and financial development scenarios.....	184
Figure 4.8: Various Measures of Export Diversification and Sophistication across Regions, 2003	184
Figure 4.9: Relationship between RERMIS and EXPY or HHI (after accounting for other controls) ...	185
Figure 4.10: Income Per Capita, EXPY, and Real Exchange Rate Misalignment.....	185
Figure 5.1: Presidential Special Initiative (PSI) sectors (in checks).....	205

LIST OF TABLES

Table 1.1: Benchmarking Ghana infrastructure access with peers and international benchmarks	20
Table 1.2: Structure of the telecommunications sector.....	23
Table 1.3: Benchmarking infrastructure quality with peers and international benchmarks.....	24
Table 1.4: Benchmarking infrastructure quality with peers and international benchmarks.....	25
Table 1.5: Infrastructure spending – O&M vs. investment.....	27
Table 1.6: Infrastructure spending – O&M vs. Investment	27
Table 1.7: Infrastructure source of spending	28
Table 1.8: PPPs involved in infrastructure service delivery	29
Table 1.9: Alternative methods of assessing infrastructure investment needs.....	36
Table 1.10: Africa’s expenditure needs to meet the MDGs.....	37
Table 1.11: Ghana - Meeting the MDGs in the water and sanitation sector	38
Table 1.12: Ghana - Investment needs in the water and sanitation sector, Annual, 2005-15	39
Table 1.13: Ghana - Alternative electricity demand scenarios, Annual, 2005-15	40
Table 1.14: Ghana - Power sector investment needs, Annual, 2005-15	40

Table 1.15: GPRS2 Cumulative Infrastructure Investment Plans, 2006-09	42
Table 1.16: Ghana - Annual infrastructure funding gap (<i>US\$m</i>).....	43
Table 1.17: Ghana - Electricity tariffs	44
Table 1.18: Ghana - Urban water tariffs	45
Table 1.19: Benchmarking of selected SSA road funds	53
Table 1.20: Benchmarking of Selected SSA Road Funds.....	54
Table 2.1: Composition of GDP 2000 – 2006	68
Table 2.2: GDP Growth Rates 2000 – 2006	73
Table 2.3: Area Planted to Major Food Crops; 1995 – 2005	74
Table 2.4: Average Yields for Food Crops 1994 – 2005	76
Table 2.5: Distribution of Crop Production across Farm Households, 2005/2006.....	76
Table 2.6: Annual Cocoa Production; 1999 – 2006.....	79
Table 2.7: Horticultural Exports 2000 – 2006	80
Table 2.8: Export Crop Production by Farm Households; 2005/2006.....	81
Table 2.9: Meat Imports, 2006.....	82
Table 2.10: Soil Quality Characteristics for a Selection of West African Countries (%).....	86
Table 2.11: Actual and Potential Yields for Major Crops	88
Table 2.12: The Profile of Micro-Finance Sector, 2005	90
Table 2.13: Projects Approved for Funding under the FBO Development Fund	94
Table 2.14: Tariff rates for cocoa and cocoa products into the EU, November 2006.....	95
Table 2.15: Export Volume of Processed Cocoa Products; 2004–2006	96
Table 3.1: Macroeconomic indicators for Ghana and comparator countries	120
Table 3.2: Tax rates in Ghana and comparator countries.....	134
Table 4.1: Aggregate Net Aid Spells for Ghana and Comparator Countries.....	174
Table 4.2: Analysis of Two Aid Surges in Ghana	175
Table 4.3: The Long-Run and Short-Run Determinants of the Real Exchange Rate	176
Table 4.4: Net Effects of PMG Variables	176
Table 4.5: Decomposition of RER Misalignment for Ghana.....	177
Table 4.6: Growth Accelerations and RER Performance since 1980	178
Table 4.7: Economic Growth and the Role of RER Misalignment, Aid, and Financial Development... 179	
Table 4.8: Export Diversification and Real Exchange Rate Misalignment	180
Table 4.9: RERMIS Performance of Select Countries.....	180
Table 5.1: Presidential Special Initiative (PSI): Efficiency of government's choice of products and its options.....	201
Table 5.2: Sector-specific Options for an Income-enhancing Export Diversification Strategy for Ghana	207

Boxes

Box 1.1: Facilitating Trade Through Mobile Phones.....	13
Box 1.2: Central Role of Volta River Authority as a Key Gas Customer.....	15
Box 1.3: Depletion of Ghana's Natural Resources Threatens Future Growth.....	17
Box 1.4: Political Economy of Private Sector Participation in Telecom	57
Box 1.5: Key Prerequisites for Successful IPPs	58
Box 1.6: Political Economy of Private Sector Participation in Water	59
Box 2.1: Smuggling of Cocoa from Côte d'Ivoire.....	78
Box 2.2: Commercial Irrigation	88
Box 4.1: Definition of Aid Absorption and Spending	146
Box 4.2: Credit Guarantees: Pros and Cons.....	164
Box 4.3: Undervaluation Policies in Chile (1986-95).....	166
Box 4.4: Undervaluation Policies in Indonesia (1967-75).....	168

1. INFRASTRUCTURE FOR ACCELERATED GROWTH IN GHANA: NEEDS AND CHALLENGES

INTRODUCTION

1.1 **The main purpose of this chapter is to document and discuss infrastructure gaps, investment needs, and policy challenges in improving infrastructure services for accelerated growth and poverty reduction in Ghana.** Ghana has made major progress in extending some infrastructure services, including roads and electricity, to its citizens. However, service delivery in other areas, such as water and sanitation, has been poor. With Ghana's annual growth accelerating to a healthy 6% range and demand for infrastructure services escalating, infrastructure bottlenecks are becoming more acute. Against this background, important, practical policy-relevant questions arise:

- What are the sources of this uneven progress in the infrastructure sector?
- Where exactly are the most pressing infrastructure delivery and financing gaps?
- How can these gaps be closed using a combination of effective policy and institutional measures and additional financing targeted at key bottlenecks?

This chapter addresses these questions. The energy, telecommunications, and water sectors regularly make press headlines in Ghana, and infrastructure is a common issue in major debates and political speeches across parties. These concerns of both press and politicians are two strong indicators that the sector is a major concern for voters. The concern is reflected in the recent round of the Afrobarometer survey, which suggests that only 21% of the population finds it easy to obtain basic household services.¹ While the recognition of these perceptions is important, it is only one of the useful starting points to begin inquiry in the fundamental issues facing this key sector of Ghana's economy.

1.2 **The chapter is targeted at two main audiences.** The first is the traditional audience for infrastructure diagnostics. It comprises the broader universe of policymakers, planners, regulators, and technical specialists directly concerned with the delivery of infrastructure services. For these readers, the chapter provides an overview, as of early 2007, of the physical, financial, social, and institutional conditions of the country that cut across subsectors. It compares Ghana's infrastructure performance in terms of access rates, affordability, quality, and financial viability of its services to those observed in comparable countries and in middle-income countries (MICs). This benchmarking exercise is useful to get a sense of the areas in which the scope for improvements is the largest and hence indicates policy areas that should probably be fine-tuned or significantly reformed. The second and related audience is the authorities. The chapter provides them with a sense of the growth costs of infrastructure policy failures as well as an assessment of investment needs for accelerated growth.

1.3 **The chapter shows that addressing the infrastructure gaps is likely to be one of Ghana's major policy challenges in its quest to accelerate growth and achieve middle-income status.** In this respect also, Ghana is not very different from many other low-income developing countries.²

1.4 **The chapter is organized in six sections.** Section 2 shows quantitatively why any strategy to accelerate Ghana's growth should account for the state of infrastructure. The section takes stock of the most relevant infrastructure issues in the key sectors: energy, water and sanitation, transport and telecommunications. It then considers how they relate to growth, with particular emphasis on public expenditures and the roles of public and private sectors in the provision and financing of infrastructure. Section 3 provides a snapshot of the state of Ghana's infrastructure sectors—in terms of the stock, access

¹ Logan and others 2006.

² The link between infrastructure and growth has recently been the object of a wide range of theoretical papers and econometric studies (see Campos and others 2003, Calderón and Servén 2004, or Calderón and Chong 2004; for a recent survey, see Estache 2006).

and quality—and benchmarks them vis-à-vis similar income and regional peer countries based on key performance indicators. The section then turns to the trends in infrastructure spending over time and across sectors and builds a framework to prioritize efforts to overcome the constraints due to limited fiscal resources. Section 4 offers a preliminary assessment of the investment needs, before section 5 identifies the institutional reforms needed to attract investment. One reform would be to enable Ghana to improve the use of its public resources to attract private resources. A second necessary reform would grapple with the difficult political economy associated with making tariff structures consistent with the limited ability of the poor to pay for infrastructure services while making average tariff levels consistent with the financial viability of the sector. The concluding section 6 outlines sector policies to relax infrastructure constraints to growth and accompany effective scaling-up in the sectors.

WHY INFRASTRUCTURE MATTERS TO GHANA

1.5 How and why infrastructure matters for Ghana’s current economic situation? The purpose of this section is show the multiplicity of the macroeconomic dimensions of infrastructure that should be considered in the Ghanaian context. In a nutshell, the role of infrastructure in complementing productive investment which in turns yields growth is well known. It also has an essential role to play in the economic integration of Ghana with its neighbors. Finally, it is an essential factor in the spatial distribution of the gains from growth within the country.

Infrastructure, investments, and growth

1.6 The assessment of the macroeconomic relevance of infrastructure has recently been subject of a large literature with important implications for Ghana’s current economic situation. The approaches range from assessments of the social rates of return of infrastructure investments to assessment of the opportunity costs in terms of growth of not investing in infrastructure. All of them have direct implications for Ghana. A few key findings relevant for Ghana are highlighted below.

1.7 Infrastructure spending has high social rates of return. The evidence from the assessment of the ex-post rates of return of investments in infrastructure may be the simplest and the more familiar one. Using a sample of 52 countries (and addressing the issue of reverse causation), Canning and Bennathan (2000) report rates of return to investment in electricity generating capacity of approximately 40%. For most countries, this rate was roughly the same as the return on non-infrastructure capital. However, for the 11 African countries in the sample, the average rate of return to generating capacity was 53%, and this rate was 6.5 times higher than the African rate of return to non-infrastructure capital. Higher rates of return were found for investment in paved roads, the African average being 69%, approximately 2.5 times higher than the returns from non-infrastructure capital. This provides a first hint at the macroeconomic importance of the sector. Although it is not strictly Ghana specific, this evidence gives a sense of the potential social return on infrastructure investment in Ghana.

1.8 There is high growth payoffs of productive and adequate infrastructure spending, including in Ghana. An alternative approach allows an assessment of the importance of infrastructure much more targeted to Ghana. Calderon and Serven (2004) have, indeed, developed a method which allows counterfactual assessments of the growth performance of any country based on simulations of alternative stocks and quality of infrastructure. These include energy, water and sanitation, rural roads and ICT. Relying on this approach, we can get an educated guess of the rate of increase in per capita GDP Ghana could have achieved, had Ghana enjoyed the level of infrastructure development, for example, of Korea. Note that the analysis is done both in terms of stock and quality. Indeed, it is essential for Ghana to recognize that its challenge is not just about the quantity of infrastructure but also about its quality.

1.9 According to this approach, between 1996 and 2000, Ghana could have achieved an annual rate of growth (in terms of per capita GDP) equal to 1.76% compared to the actual rate of 1.11%. Whereas it should be recognized up front that improving access and quality of infrastructure is only one of the many policy challenges that will help Ghana to meet its ambitious growth targets (see the Ghana

CEM Volume 1 on growth by Bogetic *and others*, 2007), it might provide a considerable contribution in unleashing Ghana's potential. It is with this notion of infrastructure as a social and economic good and the identified infrastructure gaps below that we approach the infrastructure challenges this paper.

1.10 Ghana needs to prioritize infrastructure subsectors against a realistic assessment of investment needs and the funding gaps. Recent evidence generated important although somewhat unexpected results on the relative importance for growth of the various infrastructure subsectors. International experience and recent empirical evidence consistently suggest that the strongest *impact on growth* comes from the telecom sector, followed by electricity and roads. This is not to say that this is the correct ranking for Ghana, but it is important to recognize that prioritization is often needed to meet fiscal constraints and in that context, it is crucial not to underestimate the telecoms sector simply because it is socially less impacting. As demonstrated in the latter part of the chapter, effective prioritization also requires careful assessment of investment needs and the funding gaps.

1.11 Telecoms, electricity and transport probably matter a lot more to the firms than to many residential users of infrastructure services. Growth generates jobs but growth comes, in good part, from productive investments. For now, firms in Ghana are expanding and economic activity is growing at a healthy pace *despite* the lack of reliable infrastructure. However, firms do so at a cost to Ghana's competitiveness and to Ghana's domestic users. In the case of electricity, firms are increasingly high-cost self-provisioning. Many firms own or share private generators despite the fact that this self-generated electricity is two to three times costlier than the one provided by the grid. Costs of electricity self-generators are passed on to the products making electricity intensive sectors and—therefore the country as a whole—less competitive and likely slowing down growth. In the first volume of this CEM, it is estimated that Ghana would have likely grown at 7.5-8 percent in 2006-7 (instead of about 6 percent) had there been no electricity crisis.

1.12 However, electricity is not the only concern for investors. The ICT sector in Ghana also has the potential to make significant contributions to economic growth and its financing. The mobile license formalization process alone attracted some US\$100 million in spectrum fees from operators, and facilitated mobile operators' access to international finance, including a US\$40 million IFC loan facility for Areeba.³ Sector investments are on the increase; cumulative capital expenditures at the end of September 2006 was US\$233 million for Scancom. Additional private investment in the telecommunications operators is anticipated. Subscriber penetration is expected to reach 30% by December 2007. The privatization of GT and Westel also will attract private investment and increase competition in the sector.

1.13 Moreover, Ghana has already demonstrated the potential to become a hub for Business Process Offshoring/Information Technology Enabled Services (BPO/ITES) in Africa. According to one estimate, the total, global addressable market for BPO is in the range of US\$120 billion–US\$150 billion (and growing at an impressive rate of 37% per annum) of which only US\$11.4 billion had been realized worldwide by 2005. Ghana has been recognized as a potentially rising global sourcing destination. This recognition was illustrated by AT Kearney Global Services Location Index, which in November 2005 ranked Ghana as the number 1 destination in Sub-Saharan Africa (ahead of South Africa), and as number 22 globally out of 40 countries. The BPO sector in Ghana has the potential to generate close to 40,000 jobs within 5 years. It is estimated that each job in the BPO sector creates 3–4 jobs in sectors such as transportation, construction, health, and entertainment combined.

1.14 The growth of the ICT sector also will benefit other segments of the economy. Investment in ICT has been shown to increase productivity across the economy and has the potential to improve the quality of governance. For example, the government has introduced a system known as GCNet, a customs and trade facilitation e-government application in partnership with the private sector. GCNet has achieved demonstrable success. It increased customs revenues by 49% in the first 18 months and reduced the time taken for customs clearances at the Accra Airport from 6 days to under 4 hours. One result of projects

³ The MTN Group subsequently purchased the parent company of Areeba, Investcom, for US\$5.3 billion.

such as these is the recent improvement in Ghana's ranking by the United Nations in e-readiness (133 out of 191 countries in 2005, up from 143 in 2004). Box 1.1 illustrates how trade can be stimulated by improvements in mobile phone services.

Box 1.1: Facilitating Trade Through Mobile Phones

An Internet facility that allows farmers and traders in agricultural commodities in Africa to transact their business through the use of mobile phone Short Message Service (SMS) has been launched in Accra. The facility, known as tradenet.biz, is a website developed in Ghana by Busylab with an 11 million-dollar USAID support. It is intended to enhance trans-border trade between farmers and traders in Africa. The USAID support was provided under a three-year market information systems project meant to improve the regional agricultural marketing systems in Africa to help increase intra-regional trade in agricultural products. The services of tradenet.biz are completely free for users, except the normal SMS messaging charges by the mobile phone service providers.

According to Mark Davies, the architect of the website, the service is operating in 12 countries and 300 markets in Africa and in some countries in South America. The tradenet facility basically provided a platform on the Internet for sellers in agricultural business to display their profiles and information on their commodities, prices, and locations to attract buyers. The facility also offered individuals and traders associations the opportunity to establish their own website within the tradenet platform at no cost to constantly display their commodities and prices. Potential buyers looking for a specific commodity only need to compose SMS message on their mobile phones stating the code of the commodity in question and the country from which they want the results and send it to tradenet number. The tradenet platform comprises both regional and country portals. Regional portals display commodities and prices from a collection of countries from a particular region in Africa and country portals display markets in a particular country. It lists prices of commodities from local markets in various countries. For instance, it has prices of commodities from Nima, Agbobloshie, Techiman, and other local markets in Ghana. He assured potential users that the platform was effectively protected from fraud. According to some estimates, the introduction of tradenet, various participating buyers and sellers had raised a trans-border trade value to 350 million dollars. The facilities had helped several farmers across Africa to sell their commodities to sellers outside their countries and, therefore, prevented their commodities from rotting on the farms. The facilities, however, faced a few challenges such as the high level of illiteracy and poverty among farmers and traders in Africa, which made it difficult for them to acquire computers, mobile phones and to use them effectively.

Infrastructure, regional integration and export opportunities

1.15 Growth enhancing impacts of increased infrastructure through enhanced trade and integration between African countries also must be acknowledged. Enhancing trade and integration through infrastructure is an important objective of initiatives such as the New Partnership for Africa's Development (NEPAD). The poor state of intra-African transport, energy, and communication networks has been a major reason for the relatively low degree of economic integration among countries.⁴ Progress is being made on all fronts.

1.16 Energy. Regional energy integration has added a new dimension to the sector's development. Ghana is one of the key players in the regional push toward energy trade. In June 2004, the Parliament of Ghana ratified the Economic Community of West Africa States (ECOWAS) Energy Protocol—the umbrella law for all energy integration projects in West Africa—to pave the way for the financial closure for the West African Gas Pipeline (WAGP) and the West African Power Pool (WAPP). Both regional projects are critical to enhance energy security in Ghana. The WAGP would enable Ghana, together with Benin and Togo, to gain access to natural gas resources in Nigeria. The WAPP would facilitate Ghana's access to, and sharing of, the region's rich hydro and natural gas resources.⁵ Gas is expected to be

⁴ Historically, African transport networks had been developed for efficient export of raw materials from the interior to the closest international port. This has led to a scattering of corridor developments with few spillovers to other parts of the continent or to non-extractive economic sectors. The geographic distribution of the existing rail network is a stark reminder of this legacy.

⁵ The WAGP project, which is under construction, includes a 648 km main offshore gas line originating in Nigeria and connecting Benin, Togo and Ghana, with spurs to Lomé (Togo) and Cotonou (Benin). The WAGP pipeline

available in Ghana in early 2008. The ongoing WAPP project will enhance cross-border power trade in West Africa in two ways. It will strengthen the interconnecting power lines from Côte d'Ivoire to Togo/Benin along the Ghanaian Coast and will establish new interconnection lines within Ghana to transfer lower-cost, gas-fired power generated along the Ghanaian coast northward into Burkina Faso and other Sahel countries.

1.17 The WAGP and WAPP initiatives are NEPAD “flagship projects” that underpin regional energy integration in ECOWAS. The Volta River Authority (VRA) plays a pivotal role in implementing both projects (Box 1.2). Thus, ensuring the successful and timely implementation of VRA’s wide-ranging obligations for regional energy integration under the ECOWAS Energy Protocol is essential to achieve reliable, secure, and cost-effective electricity supply to consumers in the entire WAPP “Zone A” subregion. VRA pioneered cross-border electricity trade in the subregion in the 1970s and leads the WAPP subprograms in developing the emerging 330kV Coastal Transmission Backbone and also the 330kV/225kV Inter-Zonal Transmission Hub. Strategically, VRA’s contribution is significantly amplified by Ghana’s unique potential to leverage the “energy banking” capabilities of the Lake Volta reservoir to facilitate the pooling of hydes and thermal power within the WAPP “Zone A” subregion. The project also will reduce Ghana's reliance on high-priced imported oil. This will have a beneficial macroeconomic impact on an economy relying heavily on private sector growth.⁶ Natural gas should enable Ghana to produce electricity for approximately US\$0.06/kilowatt hour (kWh, which is less than half the cost of diesel-based power.

1.18 WAGP's promoters have highlighted the beneficial environmental impact of burning natural gas instead of oil. Natural gas is calculated to reduce greenhouse emissions by some 86 million tons over the 20-year life-span of the pipeline. Under the provisions of the Kyoto Protocol's Clean Development Mechanism, Benin, Ghana, and Togo have the opportunity to benefit from the accumulation and sale of certified carbon emission reductions (CERs) arising from the use of Nigerian natural gas. The scale of this potential revenue stream will depend largely on the type of gas flowing through the pipeline. Associated gas is a candidate for CERs. However, non-associated gas will not. Because WAPG plans to use a mixture of associated and nonassociated gas to supply customers, the case for CER status is less clear-cut.

1.19 **Water.** For the water sector, the multi-country importance of the sector is best seen in the central role of the Volta Basin and the associated policy challenges. The Volta Basin is an international river basin shared by the six riparian countries of Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali, and Togo. The Volta is one of the few international river basins with no legal, institutional, and financial cooperative arrangements to develop and share the potential benefit of the basin’s resource to Ghana and the other riparian countries. Ghana and Burkina Faso began consultative meetings in April 2004 to create a path for the establishment of a transboundary water management institution. The Ministers in charge of water resources of Ghana and Burkina signed the Ghana-Burkina Joint Declaration, which stated a desire to collaborate on management of shared water resources and establishment of a Volta Basin organization through a Volta Basin Technical Committee (VBTC) involving all riparian countries. There also is a functioning Joint Ghana-Burkina Technical Committee on Integrated Water Resources Management (JTC-IWRM). JTC-IWRM is a technical adviser for both Parties on issues relating to the conservation, development, and use of Volta basin water resources. JTC-IWRM has a Permanent Focal Point in each country: the Water Resources Commission (WRC) in Ghana and the Directorate General for the Inventory of Hydraulic Resources (DGIRH) in Burkina Faso. The effective collaboration among these multiple actors will indicate the extent to which every country in the basin will be able to make the most of this shared, increasingly valuable resource.

would provide Ghana with: a) a low-cost and high quality fuel for power generation, industrial, commercial, and transportation uses; b) increased energy supply security through diversification; and c) environmental benefits by replacing polluting fuels such as crude oil, heavy fuel, and other petroleum products.

⁶ The price of gas is partly indexed to crude oil, so the cost of electricity will also vary in line with international oil prices.

Box 1.2: Central Role of Volta River Authority as a Key Gas Customer

The government has assigned to VRA the strategically important role of being Ghana's custodian of the "Foundation Contract" for the supply of Nigerian natural gas through the West Africa Gas Pipeline (WAGP) project. The West African Gas Pipeline (WAGP) was conceived in the mid-1990s by the Economic Community of West Africa States (ECOWAS) as a partnership between four neighboring countries on the one hand and four private sector corporations on the other. It represents a key stage in the creation of a regional natural gas grid capable of supplying competitively priced energy to a growing regional market struggling with an acute shortage of energy infrastructure needed to attract additional foreign investment. The new pipeline will have a maximum transmission capacity of 475 million cubic feet per day, although it is expected to run at less than half that in the initial stages.

The pipeline was originally intended to terminate in Senegal, but had to be truncated because of the conflicts in Liberia, Sierra Leone, and Ivory Coast. Despite the regional cooperation required to make the scheme a reality, construction has had to overcome immense challenges since work began in 2003: doubts over the commercial viability of the scheme; skepticism over whether the four participating countries had the necessary institutional capacity to manage the project; disputes between promoters and customers over the price of gas to be delivered; a series of construction delays that have put completion of the pipeline some two years behind schedule; and mounting anxiety over the threat posed to the pipeline by persistent civil unrest in the Niger Delta.

The 678-kilometer pipeline is owned and operated by the West African Gas Pipeline Company (WAPGCo)—a consortium of Chevron (37%), Nigerian National Petroleum Corporation (25%), Shell Overseas Holdings (18%), Ghana's Takoradi Power Company (16%), Togo's Societe Togolaise de Gaz (2%), and Benin's Societe BenGaz (2%). Constructed by WAGPCo for US\$635 million, the pipeline runs underground from Lagos, where it links up to the existing Escravos-Lagos pipeline transmitting natural gas from the volatile Niger Delta region, to a beachhead at Lagos. It then runs offshore, parallel to the West African coastline, to Takoradi in western Ghana. Additional feeder lines run to Cotonou (Benin), Lomé (Togo), and Tema (Ghana) transporting natural gas. Conversion of key oil-fired stations to gas is underway. The SSO MW Takoradi power plant is widely seen as WAGP's key customer, on which the long-term commercial viability of the project hinges.

1.20 **Transport.** Finally, for the transport sector, regional integration and support to the landlocked neighbors has always been a strong theme in Ghana's Transport Program. The two key corridors proposed under the government's Road Sector Development Program (RSDP)—Abidjan to Lagos and Tema to Bamako—became even more critical after the start of the crisis in Cote d'Ivoire. The rerouted trucks did great damage to Ghana's infrastructure, and the main trans-African routes deteriorated much more quickly than anticipated. However, rerouting must have generated more transit and port revenues. With a focus on rehabilitating part of the Central Road Corridor (CRC) and on facilitating road transport and transit, the West Africa Transport and Transit Facilitation Project (WATTFP) seeks to assist the Government in addressing this concern. The project is being pursued as a regional initiative and is expected to support the objectives of the ECOWAS- and UEMOA-endorsed Road Program I (RP-I), which covers the Ghana/Burkina Faso/Mali road transport corridor. The proposed project seeks to (a) promote regional integration; (b) improve accessibility of land-locked countries (Burkina Faso and Mali) to regional and world markets; and (c) reduce transport costs on the Tema/Ouagadougou/Bamako road transport corridor to make it more competitive than the Ivorian corridor. This project is being supported jointly by the African Development Bank. Promotion of regional integration is a key part of AfDB's SSA lending program.

Infrastructure, local development, and regional policy

1.21 **A main challenge of the growth agenda will be to decide on how and how much to try to apportion it across regions.** There still are important pockets of poverty in specific areas, especially in Ghana's North but also, increasingly, in peri-urban areas of the South that experienced significant rural-urban migration. While strong growth and pro-growth policies will remain critical in achieving Ghana's broader social objectives, attention to fostering more equitable geographical distribution of activities and opportunities also is needed.

1.22 **Infrastructure location matters.** It is important for Ghana to identify the location of the sources of growth and then to assess the extent to which infrastructure provides the necessary local support to

implement the growth vision at the regional and local levels. The importance of this assessment is strongly supported by the “new economic geography” theory (following the seminal contribution by Krugman (1991)). This theory implies that to decide where and how much to invest in infrastructure, it is important to understand how firms decide on the locations for their production (for a recent overview, see Baldwin and others, 2003).

1.23 **This discussion must reflect concern for the differences in growth rates across regions in Ghana.** Although there has not yet been a systematic diagnostic of the trade-offs associated with different approaches to shared growth, taking account of location should be important to the design of resource allocation within infrastructure. Indeed, there is a large volume of evidence showing that infrastructure is central to convergence or divergence of growth rates between poor and rich regions within and across countries. When it comes to assessing a country’s infrastructure investment needs, “one size does not fit all” (de la Fuente and Vives 1995).

1.24 **Spatial externalities matter.** A careful analysis should take into account spatial externalities, including the impact of infrastructure investment in a region or a city in reducing local production costs by the direct effect of lowering local intermediate input prices or by indirectly lowering local wages with increased local amenities. Firms in a region of better amenities can pay less to compensate workers to stay in the region or induce workers to migrate from other regions. *Infrastructure investment affects the spatial allocation of economic activity by raising the level of economic activity in the invested region but drawing away from adjacent.* This dynamic implies that an empirical assessment of infrastructure investment may produce different conclusions depending on the levels of regional aggregation. Future work based on this CEM could experiment with various levels of regional aggregation to measure actual effects of infrastructure investment when spatial externalities are considered. The importance of taking a holistic approach to infrastructure service provision also underlies the problem of the depletion of natural resources (Box 1.3).

1.25 **Regional policy matters.** Inducing significant sustained growth in an underdeveloped region is clearly a major challenge. In many ways, this requires the government to deal both with the nature of the market and institutional arrangements and the nature of likely investors and conditions required for investment. These issues can be even more powerful than resource scarcity in constraining growth in underdeveloped areas. Delivering infrastructure packages to areas of high agro-climatic and economic potential and that are populated by large numbers of poor households might be critical for both growth and pro-poor growth.

Box 1.3: Depletion of Ghana's Natural Resources Threatens Future Growth

Projections of sectoral contributions to GDP in the GPRS II assume that natural assets will continue to contribute significantly to economic growth. However, current national accounting systems neglect the negative economic effects of natural resource degradation. As a result, wealth accumulation is being overestimated in the country. Data suggests that wealth accumulation equals 25% of GDP, while accounting methods that integrate natural resource depletion show that wealth accumulation is significantly lower than wealth accumulation calculated through traditional measures. Using more comprehensive assessments, the Natural Resources Management and Growth Sustainability study concludes that wealth accumulation is closer to 15% of GDP. This number signifies that economic growth has been eroding the productive base on which Ghana depends, threatening growth sustainability.

Economic development and rural livelihoods in Ghana are highly dependent on natural resources. Rural households rely on soil and other natural resources for their livelihoods. Fisheries and wildlife provide important sources of protein in the Ghanaian diets. Urban economic activities depend on reliable hydro-electric power and fuel. The wood-processing industry, Ghana's main manufacturing sector, depends on timber. The emerging tourism sector relies on cultural and natural assets.

In addition, natural resources are indispensable for most of the economic sectors of the country. Approximately half of Ghana's GDP derives from the following sectors: agriculture and livestock (29.0%), forestry and wood processing (6.5%), fisheries (4.0%), electricity and water (3.0%), and tourism (5.0%). Ghana's natural resource base accounts, therefore, for a vast portion of the country's economy and provides goods and services fundamental to rural and urban livelihoods.

Ghana's natural resources are, however, overexploited and continue to decline in both quantity and quality. Cocoa farming, gold mining, and the wood industry are threatening high forests. Ongoing soil erosion undermines food and agricultural production. Human activities are degrading wetlands. Silt accumulation and alien species threaten goods and services provided by Lake Volta. Indeed, it is estimated that the degradation of agricultural soils, forests, coastal fisheries, wildlife resources, and Lake Volta's environment may account for losses of at least US\$520 million annually—approximately 4.9% of Ghana's annual GDP.

The depletion of the entire range of natural assets is interrelated and self-perpetuating. The scarcity of fish stocks usually increases pressure on (often, protected) wildlife. Soil fertility losses often lead to forest-clearing in search of productive land. The degradation of Lake Volta's environment increases the costs and reduces the quality of both water and power supplies to urban populations.

1.26 **The challenge is well illustrated by the problems faced by northern Ghana.** The region has an absolute advantage in producing a number of commodities comprising a range of subtropical or guinea savannah crops and wild products, including the shea nut, and a range of minerals. But, northern Ghana is well connected to the south only through the Tamale-Techiman road.

- **Completion of the tarring of the Techiman-Wa road, with its extension to the border at Hamile, is a key priority which will help bring the entire Upper West Region (UW) and the eastern part of the Northern Ghana into the economic mainstream.** Finishing the road would probably benefit approximately 1 million people as well as greatly facilitate subregional trade and Ghana's position within it. The absence of good road communication to the UW will continue to hamper development in that region.
- **Moreover, the connection through Upper West to the Bobo Diolasso commercial area of Burkina Faso also is a major issue.** Completion of a good quality road connection from the Burkina border at Hamile down to Techiman offers major economic opportunities for trade through Ghana to Tema. The Governments of Burkina Faso and Mali have been lobbying the Government of Ghana (GoG) to complete this road. This offers major opportunities to Ghana as a whole (due to a substantial increase in trade through Ghana) and as well as to the Upper West region specifically. Other key main roads include the Wa-Tamale road, via Mole (sec. 3.3.3), which has been studied and for which international funding is being sought; and the road from Bawku south through the Northern and Volta Regions to Accra, which would open up the east side.

- **Similarly, the distance is so much shorter from the eastern part of the UE and Northern Region than the route through Kumasi.** Thus, upgrading the eastern route from Bawku through the Northern Region and to Accra through the Volta Region also is a priority. This also will benefit northern Volta Region. In addition, upgrading the roads to the borders at Tatala will assist the development of subregional trade.

1.27 **From a policy viewpoint, this discussion points to the necessity of close coordination among regions on road projects.** Such coordination, however, is almost absent and all key decisions in this respect are made in Accra. Once likely locations for key enterprises have been established, regional economic planners can work with district assemblies, members of parliament (MPs), and Regional Ministers to attach priority to infrastructure, which services developing industries. Critical points already identified include: the upgrading and proper signposting of the road to the Mole Game Reserve, and internal roads within the Reserve; roads to open up the river in areas for irrigated horticulture and new areas for cotton production; and feeder roads to less accessible mining areas (for example, Sheini, Diggery). The extension of electricity, water, and telecoms services could be considered in the same light. All of these necessities require a strengthened regional economic planning process.

1.28 **Ultimately, the need to bridge the north-south divide must be part of the growth agenda.** This necessity is recognized at the highest level. Whether recognition can be translated into the kinds of institutional, enabling, and expenditure commitments necessary to underpin growth in the north remains to be seen. All significant government policies (private sector development, agriculture, infrastructure, security) need to have a “northern component” with differentiated strategies and prioritized expenditures. It would help to have a task force of regional officers (to include the three northern Regions as well as Brong Ahafo and Volta Region) to decide on priorities and linking projects. It would also help to have a much more strategic approach to the identification of infrastructure needs (water, electricity, roads, telecoms) for enterprise development, with guidance by Regional Economic Planners to District Assemblies (DAs) (to support tourism, agriculture, trade, mining).

BENCHMARKING GHANA’S INFRASTRUCTURE AND SPENDING

1.29 **This section first assesses sector performance of the infrastructure sectors in Ghana in terms of stock, access, and quality vis-à-vis similar income level and regional peer countries.** It then benchmarks infrastructure spending. The broad conclusions emerging from the benchmarking exercise point to *significant gaps in infrastructure service provision: in supply, quality, and reliability*. The gaps are particularly big in the energy, water and sanitation, and ITC sectors, which also are the sectors characterized by the lowest expenditures, but also in parts of the roads system that link poorer regions, as noted above.

Benchmarking Ghana’s Infrastructure Sectors

Benchmarking Ghana’s Access to Infrastructure Services

1.30 **A major leap is needed for Ghana to move away from its peer low-income countries and reach infrastructure access comparable to middle-income countries** (Table 1.1). The following is a short overview of the infrastructure gaps by sector.

Energy

1.31 **Ghana does well in overall electricity access in relative African terms.** Ghana has one of the more developed electricity sectors in SSA, as reflected in an estimated overall rate of access of approximately 54% in 2005. Ghana's electricity access agenda has made marked progress from the initial conditions, which in 1989 featured an access rate of only 28%. Although the country’s current access rate is impressive in SSA, it certainly is not when compared to countries in Ghana’s peer group from other

regions. For example, with the same population, Sri Lanka has almost a 70% access rate, with its urban areas at nearly 90%.

1.32 **Ghana, however, still has a major rural access problem.** The 54% national electricity access breaks down as 82% urban and 21% rural. Access to electricity in rural areas more than doubled over the past five years from a very low base, whereas only a low rate of increase has been recorded with respect to urban electrification. By comparison, both Bangladesh and Vietnam—examples of rapidly growing developing countries—have made much more impressive strides. Bangladesh has grown from nearly nothing to 25% access in rural areas in the last 20 years. Vietnam has rapidly expanded access from approximately 51% in 1996 to over 80% at the household level in 2003. Another significant difference between Ghana and these countries is the extent to which non-grid solutions have been used to accelerate the access rates.

1.33 **The regional differences in access within Ghana are quite dramatic.** The poorest rural areas (particularly the ones located in the Northern, Upper East, and Upper West regions) are characterized by significantly lower access to electricity (Figure 1.1). This preliminary evidence based on the 2000 Census data seems to be confirmed by preliminary analysis of the 2003 Core Welfare Indicator Questionnaire (CWIQ) and the latest GLSS-5.

1.34 **Ghana is not planning well its energy needs.** The lack of coherent sector planning has brought the sector into a crisis, with severe power load shedding. Due to rapid increase in demand—sustained by artificially low prices—and low water inflows to the Akosombo and Kpong hydropower reservoir, Ghana is suffering from a serious electricity supply deficit. This threatens its achievement of economic growth targets.⁷ The low water levels at the Akosombo dam led, in turn, to an estimated 25 to 30% reduction in power supply, with most of this decline happening in the first half 2006. The power shortages in 2006 and 2007 have slowed down mining activities, including the beginning of operations of new mines by Newmont and AngloGold Ashanti that were expected to raise export volumes.

1.35 **Energy crisis has real economic costs: if allowed to continue, it could choke off accelerated growth.** Mining and manufacturing and services growth have been significantly constrained by the energy crisis. Had there been no energy crisis, Ghana would have probably grown in 2006-7 by 7.5% and maybe more. Remarkably, the outlook for the 2007 of approximately 6% remains strong, despite the energy crisis, suggesting broad resilience and momentum of the economy—but it must not be taken for granted. Evidence from local and foreign businesses—as well as from the preliminary Investment Climate Assessment (ICA) in Chapter 3 of this Volume 2 of the CEM—suggest that Ghana is already foregoing major new investments, jobs, and growth as a result of the power cuts. In the greater Accra area, for example, load shedding was about 12 hours within a time period of 3 days per week in September 2006 onwards. Many small and medium-sized businesses have bought supplementary back-up generators to retain full business hours, substantially raising their costs. Large industry also is being cut by approximately 25% of its demand. A survey conducted by the Chamber of Mines indicates that a 50% cuts in electricity provision would lead to revenue shortfalls of US\$45 million per month for four companies alone. One major international company reported US\$4,000 losses for each day of sustained power cuts. Businesses also report their inability to extend plant operations to secondary towns due to a combination of inadequate power and water supplies.

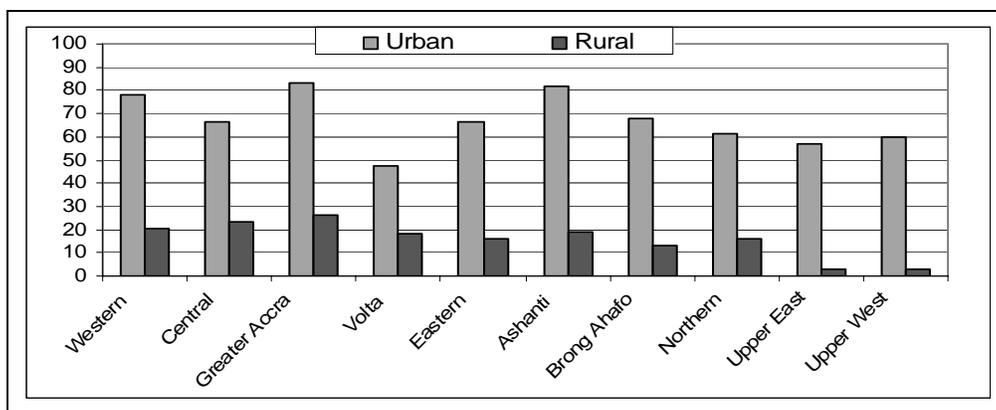
⁷ For details on an initial assessment of the severity of the crisis and the required load shedding according to several scenarios, see Appendix 1.

Table 1.1: Benchmarking Ghana infrastructure access with peers and international benchmarks
(latest observations)

		Year	Ghana	LIC	Sub-Saharan Africa
Energy	Households reporting access to electricity (% of households)	2005	54	34.7	27.2
	Households reporting access to modern cooking fuels (% of households)	2004	9.3	11.7	13.0
Water Supply	Improved water source (% of population with access)	2004	56	63.8	64.1
	Households using piped water as major source of drinking water (% households)	2000	39.9	30.7	31.9
Sanitation	Improved sanitation facilities (% of population with access)	2004	35	37.5	36.5
	Households reporting access to a flush toilet (% of population)	2000	8.5	8.6	8.7
Telecom	Fixed line penetration rate (subscribers per 1000 inhabitants)	2005	14.5	38.8	25.2
	Mobile penetration rate (subscribers per 1000 inhabitants)	2005	128.5	76.1	153.4
	Internet users (subscribers per 1,000 people)	2005	18.1	24.3	37.4
	Personal computer	2004	52	11.2	220.0
Roads	National network in good condition (% national network)	2006	45	...	31.0
	Road, paved (%)	2003	17.92	14.7	12.7
	Road density, total land (road-km/sq-km)	2004	248	222.2	195.3
Other Transport	Average time to ship 20ft TEU container from port to final destination (days)	2004	...	...	10.4
	Passenger traffic by railways (in 1000 passengers/km)	2005	62,000	...	...
	Good traffic by railways (in 1000 passengers/km)	2005	220	...	...
	Maritime traffic: goods loaded (in 1000 tons)	2005	12,161.6	...	...
	Air freight traffic: goods loaded (in 1000 tons)	2005	44	...	...
	Rural access (% of rural people who live within 2 km of an all-season passable road as a proportion of the 'total rural population')	2004	22	34.7	26.9

Source: World Bank Africa Development Indicators; Country Sectoral Studies and estimates from World Bank's sectoral experts.

Figure 1.1: Household access to electricity, 2000



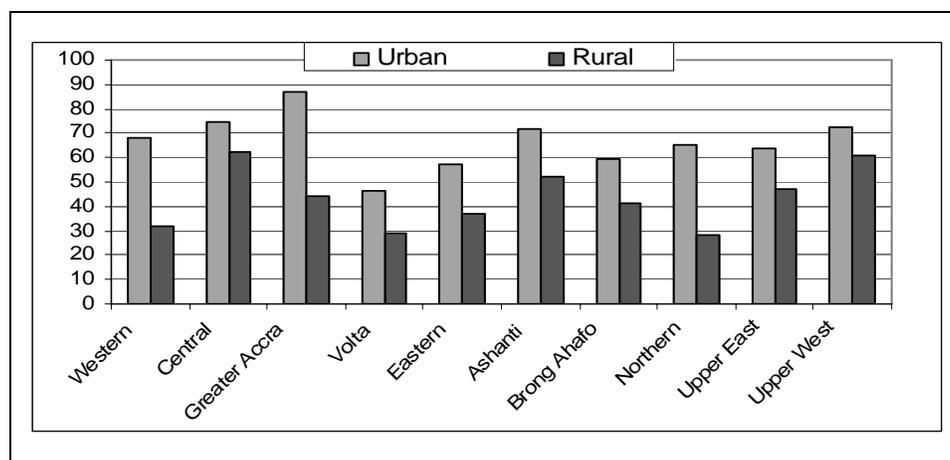
Source: Census, 2000.

Water

1.36 **Water and sanitation sector is engulfed in a “silent crisis”.** While the media and many observers are focusing on the energy crisis, Ghana, including in Accra, is facing a silent water and sanitation crisis. This crisis also threatens the achievement of important Millennium Development Goals (MDGs). It constrains numerous economic and social activities in both private and public sectors that rely on the supply of clean water and adequate sanitation to operate (for example, large retail, wholesale, food, and agro-processing sectors). Approximately half the population does not have access to safe water and two-thirds do not have access to adequate sanitation. Access to safe water in 2005 was estimated at approximately 53% for rural water. Coverage for urban water supply was estimated at 58%, a *drop* of some 3% from 2004. With respect to sanitation, coverage in 2004 was 35% (32% for rural/small towns and 40% in urban areas).

1.37 **Urban water delivery suffers from multiple problems.** It is characterized by intermittent supply, inability to extend supply to new customers, and weak financial performance by the water utility, Ghana Water Company Ltd. (GWCL). GWCL operates 82 urban water supply systems and covers approximately 8 million, or 40%, of Ghana’s 20 million people. There are, however, considerable challenges in the management of these systems. These include obsolete facilities that stretch the utility’s ability to deliver service to an urban population increasing at an average annual rate of 3.5% (the rate of growth in Accra is 4.5%). This might also explain the lower divide between urban and rural areas in terms of access to water sources—compared to access to electricity—as illustrated by figure 1.2.

Figure 1.2: Household access to water, 2000



Source: Census, 2000

Transport

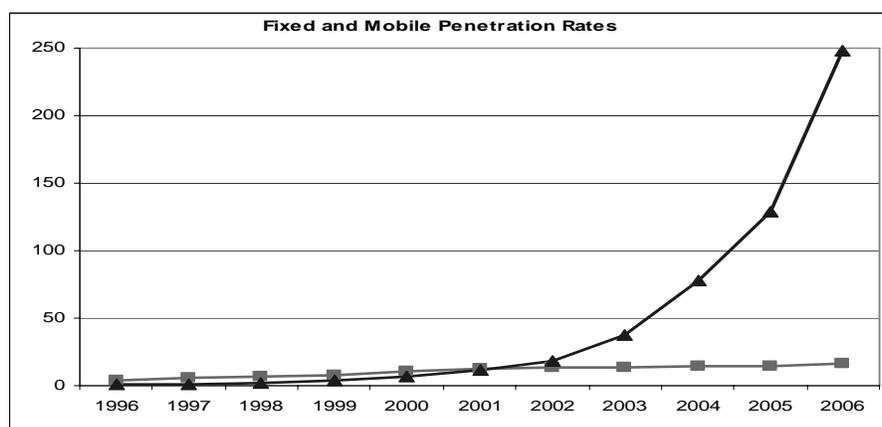
1.38 **Ghana's underappreciated success story is transport.** The country has a well developed transportation system consisting of two large deep-water ports, a 944 km railway system, a 60,000 km road network system, one international airport and eight regional airports and airstrips throughout the country. Inefficiencies in transport are a major threat to growth. However, it should be noted that there are no widely available alternatives to roads other than for movement of bulk commodities for export, which would be better handled by rail from central collection centers and mining areas to the ports. The railway system has limited coverage (a triangle linking Accra-Kumasi-Takoradi) and serves only the southern part of the country, excluding the port of Tema. Ghana's two ports handle annually 7 million tons of import and export traffic. Despite data on port efficiency comparators are not available, qualitative information suggests that the traffic has grown significantly, absorbing some of the Ivorian traffic as well. This figure can further increase over the coming years if Ghana is able to capture a larger share of shipments to and from landlocked countries, particularly Mali, Burkina Faso, and Niger, which can use competing corridors through Côte d'Ivoire, Senegal, Benin and Togo. The port capacity is under pressure resulting from increased traffic. Delay and congestion cause significant surcharges. This has put pressure on space and handling efficiency, increasing indirect costs for consumers. On the plus side though, some of the customs and other administrative formalities have been streamlined. Ghana's inland maritime transportation is underutilized. Most bulk hauling of petroleum products is done through roads but a small percentage is transported via Volta Lake.

Telecommunications

1.39 **Ghana's telecoms: a mixed story.** Ghana recorded the fastest teledensity growth rate in Africa in 2006. Ghana's teledensity rate went up to a 2% increase in 2006, as against the projected rate of 10% by the International Telecommunications Union (ITU). The teledensity rate, which is the number of telephone subscribers as percentage of the population, was the result of the increase in the number of fixed line and mobile subscribers, including the provision of payphones. The contribution of the ICT sector to GDP also is estimated to have increased from 1.8% in 2000 to 6% of GDP in 2005.

1.40 **Fixed lines penetration, however, has been very slow.** Fixed line penetration rates have been growing at very low rates, whereas mobile penetration rates are growing at exponential rates (Figure 1.3). The rate of growth during the past year has been particularly remarkable, ranging from 150% to over 300% for the three mobile operators including the one owned by the dominant fixed line operator Ghana Telecom (Table 1.2). Western Telesystems (WESTEL), which has been struggling to make an impact in the sector since it was granted a licence to operate a fixed line service in the country approximately seven years ago, kept its subscriber base constant during the same period under review. Although the company received another licence to operate a GSM mobile service in the last quarter of 2006, it is yet to roll out its service.

Figure 1.3: Fixed and mobile competition



Source: ITU for 1996-2005 and National Communication Authority for 2006.

Note: Fixed and Mobile Penetration Rates are measured as number of subscribers per 1,000 inhabitants.

Table 1.2: Structure of the telecommunications sector

	ORGANISATION / COMPANY	TYPE OF SERVICE			2005 (End of Year)	2006 (End of Year)
		FIXED	MOBILE			
1.	Ghana Telecom Company	✓		Subscriber base	321,500	357,577
				No. of Pay Phones	11,364	11,364
2.	WESTEL	✓		Subscriber base	2798	2,798
				No. of Pay Phones		165
3.	SCANCOM LTD. (Areeba)	-	✓	Subscriber base	1012000	2,585,467
4.	MOBITEL(tiGo)	-	✓	Subscriber base	350000	1,546,721
5.	KASAPA	-	✓	Subscriber base	63000	200,104
6.	GT-Onetouch	-	✓	Subscriber base	270000	877,106

Source: National Communication Authority.

Benchmarking Ghana Infrastructure Quality

1.41 **Quality is still perceived to be low.** Recent Association of Ghana Industries (AGI) surveys indicate that infrastructure quality is still perceived to be very low by business users. Whereas analyses of the urban and the subsequent rural investment climate surveys currently carried out or planned in Ghana will shed more light on the types and severity of investment climate constraints in Ghana (see Chapter 3 in this volume), our preliminary analysis here is based on the basis of earlier surveys carried out in 2006 by AGI and in 2004 by the World Economic Forum, through opinion survey of top executives.⁸ The 2006

⁸ The AGI survey is based on a sample of 226 face-to-face interviews with chief executives of AGI member companies. The majority of the companies is *privately owned* (85%), belongs to *the manufacturing* sector (80%) and are located in *Accra/Tema regions* (77%). The Global Competitiveness Report publishes an annual international survey of the quality of the overall infrastructure sectors, as well as the transport and electricity subsectors. The World Economic Forum applies a similar methodology to capture the perception of business executives of their working environment in comparison with the standard that they would expect in a developed country. The survey in

AGI survey, in particular, points to the National Load Shedding Program in 2006 as the most severe obstacle to doing business. The quality of power supply was also ranked as the fourth of 13 challenges to doing business in Ghana.

1.42 According to the Global Competitiveness Report the quality of Ghana’s infrastructure ranks 66th of 104 countries. This confirms how it has a long way to go to reach standards similar to leaders in the SSA region, such as South Africa, Mauritius and Botswana (Table 1.3). In terms of subsectors, the ones for which Ghana ranks the lowest position are electricity and air transport (where it ranks respectively 84th and 93th of 104 countries). On the other hand, in terms of port infrastructure Ghana ranked 55th even if its performance is still below the one of South Africa and Mauritius.

Table 1.3: Benchmarking infrastructure quality with peers and international benchmarks
(latest observations)

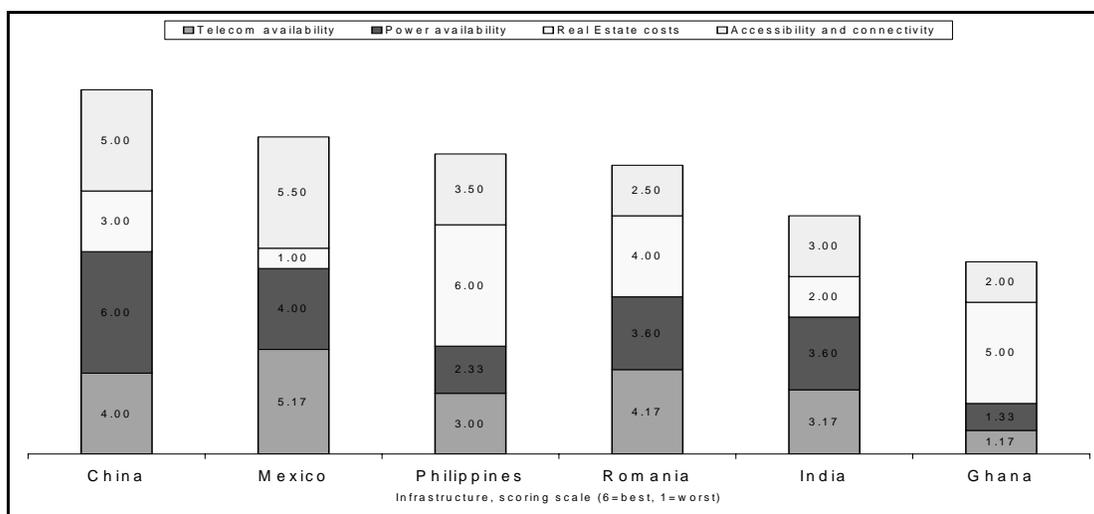
	Overall infrastructure	Port	Air transport	Railroad	Electricity	
	Ranking	Quality rating				
South Africa	23	5.3	4.5	6.1	4	5.9
Mauritius	40	4.4	4.6	4.9	2.7	5
Botswana	43	4.3	2.4	4.3	3.5	5.1
Ghana	66	3.2	3.7	3.2	1.7	3.2
Zambia	84	2.7	2.2	3.7	2.5	4
Tanzania	88	2.5	3.1	3.8	2.9	3
Nigeria	93	2.3	3	4	1.9	2.2

Note: Survey based subjective evaluation on scale from 1-‘underdeveloped and inefficient’ to 7-‘as developed and efficient as the world’s best’.

Source: World Economic Forum 2004.

1.43 More recent surveys, confirm the Ghana’s low scores in terms of telecom and power availability (e.g., Hewitt in 2006). The Ghana scores for availability of telecom and power services (as well as in terms of connectivity) are close to the worst according to the 1-6 scale. Since infrastructure often represents an important determinant in the investment location decisions by multinational companies, failures to improve the scores might imply missing important investment inflows (Figure 1.4).

Figure 1.4: Ghana’s infrastructure compared with international destinations



Source: Hewitt 2006.

Ghana was implemented by the Ghana Investment Promotion Center. It provides subjective ratings of the quality of infrastructure in 104 developed and developing countries based on surveys of large industrial users.

1.44 **The utilities sector is still seen as corrupt although the level of corruption may be less important for investment climate.** Extra payments to public utilities represent also a key obstacle to doing business in Ghana. Table 1.4 confirms that businesses are forced to resort to bribes and other undocumented extra payments to get connected to telephone and electricity. The occurrence of such extra payment is more frequent for public utilities rather than for import-export and public contracts. However, the most recent Investment Climate Assessment (see Chapter 3 below) suggests that corruption is comparatively less important for the overall investment climate compared with other obstacles such as the infrastructure gaps.

Table 1.4: Benchmarking infrastructure quality with peers and international benchmarks
(latest observations)

	Irregular payment in public utilities		Irregular payment in export and import		Irregular payment in public contract	
	Ranking	Quality rating	Ranking	Quality rating	Ranking	Quality rating
South Africa	52	5.3	42	5.3	33	4.8
Mauritius	82	4.3	89	3.6	84	3.2
Botswana	55	5.3	49	4.9	52	4.2
Ghana	88	4	70	4.3	72	3.4
Zambia	75	4.4	74	4.1	80	3.3
Tanzania	99	3.4	97	3.3	88	3
Nigeria	100	3.4	98	3.2	100	2.6

Note: Survey based subjective evaluation of frequency of making undocumented extra payment or bribes on scale from 1-‘common’ to 7-‘never occur’.

Source: World Economic Forum 2004.

Benchmarking Ghana’s Regional Infrastructure Disparities

1.45 **There is a major infrastructure rural-urban gap.** CWIQ data indicates a continuing decline in asset-based poverty between 1997 and 2003, with the poverty headcount falling by approximately 7% during this period. Most of the reduction in asset-based poverty was associated with the movement of people from rural to urban areas, with rural areas seeing a decline in poverty rates, while urban poverty rates increased slightly, albeit from much lower levels. Rural areas account for three-quarters of the poor, despite representing just short of 60% of the population.

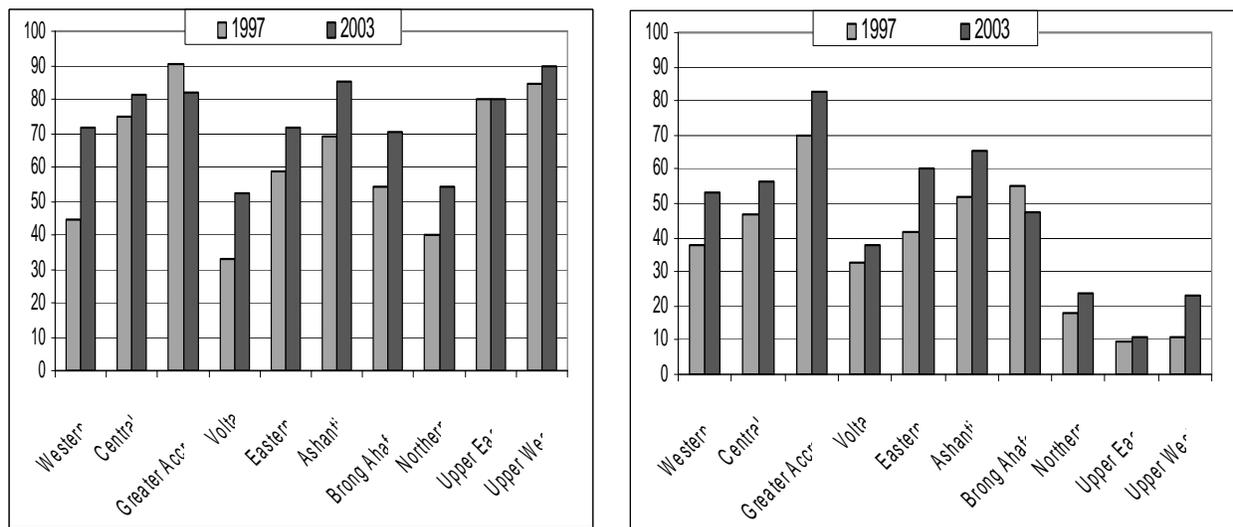
1.46 **Regional differences are also significant.** Higher poverty headcount indexes in the three northern regions (Northern, Upper East and Upper West) reached a level as high as 80 to 90% in some districts.⁹ The northern regions are, however, by far the most sparsely populated in the country. While other regions have lower poverty headcount indices, they also tend to have much larger populations. As a result, only approximately 40% of poor people in Ghana is based in the three northern regions, leaving the majority to live in the centre and southern regions (for a detailed analysis see the Ghana CEM paper in Volume 3 on poverty by Coulombe and Wodon, 2007).

1.47 **The disparities across regions are magnified when examining the poverty information at the district and subdistrict level.** While the cities of Accra and Kumasi have poverty headcounts of less than 10%, nine districts (of 110 in the country) have poverty headcounts of above 80%. Although the vast majority of these destitute administrative units are concentrated in the three northernmost regions, pockets of high poverty also are found the central and southern areas of the country. While poverty measures are much higher in the Northern, Upper Easter and Upper Western regions, there are several pockets of

⁹ Since the CWIQ does not include a full-fledged expenditure module, expenditure levels can be calculated by proxy, using assets reported in the CWIQ.

poverty in the forest areas of the country (Western, Brong Ahafo and Ashanti regions), as well in the coastal areas (Central and Volta regions).

Figure 1.5: Household access to improved water and sanitation, 1997, 2003



Source: CWIQ (1997, 2003).

1.48 **Infrastructure poverty and income poverty are strongly correlated.** According to preliminary evidence, poverty mapping seems to overlap with the infrastructure mapping (Figure 1.5). For instance, lack of access to potable water causes the guinea worm infection rate to continue to rise in the Northern Region in spite of intense efforts over the years by the government to eradicate the disease. According to the Guinea Worm Eradication Program (GWEP) current report, Savelugu-Nanton, Tolon-Kumbungu, Tamale, East Gonja and the Yendi Districts of the Northern Region alone reported 86.7% of all reported cases in 2006 in the country. Savelugu alone recorded a dramatic increase of 427 cases in 2005, 1,182 in 2006 and 683 in 2007, representing 70% of all reported cases in the Northern Region. Tamale is believed to be the only metropolitan city in the world to be attacked by the Guinea worm disease.

1.49 **Interestingly, the areas with no access to potable water in Ghana are many, even in Accra.** Notably in Accra, even relatively well-off locations such as Labone, Osu and East Legon suffer from major access and quality problems. Anecdotal evidence reveals that for some areas, the taps flow only once a week so that houses with reservoirs are unable to store enough water for both domestic and commercial purposes. Interestingly, as Figure 1.5 illustrates, Greater Accra is the only district recording a *decrease* in the rate of access to potable water from 1997 to 2003. For those areas, which have the required piping system but do not have water flowing through them, residents have to buy water from their neighbors. In the affluent neighborhoods, tanker services are common. Most of the residents report that they have to buy a so called “bucket” of water for approximately 1,500 cedis. They will be spending on average over 200,000 cedis per month on water alone, which can be a serious amount of money for a low-income family. The environment is also so dusty that one cannot be sure of how clean these reservoirs are. The health implications can be severe, as contaminated water plays a major role in the spread of diseases, including cholera and typhoid.

Benchmarking Ghana’s infrastructure spending and SOEs

1.50 **Ghana has not spent enough on infrastructure; as will be shown below, its overall spending on infrastructure might have to double to close severe infrastructure gaps to help sustain rapid economic growth.** Given its income per capita and limited country affordability, Ghana’s infrastructure spending is low. In regional and international comparison, Ghana spends a relatively low amount on budgetary infrastructure services. The 1% of GDP spent in 2005 makes it *one of the lowest budgetary*

spenders on infrastructure in the SSA region. As Table 1.5 shows this is substantially lower than social sector spending. The low level of infrastructure spending may provide a powerful explanation for the still disappointing performance of some of the infrastructure sectors.

Table 1.5: Infrastructure spending – O&M vs. investment

	Total budget	Infrastructure	Education	Health	Other
Year	% of GDP	% of GDP			
2001	11.0	0.5 ^a	3.7	1.2	4.9
2002	12.6	0.3	4.7	1.4	6.3
2003	15.2	0.7	6.9	2.6	5.3
2004	16.3	0.9	8.4	1.8	7.3
2005	19.3	1.0	8.7	2.8	6.8

Source: Fiscal Cost Baseline.

Note: Only on-budget spending in infrastructure according to the functional classification of government expenditure in the budget.

1.51 **The increase in public resources allocated to the infrastructure sectors in recent years and in the near future can be expected to gradually improve Ghana’s infrastructure performance.** The road sector can certainly be quoted as a notable sector in which significant improvements have been already achieved (Table 1.6 and Section 4), especially as it accounts for the lion share of the budgetary funding.

Table 1.6: Infrastructure spending – O&M vs. Investment

Share of nominal GDP	O&M (including wages) (%)	Investment (%)
Energy	0.02	0.02
o/w Electricity	0.01	0.02
Transport	0.11	0.28
o/w Road Transport	0.10	0.27
o/w Water Transport	0.01	0.00
Communication	0.02	0.00
Water Supply	0.06	0.08
Sanitation	NA	NA
Irrigation	0.17	0.03
TOTAL	0.48	0.68

Source: Fiscal Cost Baseline.

Note: Only on-budget spending in infrastructure according to the functional classification of government expenditures in the budget.

1.52 **SOE spending finances the lion’s share of infrastructure in Ghana.** In 2004, in Ghana, the private sector contributed approximately 1% of GDP to annual infrastructure spending. In contrast, bulk of this public spending (approximately 3% of GDP) is realized through public spending in infrastructure disbursed through SOEs and parastatals. This spending is financed through parastatals’ revenues, loans from central government (direct or on-lending), and ad hoc transfers (Table 1.7).

Table 1.7: Infrastructure source of spending (%)

Nominal GDP share (%)	2001	2002	2003	2004	2005
Total gross investment	1.85	1.50	2.16	2.72	2.70
Total O&M	1.70	1.77	2.26	2.42	2.34
On-budget ^{1/}	<u>0.85</u>	<u>0.52</u>	<u>0.82</u>	<u>0.93</u>	<u>1.16</u>
Gross investment	0.39	0.23	0.42	0.34	0.68
O&M	0.46	0.30	0.41	0.58	0.48
Parastatals/SOE	<u>2.41</u>	<u>2.51</u>	<u>3.49</u>	<u>3.78</u>	<u>2.96</u>
Gross investment	1.10	0.96	1.65	1.69	1.30
O&M	1.31	1.54	1.85	2.08	1.66
Private sector					
Gross investment ^{3/}	0.36	0.31	0.10	0.69	0.72

Source: Fiscal Cost Baseline, WB PPI Database.

Notes:

1 Excluding transfers to local governments.

2 Explain whether includes expenses funded by transfers from the CG and/or own revenues.

3 Proxy by committed investment with private participation.

1.53 This leads us to address the issue of where Ghana can best tap the additional resources needed to meet its infrastructure challenges. In what follows, the scope for enhancing private sector financing will be assessed against the past record in attracting private sector financing and the current plans to enhance private sector participation in infrastructure.

(a) Private Sector

1.54 **Ghana can and must do better on Public Private Partnerships (PPPs).** For budgetary and efficiency reasons, Ghana will benefit from further developing public-private partnership schemes to meet these investment needs. To develop these partnerships, there is a need to resolve issues concerning tariff-setting and access to the market. Nevertheless, public investment could be more efficient and private investments even greater and more stable than at present. Such a strategy would result in a shift toward private investments over time. In this scenario, public investments would continue to target bottlenecks and public goods such as water and sanitation and rural roads, while private sector participation would strengthen in energy, Information and Communication Technology (ICT), and transport.

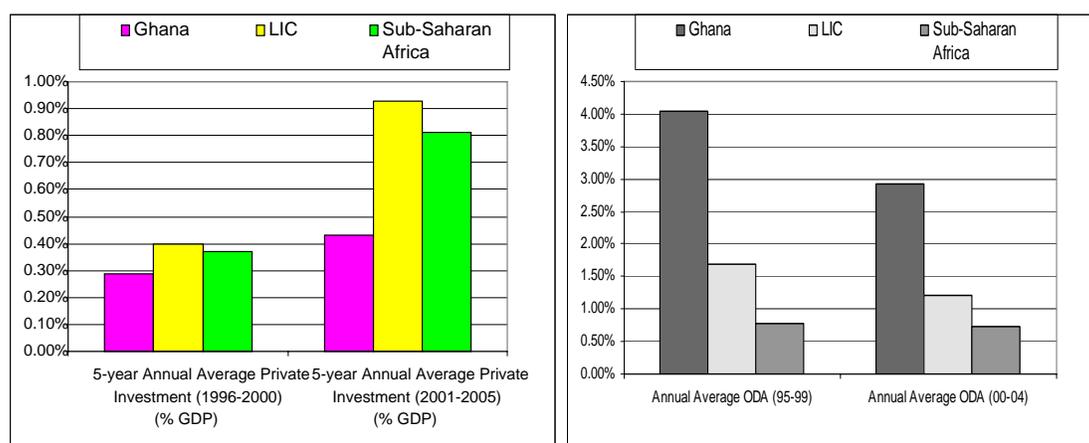
1.55 **Ghana is significantly lagging behind its Sub-Saharan African and similar income peers in terms of private sector investment.** Despite the effort made by the authorities in opening the market to the private sector, the results in terms of committed investment (Table 1.8) are rather disappointing when compared to SSA and similar income averages (Figure 1.6). *Not only does Ghana significantly lag behind its peer averages, but also it seems to have smaller average project size than comparator countries.* Why? While we could not carry out a detailed diagnostic, there are reasons to believe that it may be useful to conduct a review of the way in which the projects to be implemented in partnership with the private sector are being selected. The outcomes are such that it is likely that this process is part of Ghana's problem and poor relative performance.

Table 1.8: PPPs involved in infrastructure service delivery

Project name	Modality	Status	Sector	Contract period (Yrs)	Investment year or financial closure year	Value of investment commitment (US\$m)
Electricity Corporation of Ghana	Two management contracts	Concluded	Electricity	3-4	Late 1980s to late 1990s	
SIIF Accra	Greenfield	Canceled	Electricity	2	1999	
CMS Energy Corporation	Greenfield	Operational	Electricity	25	1999	60
Tano Basin Gasfields Development Project	Greenfield	Canceled	Electricity	10	1996	316
Westel	Greenfield project	Canceled	Mobile	10	1996	10
Capital Telecom	Greenfield project	Operational	Mobile	20	1996	32
Ghana Telecom	Management Contract	Operational	Fixed line	3	2003	
Ghana Telecom	Divestiture	Canceled	Fixed line		1996	350

Source: World Bank/PPIAF PPI Database.

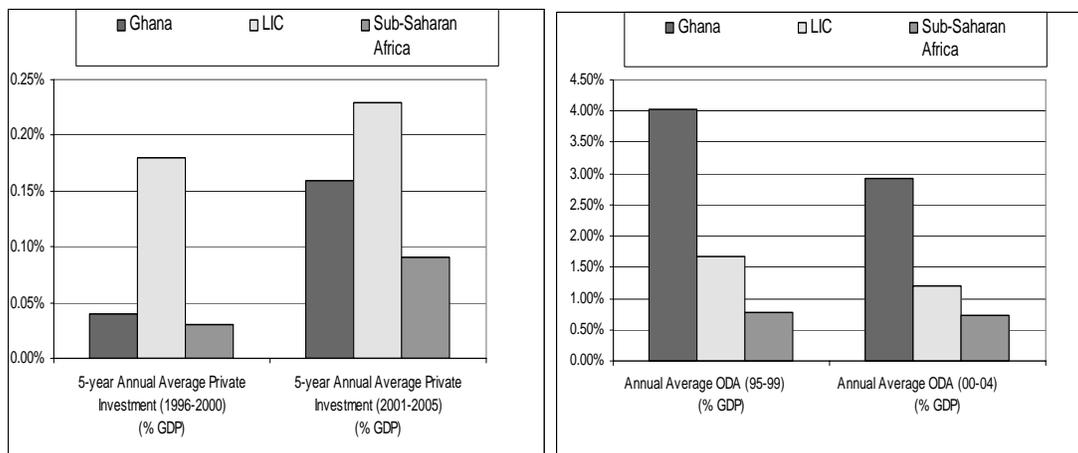
Figure 1.6: Infrastructure trends in PPIs and ODAs



Source: World Bank/PPIAF PPI Database and OECD-DAC.

1.56 **Ghana should significantly improve leveraging its spending on infrastructure.** For every Cedi of public money spent on infrastructure, Ghana should be able to attract significantly more private money to the sector. Ghana is characterized by significantly lower-than-average private investment in the telecom and energy sectors. This low private participation might be a powerful explanation of the poor performance of the sectors, not only when compared to Ghana's peers but also in developing country standards (Figures 1.6).

Figure 1.7: Trends in PPIs and ODAs in the energy sector

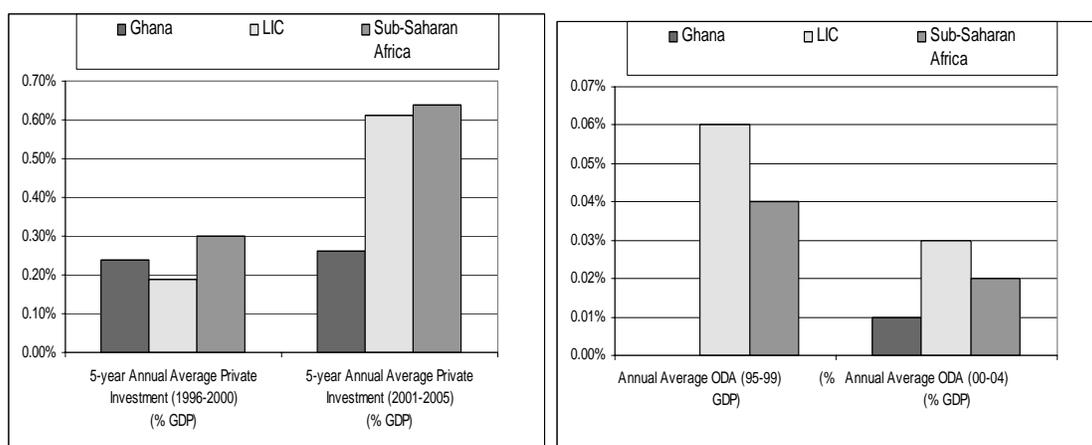


Source: World Bank/PPIAF PPI Database and OECD-DAC.

1.57 **The telecom sector is still dominated by state-owned enterprises.** The incumbent (former state-owned monopoly) Ghana Telecom (GT) and Westel (the second national operator) are 100% state-owned as a consequence of the repurchase of shares from private investors in 2005. Only the third operator, Capital Telecom, a local (rural) fixed-line operator, is privately owned.

1.58 **By contrast, the vibrant mobile sector is characterized by a fierce competition between four mobile operators** (Areeba, Tigo, OneTouch, and Kasapa). Only OneTouch is owned by the dominant telecom provider, GT. The other three are all privately owned. There are a significant number of data service companies. GT itself has the largest Internet Service Provider (ISP) business. The next biggest providers are Knet, Internet Ghana, and Busy Internet. Ghana also has a number of prospering ICT companies, software, IT service providers, and Information Technology (IT) Enabled Services (ITES) ventures.

Figure 1.8: Trends in PPIs and ODAs in the telecom sector



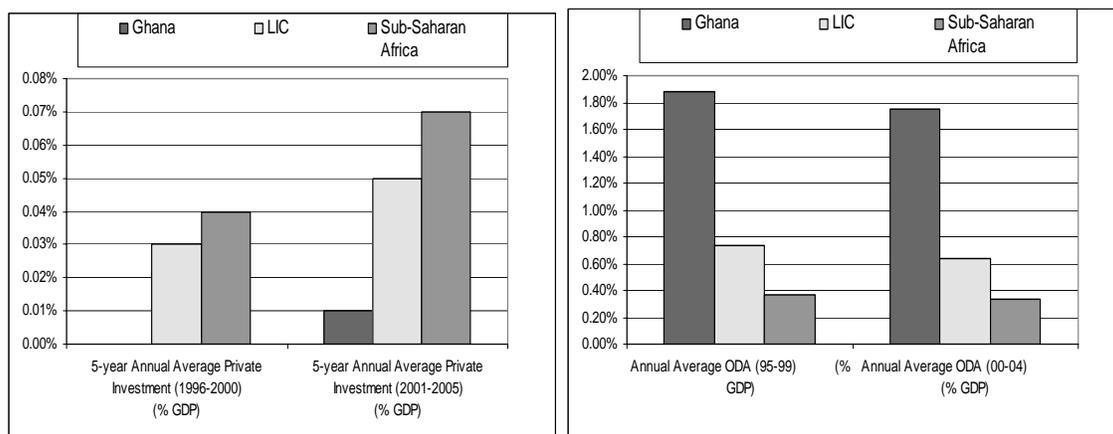
Source: World Bank/PPIAF PPI Database and OECD-DAC.

1.59 **The Government has resorted to concessionary financing to build the domestic telecom backbone infrastructure.** As yet, there is no domestic fiber network with national coverage capable of carrying large amounts of data within the country, particularly to points of international access. Developing this capability would reduce the reliance on satellite connectivity, which is both expensive and technically inferior. The Government of Ghana is in discussions with China for support to build the

national backbone infrastructure. The benefits of such a network would be achieved only if there is open and nondiscriminatory access to it and, preferably, competition in the supply of capacity.

1.60 Ghana could do much better with water PPPs. Virtually no private investment in the water sector makes Ghana stand out as a significant underperformer. Private participation in the water sector is generally hard to attract. However, there are encouraging trends involving the private sector in the provision of water services both through the introduction of management contracts in small towns.

Figure 1.9: Trends in PPIs and ODAs in the transport sector



Source: World Bank/PPIAF PPI Database and OECD-DAC.

1.61 The railway sector is operating at low efficiency under parastatal management. In the past, options for concessioning the infrastructure and operations of the railway company have not succeeded. Even with the highly concessional financing that other Sub-Saharan railway systems enjoyed (the loans are on-lent by the governments at low margins, and the effective interests paid are in many cases less than 2%), the Ghana's operations appear highly fragile.

1.62 Good reasons exist to have strong hopes for major improvements in PPP opportunities. The project pipeline for infrastructure projects provides additional opportunities for private sector participation. Apart from the ample scope for PPP in the telecom sector, the other infrastructure sectors could attract significant private sector involvement.

1.63 In energy, additional power generation presents an opportunity to attract the private sector, though there is a risk that extra generation is added in a rather ad-hoc way through expensive, quasi-IPP contracts awarded on a non-competitive basis with a large risk premium on investment. This occurred in other developed countries when the contracts were negotiated at a time when the sector was already facing severe shortages.

1.64 In ports, the container terminal of the main port of Tema, which handles the bulk of the total domestic traffic, also is to be placed under a management contract. Tema Harbour is reported to be about to sign a 20 year Build, Operate and Transfer (BOT) agreement between the Government of Ghana and a foreign consortium, Meridian Port Services (MPS) for the latter to manage a Container Terminal at the Tema port. Consequently, indigenous stevedoring companies who were granted licenses by Ghana Port Harbour Authority (GPHA) have expressed serious concerns. Rough estimates put the entire workforce of the Ghana Association of Stevedoring Companies (GASCO) at approximately 700 while they are the chief dock labor employers, employing labor from the pool of the Ghana Dock Labor Company made up of approximately 3,750 dockworkers. Between 2003 and 2005, stevedoring companies collectively have paid over US\$2.2 million in corporate taxes and US\$13.4 million as royalties to government and GPHA respectively.

1.65 Performance-based contractual agreements are powerful instruments to help define sector development goals and resources. They do so by imposing a time-framework in which monitorable

performance targets are to be achieved, allowing for increased managerial autonomy. Performance-based contracting requires the government to play a key role in planning, policy, and regulation. Management, in turn, is empowered to do what it does best: (i) invest capital; (ii) manage the businesses, (iii) manage and create appropriate incentives for staff and management; (iv) deal with customers; and (v) improve the efficiency and quality of service also under the pressure of benchmark competition. These arrangements are intended to promote cost-savings, efficiency, and responsiveness in terms of performance expectations linked to budgets, service, and management. They can play an important role in clarifying the roles of the government and the utility, improve accountability for fulfilling the expected outcomes as defined in the contracts, and provide incentives for operational efficiency and effective investment with financial incentives and penalties; they also link remuneration to the ability to meet the performance targets, and provide incentives to improve performance and efficiency (Vagliasindi 2007; Vagliasindi and others 2006).

1.66 **Performance contract system must be coupled with long-term planning.** This means that every enterprise has to develop medium- and long-term plans that are consistent with the priorities established by the government through sector ministries. *The overriding principle for preparing a performance contracts remains that they are based on simplicity so that their content can be easy to monitor and to evaluate* (Appendix 2 for more details on the experience of international experience in performance contracts).

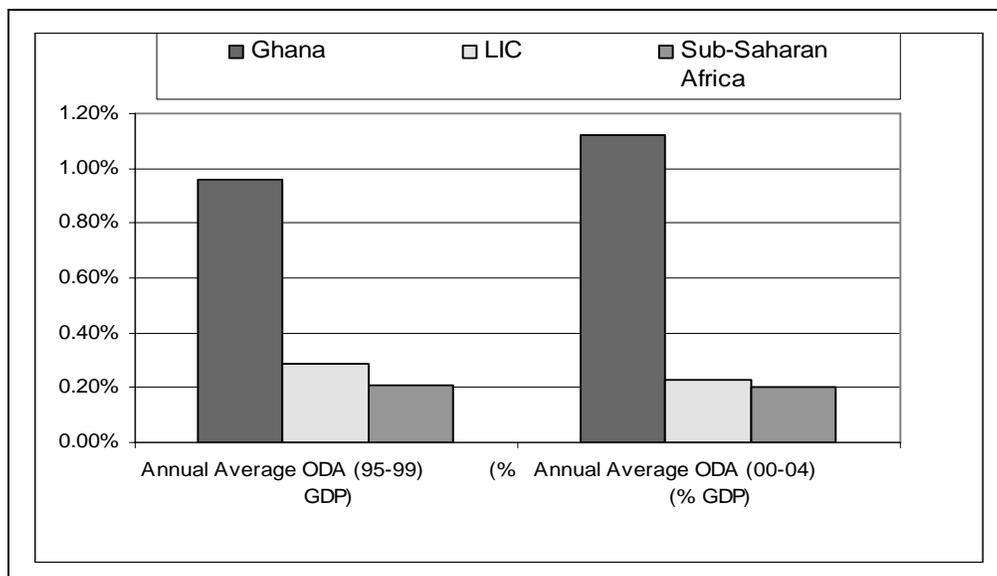
(b) Donors

1.67 **Ghana's access to cheap lending for infrastructure is high but declining.** Ghana is characterized by above-average concessional lending for infrastructure. However, this average has significantly declined over time and is driven mainly by the transport and water sectors. On average, Ghana has received a considerable share of concessional lending, corresponding to approximately 4% and 3% of GDP in the 1995–99 and 2000–04 periods, respectively. However, the only two sectors that have benefited consistently over time from donor money are the transport and water sectors. The telecom sector stands out as the poorest beneficiary of ODA, which also partially explains telecom's worse than average performance.

1.68 **Are donors meeting the right needs?** The pattern of donor involvement suggests that donors do not necessarily target sectors in which needs are strongest. What stands out in the snapshot provided below is again the prominence which transport receives in external funding. At the same time, what is striking is the low response to the huge need for external funds for the electricity sector, which is now suffering from a severe crisis.

1.69 **Is Ghana too dependent on foreign aid in infrastructure?** The analysis of the details of the funding sources reveals some strong biases. The strongest is for the water and sanitation sector. It is almost fully dependent on donor support (Figure 1.10). Donors account for over 90% of water supply investments. Of a total expected water and sanitation funding of US\$85.14 million in 2006, the budgetary portion is only 3.7%. Donors are providing the remainder. This donor amount represents only 57% of *annual* requirements to meet the MDGs over the long term. If the MDGs are to be met, the CWSA estimates that public spending on rural water and sanitation should rise from its current less than 6% of total investments to approximately 30%. Some HIPC funding is directed into this sector, but it also is significantly low, representing only 1.5% of total poverty-related expenditures.

Figure 1.10: Trends in ODAs in the water sector



Source: OECD-DAC.

(c) Users

1.70 **Users contribute to the cost of service provision by paying either directly for the service provided (as in electricity and water via individual bills) or indirectly via taxes or levies (as in the road or the airport sector).** The scope for tariff increases can be assessed first by assessing the current extent of cost recovery in the various infrastructure sectors.

1.71 **The overall cost recovery picture is mixed.** Whereas in the transport sector, significant levels of cost recovery have been achieved, in the water and electricity sector the situation is bleak, as shown by the worsening financial performance of the utilities. At present, water and sanitation services in rural areas cover recurrent costs through tariff revenues, while capital costs are covered by external grants and concessional loans. The tariffs for other services (electricity and urban water and sanitation) are not set at levels sufficient to cover recurrent costs; also, only a fraction of the capital costs are covered by grants and concessional loans. As a result, these public utility companies operate in chronic deficit, adversely affecting the quality of service delivery and long-term service sustainability. *In the wake of another scale-up in infrastructure, investments need to ensure that the benchmark rates of return that guide the levels for utility tariffs are set at an adequate level.*

1.72 **In the power sector, based on a transitional plan, the average tariff was expected to be gradually adjusted to full cost recovery levels, but progress was slow.** Furthermore, to prevent any erosion of tariff values through certain exogenous factors such as inflation, cost of oil and generation mix, an Automatic Adjustment Formula (AAF) was put in place to ensure the sustainability of the process of service delivery. But since its establishment in October 1997, PURC has adjusted electricity and water tariffs only five times, despite considerable interim changes in the cost levels and cost structure. The adjustments were done in 1998 (February and September), 1999, 2001 (May), 2002 (August) and 2003 (March). The first major electricity tariff increase was over 400% for all categories of consumers and the second increase was 103% in 2001. The combined increase in 2002 and 2003 was 72%. Two further adjustments in January and April 2004 have since then been implemented. Of particular concern in the case of electricity is the recent decision in 2006 by the Government to freeze the application of the revised PURC notified tariff schedule and to discontinue the quarterly automatic adjustments of tariffs. As a result, electricity prices are far below full cost recovery levels. Furthermore, Government has mandated a

tariff of US cents 3 per kWh for the state-owned aluminum smelter VALCO, when the marginal cost of electricity is approximately 15 US cents/kWh.

1.73 **Studies suggests that fuel levy should normally not be less than US\$10 cents per liter.** Given maintenance needs for Sub-Saharan African countries, the average is likely to be much higher at approximately US\$13–15 cents per liter. Very few countries, including Namibia, have reached this level. Yet despite the low levies, Ghana has the highest percentage of coverage of routine and total maintenance among its peers.

1.74 **The main short-term threat to fiscal prudence from the infrastructure sectors represent pressures for the budget to pay for the inefficient tariff policy and operations of the aluminum company.** Therefore, it is how responsibly Ghanaian government manages these pressures that will determine the success of its quest for continued strengthening of fiscal and the overall macro stability.

(d) Overall Public Resources

1.75 **Ghana faces a basic fiscal trade-off.** One of the main issues facing the Ghanaian authorities is how to finance productive, additional fiscal expenditures without jeopardizing the sustainability of the government's financial position. This is a dilemma shared by other governments in Africa that have suddenly gained additional fiscal space as a result of the recent rounds of debt relief (HIPC and MDRI). Importantly, this fiscal space was designed to allow the planned increased in productive investments, especially in infrastructure, which are needed for accelerating economic growth and poverty reduction. It has also, however, created strong demands for less productive expenditures such as wage increases within the public sector or subsidies to some SOEs. The impact of rapid increase in the wage bill in Ghana and its implications for other higher-priority spending programs should be carefully reviewed.

1.76 **The financial situation of the SOEs has substantially deteriorated.** The financial viability of the power sector is projected to worsen in 2007, as the share of more expensive thermal power in the generation mix increases. VRA's financial performance showed steady signs of improvement from 2002 (when the company incurred substantial operating losses) through to mid-2005. Operating revenues fully covered operating costs, and operating cash flow was more than sufficient to cover capital investments and debt service costs. Circumstances changed in 2005, however, with the reopening of the VALCO aluminum smelter, as well as a near doubling in crude oil prices. The increased demand had to be met primarily with increased thermal generation, at an average fuel cost of 8.7 US cents per kWh. In contrast, the VALCO tariff was set at 2.7 US cents per kWh. As a result, supply costs were 26% higher than revenues, and the company lost 727 billion cedis on revenues of 3.3 trillion cedis. In 2006, as VALCO demand increased to 1,200 GWh, and oil prices remained in the range of US\$60–US\$70 per barrel, VRA was obliged to increase its use of the less efficient gas turbine and diesel generators to meet demands, and the weighted average cost of fuel rose to an estimated 11.2 US cents/kWh. Consequently, VRA suffered a major financial loss of 1.5 billion cedis on revenues of 4.3 billion cedis in 2006.

1.77 **VRA faces a major challenge.** Without tariff increases and external financial support from government, VRA cannot continue operations and carry out planned investment programs. VRA's revenues in 2007 do not cover its fuel bills and it has run out of credit from suppliers and banks. The cost of its oil purchases is being met directly by a government subsidy. The situation would have been much worse had the company not adopted significant cash-preservation methods, including drawing down its working capital and deferring system maintenance. It is estimated that cash flow in 2007 could be as low as negative 5.2 trillion cedis unless measures are taken to enhance VRA's revenues and/or reduce its out-of-pocket operating costs. Assuming that natural-gas-fired generation can be brought on line in early 2008, the situation will improve. However, *absent additional tariff increases and/or continued government transfers, VRA will continue to incur negative operating cash flows, which will be exacerbated by the company's substantial investment commitments.*

1.78 **In recent years, the Electricity Company of Ghana (ECG) financial performance has been marginally satisfactory.** While the company incurred operating losses each year from 2002–05, it

maintained a positive cash flow from operations and was able to maintain a significant capital investment program. However, given that the Government does not propose to extend debt forgiveness on HIPC loans, ECG will have to begin to make provision to repay the principal and interest due and accrued on these loans in 2004 and 2005. In terms of the financial outlook for the company, profits in 2007 are expected to be low as load growth will be suppressed by the load-shedding. Beyond 2007, however, the outlook will improve, provided that it can raise its revenue collection performance, with adequate operating cash flow to cover co-financing of the investment program as well as debt service obligations.

1.79 **Ghana Water Company (GWCL) has been among the poorest SOE performers.** With almost no new capital investment, total assets in 2003 (4.4% of GDP) were less than half of the level in 2000 (9.6% of GDP). Nonetheless, total liabilities also declined from 6.3% of GDP in 2000 to 2.6% in 2003. Several factors have contributed to this relatively weak performance, although two stand out. The first relates to the poor state of the company's infrastructure, as a consequence of a long period of disinvestment. This is reflected in a high frequency of "pipe burst" and system losses, which account for half of its total water production. This loss is above the target for such losses set by the regulatory authority (PURC) at 45% of production, and is significantly greater than the 25–35% benchmark established internationally. The system losses are almost evenly split between unaccounted-for water (mainly due to technical problems, such as damaged water mains and distribution lines), and commercial losses (including theft and unbilled consumption). The latter is the second major factor driving poor performance, as only half of the company's registered customers have meters installed. The collection rate from metered consumption has remained at approximately 75% during the past several years, although this rate would rise if the settlement of cross-debts is included. As for the electricity utility, the main source of quasifiscal operations for the water company stem from payment arrears and excessive losses. The main beneficiaries of GWCL's quasi-fiscal operations are its urban consumers, nearly half of which enjoy free water. However, these consumers also face a heavy cost in the form of a lower quality service (low water pressure and frequent disruption). The transfer of resources has been financed in a similar manner to the ECG, through arrears, the build up of debt, debt relief, and disinvestment, the latter being striking in recent years.¹⁰

1.80 **There is significant scope for improvements.** The scope for increasing efficiency in infrastructure spending can be assessed by looking both at capital efficiency, considering the unit cost of investment in infrastructure compared to international benchmarks. Whereas forthcoming work in preparation for the Africa Infrastructure Country Diagnostic (hereafter AICD) will shed more light on these issues, we will only touch on these issues in next section together with the estimates of the investment needs.

Interim Conclusions from the Benchmarking Exercise

1.81 The broad conclusions emerging from the benchmarking exercise are as follows:

- **First, key infrastructure services in Ghana not only still are seriously short in supply but also are characterized by poor quality and reliability.** This is particularly the case for the energy, water and sanitation, and ITC sectors. This has serious implications for growth since it substantially increases the cost of doing business and hampers Ghana's prospects to attract investment and its ambitions to become a regional hub in Western Africa.
- **Second, there is strong divide between rural and urban areas in terms of infrastructure stock and quantity and quality of service.** The divide between urban and rural areas is particularly striking, not only across regions but also at the district and subdistrict level. While poverty measures are much higher in the Northern, Upper Eastern, and Upper Western regions, there are several pockets of poverty in the forest areas of the country (Western, Brong Ahafo, and Ashanti regions), as well in the coastal areas (Central and Volta regions).

¹⁰ For an interesting analysis of the quasi-fiscal cost of SOEs see Chivakul and York (2006).

- **Third, there is a need to better tailor expenditure to the sectors that are in most need.** To date, the transport sector has attracted the lion’s share of the expenditures. The energy and water and sanitation crises call for more attention to be devoted to these crucial sectors.
- **Finally, it is essential to improve the performance of SOEs, through which the bulk of the infrastructure expenditure is channeled.** Even a relatively modest improvement in operational efficiency in the order of 5% could free resources of approximately 1%–5% of GDP, so that they could be used to finance significant expenditures on infrastructure.

ASSESSING INVESTMENT NEEDS

1.82 **The success of reforms to provide better infrastructure services hinges on accurate assessment of infrastructure needs.** As the result of the benchmarking exercise shows, key infrastructure services in Ghana still are in seriously short supply and of poor quality. Accordingly, reliable estimates of this infrastructure shortfall are required. However, equally important, progress will be derived, not only from new financing, but also from gains in efficiency of investments and improved sector policies, including policies to select the right projects for the country.

1.83 **To prioritize a sequence of policy interventions, Ghana needs an assessment of needs and funding gaps.** Specifically, it needs to assess (i) how much of infrastructure services can be provided, given current fiscal constraints and (ii) the gap between the current and feasible levels of infrastructure service provision. We will examine these key issues sector by sector. We rely on a combination of simple and more sophisticated methods (Table 1.9). We first use the benchmarking approach to assess the infrastructure needed to support the government’s growth targets. This approach assumes that there is a relatively stable relation between the stock of infrastructure and its composition and growth. The estimates are thus equivalent to a demand for infrastructure for a given growth target. Next, we will consider the estimates generated at the sectoral level based on engineering assessment of the costs of expanding services to reach targeted coverage or interconnections of networks.

Table 1.9: Alternative methods of assessing infrastructure investment needs

“Benchmarking”	Set target
<p>Examples:</p> <ul style="list-style-type: none"> ❖ Stock target: What would it cost to get Ghana’s infrastructure (per capita; per unit of GDP; per km²) to the level of the AFR leader; or to the level of another region (SAR, EAP) median? ❖ Flow target: How does Ghana’s expenditures on infrastructure compare to peers. 	<p>Examples:</p> <ul style="list-style-type: none"> ❖ MDGs: What would it cost for Ghana to achieve universal service coverage in water and sanitation, electricity and access to all year round roads. ❖ GPRS2: What would it cost for Ghana to achieve targets under GPRS2?
<p>Econometric:</p> <ul style="list-style-type: none"> ❖ Growth: What level of infrastructure coverage is needed to achieve x% level of growth and reduce inequality by z%. This is the approach followed by Calderón and Servén (2004) applied by Estache (2005) in the case of Africa. ❖ Demand: What level of infrastructure coverage will be demanded by firms and consumers, for given growth projections. This is the approach followed in Fay and Yepes (2003) and extended by Bogetić and Fedderke (2006). 	<p>Microsectoral estimates:</p> <p>These can be economic-engineering models that price particular level of coverage and quality; or it can be more ad hoc, relying on sector data and expert opinions.</p> <ul style="list-style-type: none"> ❖ Power sector: <i>Well defined international methodology, used by electricity companies to estimate investment needed to maintain the integrity of the network and satisfy predicted expansion in demand.</i> ❖ Roads: <i>Well defined methodology for rehabilitation/maintenance expenditures; combined with road sector expert opinion on definition of major corridors and investment needs for their completion.</i>

Costing the expenditure demand to support growth

1.84 **This approach relies on a comparative method to assess the investment and operation and maintenance (O&M) costs across sectors.** It has the advantage of simplicity and consistency. It is,

however, not very precise in that it does not allow for the differentiation in unit costs within sectors that engineering approaches allow for. It also assumes relatively standardized operation and maintenance costs, which can be very different across countries or even within countries since they vary with a number of physical characteristics not taken into account.

1.85 **Growth Approach.** There is evidence that Ghana could have almost doubled its per capita GDP growth from the actual 1.1% to a (potential) 1.75% for the period 1996-2000 had it enjoyed much higher, for example, Korea’s infrastructure stock and quality.¹¹ Applying Calderón and Servén (2004)’s analytic framework, Estache (2005) projected country-specific increases in GDP per capita that selected African countries could have realized had they had Korea’s infrastructure stock and quality.

1.86 **Demand Approach.** Estimates of the investment needs based on a very rough approximation of a demand function driven by the historical needs in the sector and extrapolating growth rates needed to meet the MDGs suggest regional average (average country in Africa) needs in the region of 10% of GDP (Estache 2006). A more detailed, panel-data based econometric approach followed by Bogetic and Fedderke (2006) extended the original framework of Fay and Yepes (2003).¹² The results for the 10 year average investment needs for an average African country are provided in Table 1.10. To the extent Ghana is similar to Africa’s average country in terms of infrastructure spending and its costs and needs, it is likely that its needs will be similar to those in the table below.

Table 1.10: Africa’s expenditure needs to meet the MDGs
(% of GDP, 2005–15)

		Electricity	Telecoms	Paved roads	Rail	Water	Sanitation	TOTAL
Investment	2005-15	1.2	0.7	2.2	0	0.3	0.6	5.1
O&M	2005-15	0.7	0.5	1.7	0.2	0.5	0.9	3.9
Total	2005-15	1.9	1.2	3.9	0.2	0.5	1.1	9.0

Costing the MDGs and other goals

1.87 **This second approach to the costing of the expenditure needs of the sector generates more precise estimates for each sector than the rough estimates generated by the more macroeconomic approaches.** The engineering approaches are, however, different across sectors and do not always do justice to the sensitivity of results to changes in growth prospects.

Water and sanitation

1.88 **Ghana wants to do better than the MDG in water and sanitation, but such progress will be costly.** Ghana aims to achieve 85% coverage for both water supply and sanitation by 2015, a *higher* coverage than the ones recommended by the MDGs. In 2004 national water supply coverage was 56% (52% for rural/small town and 61% for urban water supply). This will need to increase by approximately 3% annually to meet the target Ghana has set itself. With respect to sanitation, coverage as of 2004 was

¹¹ Calderón and Servén (2003) provide evidence that the difference in infrastructure levels between Latin American countries and East Asian countries accounts for about one third of the gap in output per worker between these regions. In a subsequent research using a sample of 100 countries over a 20 year period, Calderón and Servén (2004) also report the role that infrastructure quantity and quality can have in accelerating economic growth. According to estimates by Esfahani and Ramírez (2003) if the growth rate of telephones per capita rose from about 5% per year as in Africa, to about 10% as in East Asia, the annual growth rate of Africa’s GDP per capita would rise by about 0.4 percentage points. If the growth rate of electricity production increased from 2% in Africa, to 6% as in East Asia, annual per capita GDP growth would increase by a further 0.5%.

¹² The central infrastructure variable is the stock of infrastructure, rather than the flow of services that will be produced from it. Roughly, the idea is that services are proportional to the physical stock—this ignores intensity, efficiency or technological progress. The pricing of the physical needs are based on “best practice” unit costs to get a monetary value which can then be benchmarked against the GDP.

35% (32% for rural/small towns and 40% in urban areas) and requires an annual increase of 5%. The total cost to achieve this ambitious target is tentatively estimated at US\$1.5 billion for the rural and small towns' water and sanitation and US\$81 million for urban water supply (Tables 1.11 and 1.12).

Table 1.11: Ghana - Meeting the MDGs in the water and sanitation sector

		1990 (JMP)	2004	2015 (National)	Adtl. pop. to be covered
		Access (%)	Access (%)	Access (%)	(th/year)
Water	Rural ¹	37	52	85	535
	Urban ²	85	61	85	536
	Total	54	56	85	1071
Sanitation	Rural	11	31	83	747
	Urban	40	40	85	653
	Total	21	35	80	1,400

Source: WSP/EUWI/UNDP 2006.

1.89 **To translate the Strategic Investment Plan into implementable plans, it has been agreed within the MDBS/PRSC framework to develop medium term implementation plans.** The Community Water and Sanitation Agency has produced a 10 year Strategic Investment Plan (SIP) for the rural water subsector estimated to cost approximately US\$760 million over the period. The investment plan covers components such as water and sanitation infrastructure in rural communities and small towns, capacity building of sector stakeholders and program management. It is expected that annual investments will be in the range of approximately US\$70 million, clearly twice the current level of investment. *This requires a doubling of donor inflows over the period and at least a three fold increase in government funding.* Ghana Water Company Ltd has an existing SIP covering the period 1998–2010. The urban water subsector SIP estimated an annual investment of close to US\$100 million, totaling some US\$1.2 billion over the plan period. GWCL is in the process of updating these plans to span the 2015 time horizon and would serve as a framework for future investments in the sector.

1.90 **One of the key challenges is that the current, planned inflows in the sector to date would cover only approximately one-third of the investment need.** Closing the huge gap in financing water and sanitation needs is thus critical. This is particularly so for rural water supply as the urban sector rely most entirely on donor funding.

Table 1.12: Ghana - Investment needs in the water and sanitation sector, Annual, 2005-15

		Total investment requirements			Public invest required	Planned public invest.	Funding gap
		New	Replace/Rehab	Total			
		(\$m/year)					
Water	Rural ¹	42	4	46	44	42	2
	Urban ²	72	9	81	81	36	45
	Total	116	9	125	125	78	47
Sanitation	Rural	25	NA	25	14	10	4
	Urban	NA	NA	NA	NA	NA	NA
	Total	NA	NA	25	14	NA	NA
(%GDP)							
Water	Rural ¹	3.24%	0.31%	3.54%	3.39%	3.24%	0.15%
	Urban ²	5.55%	0.69%	6.24%	6.24%	2.77%	3.47%
	Total	8.94%	0.69%	9.63%	9.63%	6.01%	3.62%
Sanitation	Rural	1.93%	NA	1.93%	1.08%	0.77%	0.31%
	Urban	NA	NA	NA	NA	NA	NA
	Total	NA	NA	1.93%	1.08%	NA	NA

Source: WSP/EUWI/UNDP 2006.

1.91 An encouraging trend in recent years is the falling costs of providing water and sanitation facilities for rural/small town communities. For rural water, as a result of decentralizing implementation thus increasing competition, the cost of delivery of one borehole fitted with pumps has fallen considerably, from a high of US\$8,000–10,000 in the past to between US\$4,000–6,000 in some projects. Unit costs for piped systems in small towns is estimated at US\$45 per capita for larger systems but could be much higher for systems with smaller populations, typically towns with less than 5,000 people. Investment costs for urban water projects are estimated at US\$300–350 per capita. Water supply to the urban poor remains a formidable challenge. Through a partnership between the PURC, GWCL, and WaterAid, pilot projects are being undertaken to test supply and management options in urban low income communities.

Energy

1.92 Improving electricity access rates is important for both commercial and social reasons. Electricity access rates are not included explicitly in the MDGs. Because of the direct and indirect links to the achievement of the MDGs (see Appendix 3 for a matrix drawn by DFID on the relationship between energy and all the MDGs) it is customary for analysts to assume as targets the number of connection needed to halve the proportion of people living without electricity in rural and urban Sub-Saharan African countries. The targets defined during a workshop held in New York in October 2004 under the sponsorship of the UN Millennium Project are to ensure reliable access to electricity to all in urban area and provide access to modern electricity services at the community level for all rural communities.

1.93 Ghana might be underestimating its energy investment needs by a wide margin, especially against the backdrop of accelerating economic growth and energy demand. A recent study commissioned by the World Bank in preparation for the Africa Infrastructure Country Diagnostic estimates much higher regional investment needs. The much higher investment needs are explained by the fact that in addition to the generation sectors the *transmission and distribution sectors' needs* are included in the analysis. The methodology is based on the least cost expansion path to meet demand forecasts for

the 2005–15 period for 29 countries in Africa.¹³ The demand forecast is based on the projected economic rates of growth and other parameters, including targets for higher electricity rates in three scenarios. Under the first scenario, which can be considered as the conservative status quo, electricity access rates in 2015 are projected to be the same as in 2005: in the case of Ghana the urban and rural access rates are respectively equal to 82.4% and 20.9%. Under this scenario, the investment needs are the ones required to add new connections so as to keep access rates constant, taking only into account the urban and rural population rate of growth. A second scenario is based on the new connections required to reach the ECOWAS Regional Target levels of 66%. Finally, the scaled up scenario is based on the new connections required to halve the proportion of people living without electricity (Table 1.13).

Table 1.13: Ghana - Alternative electricity demand scenarios, Annual, 2005-15

	Constant access rate			ECOWAS regional target			MDG target		
	Target access rate	New connect	Demand incr	Target access rate	New connect	Demand incr	Target access rate	New connect	Demand incr
Total	49%	5,95263	783	69%	1,490348	1693	75%	1,782616	1870
Rural	21%	4,6314	28	37%	4,63277	280	32%	7,55546	457
Urban	82%	5,48949	755	100%	1,027070	1413	100%	1,027070	1413

Source: Econ 2007.

1.94 **The estimated investment needs do not seem to vary significantly after allowing for trade expansion.** As explained earlier, the trade expansion scenario is modeled through the needed increase in cross border transmission capacity within the Western Africa Power Pool, whenever trade reduces costs are not significantly different, as reported in Table 1.14 below. An alternative scenario considers the case of trade stagnation, where the cross border transmission capacity is kept constant at the current level. It should be noted that the Western Africa Power Pool is a smaller market compared to the Southern African Power Pool and has little potential of hydro power, implying small differences in costs. In addition, the construction of the Western Africa Gas Pipeline limits further the scope for electricity trade, replacing it with gas trade. These estimates are somewhat higher than the ones reported in the KITE report prepared for UNDP-REEP and ECOWAS in 2005, which are slightly less than US\$4,000.

Table 1.14: Ghana - Power sector investment needs, Annual, 2005-15

	Trade stagnation			Trade expansion		
	Investment	O&M	Total	Investment	O&M	Total
<i>(US\$m)</i>						
Generation	821	801	1622	821	805	1626
T&D	2164	833	2997	2166	833	2999
Total	2985	1634	4619	2987	1638	4625
<i>(% GDP)</i>						
Generation	5.75	5.61	11.36	5.75	5.64	11.39
T&D	15.16	5.84	21.00	15.17	5.84	21.01
Total	20.91	11.45	32.36	20.93	11.47	32.40

Source: Econ 2007.

¹³ The countries include Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mozambique, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe (South Africa Power Pool); Benin, Burkina Faso, Cameroon, Chad, Cote d'Ivoire, Ghana, Niger, Nigeria, Mali, Senegal, Togo (West Africa Power Pool) and Egypt, Ethiopia, Kenya, Rwanda, Sudan, Uganda, and Madagascar (East Africa-Nile Basin Power Pool).

Transport

1.95 **For roads: the issue is finding the right balance between investment and maintenance.** In the road sector, available evidence suggests inadequate funding for road maintenance and development, and inappropriate road treatments. Between 2001 and 2004, the maintenance shortfall is estimated in the range of US\$330–500 million, which is expected to cost transport service providers, operators and owners approximately US\$1 billion over 4 years. Experts also complain about the balance between “road maintenance” and “investment” and the lack of clear prioritization between competing parts of the network.

1.96 **A prioritized investment program for the second phase of the road sector development program 2006–10 is under discussion.** However, a central issue is that planned maintenance needs of the road network are fully met as a priority. The proposed road sector investment program agreed with the Government and other Development Partners (mainly AfDB and EC) is being developed within the CG Results Matrix (Appendix 4). The key targets are to ensure expansion and maintenance of transport infrastructure (improve road condition mix, increase access to market through improvement in feeder road network, fund road maintenance gap, develop major highways, establish an asset register for each mode, define and adopt standards by type, functionality and development use, strengthen domestic construction industry).

1.97 **The above outcomes are rather general and have been translated into an overoptimistic results matrix.** It assumes that 100% of the network will be fully maintained by 2008 from 67% currently; that the railway passengers and freight traffic will increase by 25% and 30%, respectively, by 2009; and that maritime traffic will increase by 28% by 2009. In contrast, the road condition targets are kept realistic and with no apparent relation to the efforts proposed in road maintenance and rehabilitation.

1.98 **For railways: there is a need to avoid white elephants.** There also are proposals in the railway sector that threaten a return to white elephant projects. Only 250km of the current 769km see some traffic, and 93% of this traffic on a 63km stretch is mines related. Under these conditions, expanding the current network and expecting private investment seems unrealistic. The Bank's experience with railway privatization in SSA shows that, historically, railways have played a crucial role in the economic integration and development of African economies. However, the continuous expansion of the road network since roads' construction approximately 100 years ago means that, today, railway competitive positioning has been reduced to certain niche markets. These include dedicated lines for mineral exports that enjoy extremely high volumes by African standards (that is, several million tons per km of main trunk line) or for long-distance traffic (over 500 km), where rail travel can enjoy a relative competitive advantage over road-borne traffic for certain high value margin product such as oil and containers. Such advantages, however, are predicated on the ability of the railway to price its services well below that of trucks (on average at least 50 to 60% less). This reality means, practically, that the long-term financial sustainability of rail operators in Africa is put in danger by the fact that the overall market demand is not able to generate enough revenue, as shown to date by the experience with African railway concessions.

GPRS Targets

1.99 We are now in a position to estimate the gap between the current and feasible levels of infrastructure service provision. Table 1.15 reports the planned allocation under the GPRS2. The lion's share of expenditure appears once again from the planned expenditures, confirming the historical trends analyzed earlier.

Table 1.15: GPRS2 Cumulative Infrastructure Investment Plans, 2006-09

All GPRS 2006-09		
	<i>Total (US\$m)</i>	<i>% GDP</i>
Total	2015.78	17.30
Private Sector Competitiveness	713.76	6.12
<i>Of which: Transport</i>	213.58	1.83
Of which: Ensure provision, expansion and maintenance of transport infrastructure	198.64	1.70
Of which: Legal, Institutional and Regulatory Framework	14.93	0.13
<i>Of which: Energy</i>	103.40	0.89
Of which: Provide support to modernize and expand power infrastructure	0.053	0.00
Of which: Improve management and accountability in power utilities	0.11	0.00
Of which: Source for long term source of fuel for the thermal plants	14.44	0.12
Of which: Increased renewable energy/energy efficiency technologies	0.14	0.00
Of which: Ensure productive and efficient use of energy (both rural and urban)	88.64	0.76
Of which: Promote and encourage the participation of the private sector	0.01	0.00
<i>Of which: ICT</i>	1.98	0.02
Of which: Enhance the Development of ICT infrastructure	0.03	0.00
Of which: Promote the Development of E-strategies in key sectors of the economy	0.09	0.00
Of which: Promote the use of ICT in Education	0.33	0.00
Of which: Promote the use of ICT in Productive Activities	0.02	0.00
Of which: Build the necessary Capacity and Strengthen the Legal and Institutional Framework	1.52	0.01
Human Resource Development	1106.54	9.49
<i>Of which: Water and sanitation</i>	91.22	0.78

1.100 Table 1.16 reports very preliminary estimates of the funding gap against the planned expenditures under the GPRS (Table 1.15), whose annualized rates are reported in the first column. The second and third columns report a very rough and preliminary assessment of the funding gap, based on the investment needs calculated earlier, namely, according to the demand-based approach (Table 1.10) and the micro sectoral estimates. It is striking also to see how the energy and water sectors are confirmed to be the two sectors in desperate need of attracting more funding to cope with the crises that are seriously affecting their performance. The two estimates of the funding gap should be considered as a range from conservative (macro-based) to a more sector-based approach. The estimates are preliminary and subject to validation and possible revision. It should be noted that these are point estimates with some uncertainty, especially with respect to operations and maintenance and the ICT needs. As a result, we suggest that the *range of US\$340-430 million cover the likely annual funding gap for infrastructure in Ghana.*

Table 1.16: Ghana - Annual infrastructure funding gap (US\$m)

	GPRS2 investment	Funding gap ^{1/}	Funding gap ^{2/}
Transport (Roads)	198.64	-62.59	-51.36
Energy-electricity^{3/}	88.69	11.05	331.219
ICT	0.03	77.56	NA
Water and sanitation	91.22	25.56	58.78
TOTAL	379	53	340

Notes: 1/ The funding gap is assessed against the investment needs calculated based on the demand growth (Table 1.10).

2/ The funding gap is assessed against the investment needs calculated based on the sectoral micro estimates (a minus sign indicate a surplus, a positive sign indicate a deficit).

3/ Funding Gap 1/ refers to generation only, while the second Funding Gap 2 also includes transmission and distribution.

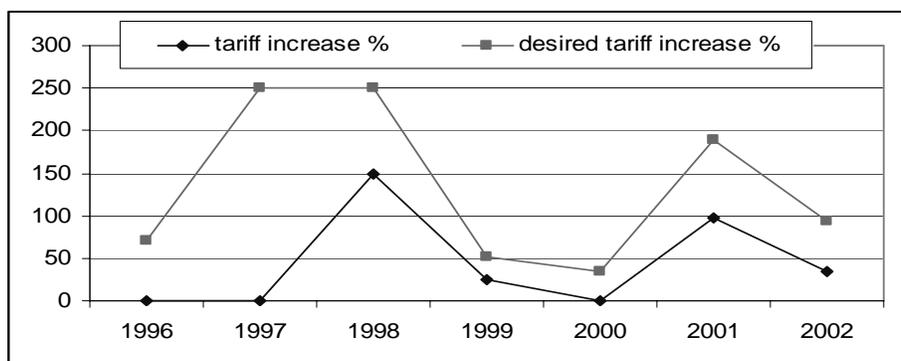
POLITICAL ECONOMY OF INFRASTRUCTURE POLICY AND INSTITUTIONS

1.101 This section critically reviews key sector management and regulatory issues needing attention to ensure progress in supporting an enabling environment for infrastructure investment.

Tariff Challenges

1.102 **Ghana's challenge is to manage the trade-off between cost recovery and affordability.** Ghana has a long history of attempts to reconcile cost-reflective tariffs and affordability. Tariff adjustments to reflect changes in cost (such as exchange rate or inflation) were implemented back in 1994 and 1997. The first intense opposition to tariff increases by several industrial associations, including the Civil Servants Association, the Association of Ghana Industries (AGI), and the Trades Union Congress (TUC) took place in May 1997, following an over 300% increase in electricity tariff. Following this episode, the president suspended the increase, and draft legislation was enacted to establish an independent regulatory agency. Even if less publicized, increases in urban water tariffs have also faced several challenges by the regulator (Figure 1.11).

Figure 1.11: Ghana - Urban water tariffs



Source: GWCL.

Energy

1.103 **The Government committed itself to reach full cost recovery but implementation has been slow.** Based on a transitional plan, the electricity tariff was expected to be gradually adjusted to full cost recovery levels, but the gap has widened in 2006-07. Residential tariff have not been raised since late 2003. As indicated in its Act, the PURC is mandated to set tariffs which will ensure both efficiency and equity in the provision of electricity and water services. Since its inception, the commission has

developed procedures to attain tariff levels that will not only make the service operators financially viable but also ensure that consumers get value for money. Furthermore, to prevent any erosion of tariff values through certain exogenous factors such as inflation, cost of oil, and generation mix, an Automatic Adjustment Formula (AAF) has been put in place to ensure the sustainability of service delivery, but this has now been suspended. Of particular concern in the case of electricity is the recent decision by the government to freeze the application of the revised PURC notified tariff schedule and to discontinue the quarterly automatic adjustments of tariffs.

Table 1.17: Ghana - Electricity tariffs

Tariff category	Effective 02/01/1998	Effective 09/01/1998	Effective 05/01/2001	Effective 08/10/2002	Effective 03/01/2003
Residential*					
0-50 (Exclusive "Lifeline" ^{1/} Block Charge)	2000	4000	7,800	14,000	18,000
51-150	50	120	242	400	550
151-300	50	150	304	400	550
301-600	75	220	570	960	960
600+	180	350			
Non-Residential					
0-300	80	220	436	750	800
300+	180	320	645	980	980
Service Charge (Cedis/month)	3000	5000	10000	20,000	20,000
Bulk supply tariff (BST)		95	194	359	412

Source: PURC.

Note: 1/ partly subsidized from August, 2002 (in the amount of 5,000 cedis) and from March 2003 (in the amount of 6080 cedis)

1.104 **Electricity tariffs still are highly politicized—and they should not be.** The pricing reform agenda has been the hardest and more politically sensitive area to tackle. Recent government decisions to disallow PURC gazetted tariff increases, has put energy pricing back into the political arena, which runs counter to the philosophy of independent sector regulation. It is unclear how the sector will pay for the new emergency thermal capacity in the absence of significant tariff increases. In the past, the government has preferred to use direct budget transfers both to VRA and GWCL instead of increasing their tariff. Accordingly, under its policy program under the PRSC-5, Government earmarked funding in its 2006 supplementary budget to compensate VRA for the difference between the average cost of electricity generation and the tariff agreed under the power supply agreement to VALCO. The industrial sector (including the VALCO load) is the largest consumer of electricity, followed by residential consumption and then the commercial sector. Excluding VALCO, residential customers consume the largest portion (54%) of the supply as of 2003. Most of the residential customers are urban households accounting for an estimated 95% of total household electricity consumption in Ghana and growing at an average of 11% annually. Commercial and service sectors consume 10% of electricity supply and the annual average growth rate is 9%. Per capita electricity consumption, at an estimated 358 kWh per year is below the SSA weighted average of 457 kWh per year.

1.105 **The government has undertaken modest institutional reforms in the electricity sector, including the creation of an HV grid company to operate the power transmission network but more progress is needed, especially in cost recovery.** It is crucial to address the financial issues in a timely manner, if the sector is to contribute fully to the achievement of Ghana's pro-poor and private sector-led

growth agenda. It is most urgent to put in place appropriate electricity prices (tariffs) that will allow for full recovery of long-run marginal costs and facilitate private investment in power generation.

Water

1.106 **Cost recovery is on a better track than in electricity.** At present water and sanitation services in rural areas partially covers recurrent costs through tariff revenues, while capital costs are covered to some extent by external grants and concessional loans. The tariffs for urban water (Table 1.18) are not set at levels sufficient to cover recurrent costs. Also, only a fraction of the capital costs are covered by grants and concessional loans. As a result, these public utility companies operate in chronic deficit, impacting the quality of the services provided and their long term sustainability. In the wake of another scale up in infrastructure investment attention needs to be given to ensuring that the benchmark rates of return that guide the levels for utility tariffs are set at an adequate level. Rural/small town water tariffs range from US\$0.60 to US\$0.93 per m³ in addition to capital costs, higher than the average urban tariff which is approximately US\$0.57 per m³, the social tariff set at approximately US\$0.5 per m³.

Table 1.18: Ghana - Urban water tariffs

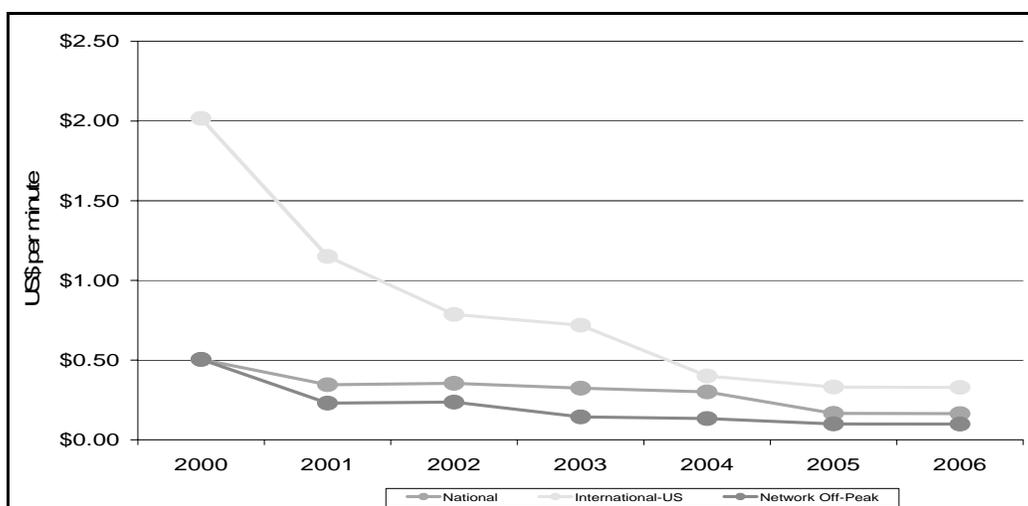
Categories of clients	Jun-99	May-01	Aug-02	Mar-03	Apr-04
Residential					
Less than 10 m3	500	990	3000	3500	4031
Between 11 and 20 m3	500		3000	3500	4031
Between 20 and 40 m3	1300	3600	4500	4800	5528
More than 40 m3	1820	3600	4500	4800	5528
Commercial and industrial					
Less than 10 m3	1820	4000	5500	6000	6911
Between 11 and 450 m3	2230	4000	5500	6000	6911
More than 450 m3	2230	4000	5500	6000	6911
Public administration					
Single tariff	1560	3600	5000	5400	6220
Unmetered premises					
flat rate per house per month	6500	9900	22000	25000	na
Boreholes, wells hand pumps					
flat rate per house per month	1500	3000	4000	5000	5758
Premises without connection					
per 1000 m3	400	1000	3000	3500	4031
Sewerage surcharge (%)		35	35	35	35

Source: PURC.

Telecom

1.107 **There are two major issues in the telecom sector: prices and the GT monopoly.** Prices still are not right. Whereas telecom tariff are declining considerably for mobile services (Figure 1.12), the high cost of international connectivity and lack of quality control remain formidable challenges. The price of international connectivity in Ghana is reasonable by the standards of the region (wholesale prices on SAT-3, the international submarine cable system in Ghana, have fallen by more than 50% from 2003 to 2006) but remains high in comparison with competitors in the Business Process Offshoring (BPO) market such as India. With an average price of US\$10,000 for a full circuit to the UK or US charged to a BPO company, Ghana connectivity prices still are almost twice as high as India's connectivity prices to the same destinations. One of the causes of this is the effective monopoly of Ghana Telecom over access to the SAT-3 cable. Quality of service also is an acute issue and stems from the lack of Service Level Agreements, quality of service guidelines and the resulting lack of quality of service enforcement.

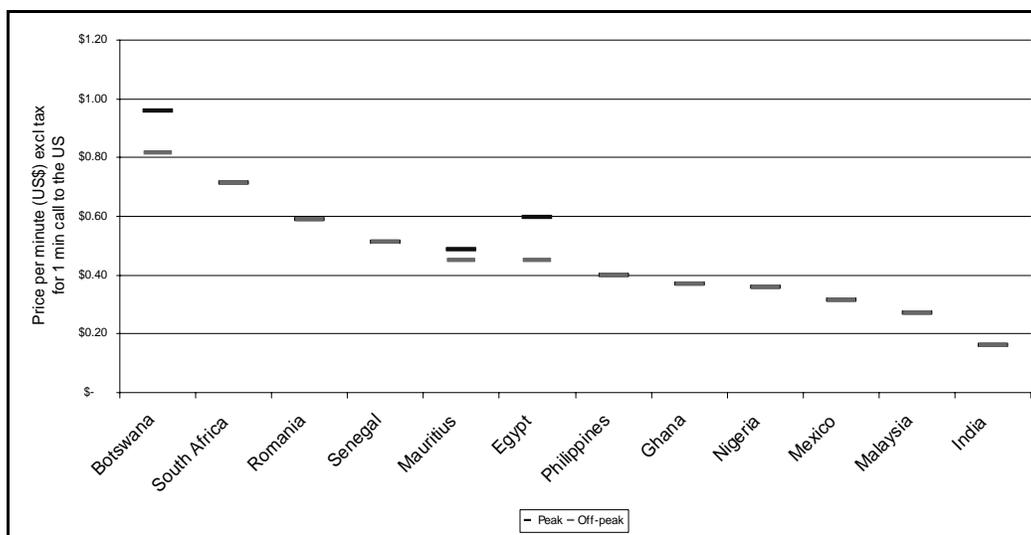
Figure 1.12: Ghana - Areeba mobile retail call prices, 2000–06



Source: Areeba.

1.108 **The primary reason for this problem is GT’s monopoly over access to the submarine fiber-optic cable (SAT-3) connecting the West coast of Africa with Europe.** Tighter regulation of access to this cable, ensuring non-discrimination between operators and liberalizing the market for capacity on the cable would significantly improve the availability and quality of international connectivity. This direct evidence of wholesale international connectivity prices is consistent with data on the retail price of services which use international connectivity as a key input. This is shown in Figure 1.13.

Figure 1.13: Ghana vs. other countries: Price of international outgoing call to the US (mobile)



Sources: Operators’ websites.

Political economy of tariff reforms

1.109 **Price changes have winners and losers: the winners tend to be small in numbers while exerting significant political influence while losers tend to be large numbers of individual customers and small firms.** Understanding these distributional effects should help focus policy choices so that they serve the broadest public interest and not special interest groups. Price reforms are generally difficult since they challenge vested interests and create new political and/or economic winners and losers. In many developing countries, there are powerful entrenched interests posing a barrier to reform and in

many cases threatening to reduce the effectiveness of reforms once these were put in place. Undoubtedly some groups of customers have more direct influence over tariff reform because of their power and the fact that are well organized. The literature on regulatory capture suggests that where interests are concentrated and the costs of organization are low, high consumption industrial customers will have sufficient political power to influence the tariff policies for their narrow purposes. Where concentration of interests and power in the regulated industries is a problem, formal regulatory independence may be insufficient. Regulators in such environments may be less inclined to serve the public interest when making regulatory decisions.

1.110 In Ghana, VRA and VALCO have been perhaps one of the most influential stakeholders in tariff reforms. VRA proposes the initial tariffs that will then form the basis for subsequent negotiations. Historically, VRA's power was particularly strong at it was able to bypass the Ministry of Energy, reporting directly to the President. In turn, VRA generated substantial foreign exchange from sales to a major international aluminum company, VALCO. VALCO is an intensive energy user, as it consumes a third of the electricity generated from the Akosombo dam. As documented earlier, VALCO has been able to negotiate very favorable (below cost) tariff rates under a long term contract with VRA and being effectively outside the scope of PURC's tariff regulation. Finally, there are a number of unions and industrial association whose opposition to tariff increases has been powerfully represented through the press.

1.111 By contrast, ordinary consumers or small firms tend to be the main losers. They find it more difficult to organize themselves sufficiently to exert political influence and are very likely to be the most vulnerable from tariff increases. In fact, they are the biggest losers via cuts in electricity service as a result of underinvestment and the tariff policy. Simply put, because of inadequate tariff policy, they are penalized by the lack of access or poor quality of service. A relevant exception, however, is the consumers that represent the bulk of voters in densely populated, politically important *urban* areas. This category of residential customers can exert considerable influence particularly around electoral periods. In the case of Ghana, their power is enhanced because these less organized customers' voice influences the large number of FM radio stations. Finally, there are a number of consumer associations which in theory have lower influence, because of their small size and funding, but in practice they can also influence the process, since they participate at PURC public hearings.

Affordability

1.112 Not getting affordability right hurts reform. The difficulty of low income households as consumers to absorb further price increases is often used as an argument against tariff reforms. However, detailed information on the dimension of the affordability problem, as well as the best way to tackle energy poverty is in many cases scarce. There is now an established literature on how to address affordability concerns. Lovei *and others*, (2000) evaluated a range of strategies aimed at maintaining utility services to the poor according to the following five criteria: (1) the extent to which the poor are being reached (i.e. coverage); (2) the share of the subsidy that goes to the poor (i.e. targeting); (3) predictability of the benefit for the poor; (4) the extent of pricing distortions and other unintended side effects due to the subsidy; and (5) administrative simplicity.

1.113 Lifeline tariffs should work for Ghana, at least partially. As many other developing countries, Ghana opted for lifeline tariffs as the means to reduce the cost of energy supplies. Lifeline tariff usually come in two- or three-block versions. Two-block lifeline tariffs have a lower tariff for energy consumed up to a certain limit, usually set quite low at a level that is approximately minimal or "lifeline" energy consumption. Three-block lifeline tariffs introduce a third, higher tariff for energy consumed over a certain limit, to discourage very high levels of use (which may be a sign of inefficiency) and/or to encourage fuel switching. The latter is particularly important in cases in which electricity is used for heating when cheaper, more efficient alternatives, such as gas, may be available.

1.114 The lifeline tariff in Ghana has been a part of the tariff system for more than a decade, but the problem has been the lack of adjustment of the tariff formula. It was created to minimize the cost

of billing small accounts. Ghana's residential tariff structure originally was based on five blocks defined according to the level of consumption. The five blocks were reduced to four, then three in May 2001 and March 2003, respectively, during the tariff review process. The lowest group offers a flat rate to customers with consumption equal or below 50 Kwh per month. Lifeline tariff became partially subsidized by the government only as of August 2002. The government pays a subsidy of 5,000 cedis to the electricity supplier per 9,000-cedi lifeline customer. In 2002, when the automatic adjustment formula was set to start, to protect this block from the tariff increase, the government increased the subsidy to 6,080 cedis. However, the adjustment with the formula did not take place until October 2003. In late 2006, PURC proposed the abolition of the lifeline block, but it may be reintroduced once full cost recovery tariffs are applied.

1.115 Demand-side measures have received increasing attention in recent years. This is due to growing understanding of the environmental impacts of energy use, in particular the climate change impact of greenhouse gas emissions from fossil fuels. Energy efficiency measures have been shown to reduce energy bills by 20%–40%—an effect equal to or greater than that achieved by subsidies, and at lower costs too (World Bank 2003). Furthermore, such measures are mostly required on a one-off basis. The impact of such measures can be immediate in terms of eliminating for example, supplemental electricity use.

1.116 There are at least four principal barriers to reducing energy demand, which must be addressed with specific, targeted measures such as effective metering. They are: (i) availability of finance, since most energy-efficiency improvements require capital expenditure that may only be recoverable (through saved energy costs) over a relatively long period of time; (ii) lack of awareness and coordination at the government level; (iii) lack of metering and poor revenue collection discipline; and (iv) lack of public awareness of alternative energy efficient technologies. From a survey administered by KITE in 2003, it emerges that there is significant difference between urban and rural respondents in terms of their awareness of the link between consumption and lower bills. Close to 70% in rural areas were unaware of such link compared to half in urban areas. The KITE survey also revealed that consumer attitudes toward arrears were generally lax, as the existence of arrears often did not imply disconnection. Almost half of the households interviewed reported that they had been disconnected, particularly in slum areas. A final concern is seeking illegal connection or meter tampering, particularly frequent after the customer has been disconnected. Prepaid meters—as a key measure to address these concerns—have started to be installed in major cities to reduce non-technical losses and to increase collection rates. Progress has been slow, however, due to lack of funds to buy prepayment meters. Load limiters were also introduced for lifeline customers who were billed on a flat rate basis to assess the amount of electricity used and adjust the flat rate tariff.

1.117 Finally, all the measures outlined above also need to be supported by an appropriate framework for social protection of the most vulnerable and needy. Also needed are improved building regulations to ensure a higher quality of housing and enforceable minimum standards for energy efficiency of appliances. Improving energy infrastructure is clearly of great benefit to all consumers in underserved areas. Depending on the particular demographics of a country, this may or may not be pro-poor. A uniform infrastructure may serve to equalize energy costs across the country, but this may also entail hidden cross-subsidies to rural and other more sparsely populated areas. Lower connection and/or fixed charges, while not targeted measures, tend to be pro-poor as they reduce barriers to poor people using small amounts of energy within their affordability range.

Energy

1.118 Implementing reform in the energy sector has been slow even though the issues are long-standing and well known. A Power Sector Reform Committee was set up to define the key milestones of the reform process, but the implementation of the reform has been slow. The Ministry of Energy (MoE) is responsible for energy policy formulation and implementation, while the Energy Commission, set up under Act 541 in 1997, is responsible for energy policy and strategy advice, national energy planning, licensing, and technical regulations. The Public Utilities Regulatory Commission, set up under Act 538 in

1997, regulates electricity tariffs and customer services. The electricity generation and transmission functions lie with Volta River Authority (VRA), while electricity distribution in the Southern part of the country is the responsibility of the Electricity Company of Ghana (ECG), the Northern Electricity Department (NED) is responsible for distribution in northern Ghana. The sole private involvement in the sector is the joint venture arrangement between VRA and CMS (USA) in the Aboadze thermal power plant that is now being wound up and the government intends to take back full ownership of this plant. The power sector remains largely state-owned. The envisaged restructuring of VRA and ECG is only at the beginning.

1.119 There is a disconnect in planning functions between MoE and the utilities VRA and ECG. As a result, power sector expansion projects—especially for generation of power and rural electrification—are being pursued in an uncoordinated manner with no clear responsibilities assigned. This lack of clarity in sector management is apparent and comes at a high cost—including the load shedding in 2006/2007. It is unclear why the 2001 Energy Sector Masterplan is neither being used nor implemented and updated.

1.120 Innovations, however, are allowing progress in rural areas. Ghana has led several innovative programs to extend reliable energy access to rural areas, led, however by political rather than economic criteria. The MoE instituted a National Electrification Scheme (NES) in 1989 as the principal instrument to achieve its policy of extending the reach of electricity to all parts of the country over a 30-year period. The first phase of the NES entailed the electrification of all district capitals and towns/villages on-route to the district capital under the National Electrification Project (NEP). The NES is implemented by the Ministry of Energy (MoE), which procures equipment and hires works contractors. MOE then hands over the assets to ECG or NED as the case may be depending on the assets geographical location. ECG and NED are responsible for the operation and maintenance (O&M) of the assets. To date, the bulk of resources for the ongoing NES come from donors. The National Electrification Fund (NEF), which was established in 1989, is managed by the MoE. The NEF collects approximately US\$575,000 annually through a levy on electricity bills. With these funding sources, the government currently provides almost 100% capital subsidy to the NES. At the current tariff level of US\$2/month for customers consuming up to 50 kWh/month, ECG and NED claim not to be able recover the O & M costs for rural electrification.

1.121 The other pillar of the National Electrification Scheme is the government's Self-Help Electrification Program (SHEP). It supplemented the NEP and commenced in 2001. Under the SHEP, communities located 20 km from the national grid are qualified for fast-track electrification if they procure all the required low voltage poles. Currently, the Self-Help Electrification Program (SHEP) is implemented by the MOE, and operation and maintenance (O & M) are then handed over to the distribution companies—ECG and NED. Whereas the SHEP program has made substantial progress, this institutional arrangement, however, mixes policy functions with implementation, resulting in conflicts of interest. It makes MOE vulnerable to political interference in the selection of communities to be electrified. In addition, the lack of transparency and clarity on the governance of the SHEP and National Electrification Fund (NEF) has led to diminished donor funding in recent years. Furthermore, the SHEP program has only focused on grid extension to date.

1.122 One of the key challenges in rural electrification is managing the trade-off between social and commercial goals. This is due to several reasons, but can also be linked to the inevitable trade off between political imperatives underlying poverty reduction targets to extend access to electricity to as many communities as possible and the commercial objectives of maximizing the density of currently connected communities to ensure the maximum returns from investment. This strategy led to a higher number of new customers with low consumption and creates upward pressures on tariffs for other categories of customers. An integrated approach is needed to clearly define grid vs. off-grid areas in the planning process, particularly since the off-grid service providers do not have access to the financing mechanisms. Finally, the current uniform tariff structure and the tariff level have caused financial strains on utilities, and are identified as a major barrier for future access expansion.

1.123 **The Government is now initiating the third phase of its electrification program.** Under this phase, it will develop investment appraisal and funding mechanisms that increase the transparency of the program, promote private sector innovation, and ensure that the program does not impose an uncompensated financial liability on the distribution companies. Given that access expansion now needs to reach consumers with lower incomes than in the previous phases, Government must place greater emphasis on removing identified obstacles that hinder consumers from connecting to power supply after the power lines have been installed in their area, including reducing connection fees and promoting low-cost house wiring techniques.

1.124 **The Government also is ready to make institutional changes to its electrification program.** Instead of relying entirely on ECG to extend the grid to new areas, it is planning to modernize its rural electrification policy to allow both grid-based electrification and off-grid alternatives to coexist and complement each other. In addition, the government wants to promote renewable energy alternatives in areas that are outside the reach of the national grid through innovative credit facility mechanisms that both lower the upfront cash cost of solar lighting equipment for consumers and improve the business environment for small energy entrepreneurs. These measures combined can substantially increase the number consumers who can benefit from electricity. In pursuit of these goals, the government plans to set up a Rural Electrification Agency in 2008.

1.125 **Important policy changes underway should help accelerate the electrification drive.** The Government has agreed to the principle of separating the policy making function from the implementation function for access expansion. While the MOE would maintain the policy making function, an autonomous or semi-autonomous Rural Electrification Agency (REA) will be established to provide oversight to the rural electrification program and manage the Rural Electrification Fund (REF). The REF can be sourced from increased levies on electricity bills, government budget and bilateral/ multilateral donors. The REA should be given a high degree of operating autonomy, and stay clear from political interference to selection of investment projects. Other critical elements of the new access expansion framework include ensuring a level playing field among multiple technology options and providers, ensuring that providers recover the full cost of service and using a transparent criterion for project selection and determination of subsidy levels. The main functions of such a REA include: (i) develop rural electrification strategies and propose regulatory guidelines; (ii) manage the REF, which will provide partial capital subsidies to all service providers, based on transparent rules, operational guidelines, and procedures for the REF (including subsidy levels, eligibility criteria, selection and evaluation process); (iii) Supervise the implementation of rural electrification, setting up technical and operational standards and ensure enforcement, providing a level playing field between grid expansion and off-grid options, based on sound financial and economic principles; and (iv) provide capacity building, training and technical assistance and ensure compliance with environmental and social safeguards and procurement requirements.

1.126 **Ghana must quickly restore financial viability of the sector.** Commercial viability is a prerequisite for a successful and sustainable access expansion program. In off-grid areas, REA will work closely with PURC and Energy Commission to develop “light handed” regulations that allow cost-recovery differentiated tariff scheme for isolated grids. In addition, there is room to reduce the costs of connection by adopting low-cost technologies and increasing the load demand through higher connection rate in electrified areas and more productive use applications. The service providers for off-grid options can be extended to the private sector and community-based cooperatives. Regarding, ECG and NED service providers for grid-based options it is important to ring-fence their line of business, by establishing a separate rural electrification office and a separate dedicated account, so that the resources for rural electrification will not get diverted to urban operations.

Water and sanitation

1.127 **Behind the “silent” water and sanitation crisis are institutional arrangements that are a central challenge in these sectors.** The roles and responsibilities of the different regulatory bodies handling the management of water resource and economic regulation is sound. The Water Resources

Commission (WRC) oversees the management of the country's water resources, whilst Public Utilities Regulatory Commission (PURC) provides economic regulation for urban water supply. Working in collaboration with the sector agencies the Ministry of Local Government and Rural Development (MLGRD) sets the policy framework for the development of local communities and oversees the performance of local administrations—Metropolitan, Municipal and District Assemblies. The District Assemblies (DA) formulate and implement development plans, programmes and strategies for the effective mobilization of resources necessary for the overall development of their areas. District Water and Sanitation Teams (DWSTs) represent the DAs in all water and sanitation activities and ensure the integration of the sector in the planning agenda of the districts. DAs support community level structures—Water and Sanitation Committees (villages) and Water and Sanitation Development Boards (small towns) to function as autonomous and accountable entities in the management of rural/small towns water and sanitation sectors.

1.128 **With respect to sanitation, the delineation of roles and responsibilities between the MWRWH and MLGRD is not sufficiently clear.** This is reflected in a lack of co-ordination between the two bodies. Sewerage, previously the responsibility of GWCL, has been transferred to metropolitan, municipal and district assemblies, even though there is little capacity at this lower level to take a holistic approach to its management. The authorities might want to pay closer attention to the sanitation sector—in institutional oversight and funding, as well as in the effective enforcement of laws and regulations.

1.129 **Ghana has embarked on a restructuring of the water sector, including the separation of the management of rural water delivery from urban water.** This is being done through the establishment of the Community Water and Sanitation Agency (Act 564, 1998), an autonomous body mandated to facilitate the provision of safe water and related sanitation services to village communities and small towns, the Water Resources Commission (Act 522, 1996) and the Public Utilities Regulatory Commission (Act 538 of 1997). There was also the conversion of GWSC into an asset holding company (GWCL) in 1999 to pave the way for private sector participation to improve water supply delivery.

1.130 **There are challenges, however, in empowering the bodies at the district level and in attracting private sector participation.** Urban water supply has been separated from rural and small towns water supply. Community Water and Sanitation Agency (CWSA) provides District Assemblies (DAs) with support in the delivery of water and sanitation services, whilst the Ghana Water Company Ltd. (GWCL) undertakes urban water supply. Urban sanitation (sewerage) has been ceded to Local Assemblies, but effective empowerment of them remains a formidable challenge. The Ministry of Water Resources, Works and Housing (MWRWH), through a Directorate of Water, is responsible for setting and monitoring the implementation of policies on water and water-related sanitation, and co-ordinate activities of sector agencies. The objective is to leave the government to keep to policymaking, facilitation and regulation, leaving the private sector, user groups (individuals and communities) and NGOs to participate in the decision-making process and deliver goods. Attracting and retaining qualified personnel in the public sector has been problematic, particularly in the District Assemblies. As a result, in several Districts, these departments are either non-existent or staffed by poorly qualified personnel. In theory, a rural water levy should contribute to financing the rural water sector: urban water consumers are charged 2% of their bills as a contribution to the fund created to support the development of rural water facilities. GWCL is responsible for the collection of the fees and its transfer to the CWSA. However, in practice, a fixed transfer of 500,000 million cedis per quarter has been made without any detailed accounting records for the levy or links to the actual volume of water consumed.

1.131 **More attention is needed to sustainably manage water resources.** The provision of more efficient economic and social services such as water supply, irrigation, hydropower, fisheries and wetlands protection depends on the improved availability of water resources. Studies on groundwater availability also are being carried out to promote more efficient approaches to exploration and a reduction where possible in the cost of drilling boreholes. Flood and drought protection measures that mitigate impacts on household property and incomes of the poorest and most vulnerable segments of society also are being pursued. The issue of the falling water levels of the Volta River and the consequent power rationing is a vivid example. On water quality, indicators show that the quality of water from Weija

(serving parts of Accra) has improved through water resources management interventions—education, provision of alternative sources of waste disposal etc. This will impact positively on the cost of water production, and generate savings for the water utility. The creation and promotion of buffer zones which have multiple uses are used for the protection of water bodies and for economic activities for example, production of wood products, fruits, forage that are adapted to riverside areas. This is currently ongoing in parts of White Volta Basin and a policy is being developed accordingly. At the micro level the subsector is promoting the provision of check-dams (dug outs to harvest rainwater for agricultural purposes).

Transport

1.132 Institutional atomization of the transport sector is a key problem. In the early 1970s, transport operations in Ghana were managed under two ministries: Ministry of Transport and Communication (MTC) and Ministry of Works and Housing (MWH). Air, rail, ports and harbours were under MTC whereas road transport was under MWH. Ghana Highway Authority (GHA) was formed in 1974 to plan, develop, maintain, protect and administer the public highways, ferries, road camps, traffic devices and any related works. In 1977, all feeder roads were transferred from Social Welfare to GHA but in 1980, they were transferred to the Ministry of Local Government. In 1982, GHA and the Feeder Roads Department were transferred to the Ministry of Roads and Highways (MRH). Urban Roads Department was established in 1988 under MRH. In 1997, MRH was re-organized as the Ministry of Roads and Transport (MRT) incorporating other transport modes including railways. In 2003, MRT was re-organized to exclude railways, ports and harbours, which were placed under a new ministry, the Ministry of Railways, Ports and Harbours (MRPH). The organization of MRT is sound with respect to road infrastructure since all the roads in the country are managed and operated by one ministry. However, the fragmentation of MRT into two ministries is a complication from the institutional efficiency viewpoint. Developing and strengthening appropriate legal, institutional and regulatory framework for the sector remain formidable challenges. Also, there is a need to separate policy formulation, regulatory, asset management and implementation, and enforce the Traffic Act and regulation based on Road Traffic Act 2004, Act 683, including axle load limitation.

1.133 GoG is implementing a national transport policy. The Government is implementing a national transport policy focusing on an integrated multi-modal approach. In the past, each transport mode developed and implemented specific policies without considering its impact on the development of other modes. Within the context of the Comprehensive Development Framework (CDF), the Government of Ghana and development partners developed the Road Sector Development Program (RSDP) as an integrated sector-wide approach (SWAp) to road maintenance, construction, and management that encompassed the entire national program for the roads subsector from 2001–06.

1.134 Major progress is being made with Road Funds. Ghana has made considerable progress in establishing a second-generation road fund. In 1985, Ghana was one of the first countries in Africa to establish a Road Fund under an administrative arrangement. However, road maintenance continued to face difficulties such as irregular and insufficient releases and inadequate financial management system. Consequently, in 1997 a “second-generation” Road Fund came into being through a Road Fund Act. The key characteristic of a second-generation road fund include a sound legal basis (including separation of road fund administration from service provision), strong oversight of operations (through a broad-based private/public board, secretariat to manage daily business), financial autonomy (coming from the effective adoption of road user charges), and sound financial management systems and accountability through the regular technical and financial audits.

1.135 Ghana ranks highly in terms of most legal criteria for the roads sector. This is particularly so compared to the other peers, in terms of legal basis, within the context of the Comprehensive Development Framework (CDF), as an integrated sector-wide approach (SWAP) to road maintenance, construction and management that encompasses the entire national program for the roads subsector over the period 2001 to 2006. A strong oversight is exercised by the Board members, the majority of which is coming from the private sector (including representative nominated by the Association of Road Contractors, Ghana Private Road Transport Union, Ghana Private Enterprise Foundation, Ghana Road

Haulage Association, Ghana Institute of Engineers, Ghana National Association of Farmers and Fishermen). However, this legislation makes no provision for an independent secretariat. Moreover, the Minister of Roads & Transport representative is the Chairman.

1.136 **The road sector's significant financial autonomy is reflected in one of the highest share of resources coming from user charges** (equal to 97%). Only Kenya, Malawi and Zambia have reached full financial autonomy. Ghana, as many other African countries carries out independent technical and financial audits, but with somewhat disappointing results. Notably, there still exists interference from the Ministry of Transport in management of road funds with inadequate planning, execution and supervision of road maintenance.

Table 1.19: Benchmarking of selected SSA road funds

	Board Members	Board with Private Majority?	% Share of Road Fund from user charges (1)	% Share of road user from fuel levy	% Coverage of routine maintenance	% Coverage of total maintenance (2)	Fuel Levy (3) US Cents/ litre Petrol Diesel		% Direct channelling of charges
Ghana	13	Yes	97	87	100	70	6.6	6.6	100
Kenya	13	Yes	99	96	50	50	8	8	95
Madagascar	9	No	76	100	80	30	4	3	75
Malawi	13	No	100	90	40	50	8	6	100
Mali	11	Yes	33	75	67	40	3	3	0
Namibia	5	Yes	75	75	80	65	15	15	100
Tanzania	9	Yes	85	94	100	-	8	8	100
Zambia	11	No	100	100	100	30	5	5	0

Source: RMI-Matrix 2006.

Notes: (1) Road User Charges = Fuel levy + road tolls + transit +overloading fees
 (2) Total maintenance denotes all maintenance works (routine and periodic) excluding rehabilitation
 (3) This is the Fuel levy actually collected (not amount legislated)

1.137 **Ghana performs highly in terms of collection of road fund resources but less well on ensuring short-term funding for road maintenance** (Table 1.19). Another interesting set of indicators is related to the availability and disbursement of funds. On average, road funds have two-month equivalent of road maintenance works as a minimum level of available cash. This implies that road funds contribute to the reduction of time in paying contractor bills. The reduction in such delays should lead to reduced road maintenance unit costs in the long run. In this respect, Ghana is underperforming as the cost coverage is only equal to one month equivalent of road maintenance. The average time for paying undisputed contractors bill is one of the highest in the region, equal to 90 days, versus an average time of 32 days. It is yet surprising to find a very low average rejection rate of bills equal to 3% which might reflect a weakness in supervision and control of maintenance works and/or a lack of internal audit.

Telecom

1.138 **The National Communications Authority (NCA) was established in 1996 with limited autonomy from the government.** NCA's performance has been questioned on a number of occasions, particularly regarding the inadequate regulatory instruments and proactive capacity to regulate the sector. There is continued need for a thorough reappraisal of the NCA's operations. The goal would be to develop a strong, independent, and self-funding regulatory institution to enable rapid market expansion and accelerated competition.

1.139 **Implementing the National Telecommunications Policy (NTP), and in particular improving the efficiency track record of the NCA is important.** The regulator, a new NCA board was appointed in August 2005 with leading figures from the private sector. NCA has recently come up with a blueprint for the sector. This should allow Ghana to design a strategic Action Plan with measurable performance indicators. The incentive to accelerate this formulation of a vision for the sector has been stimulated by the international harmonization of regulatory regimes in the region.

Table 1.20: Benchmarking of Selected SSA Road Funds

	COLLECTION OF ROAD FUND (RF) RESOURCES						AVAILABILITY & DISBURSEMENT OF FUNDS															
	Sources of RF Revenues %		% of RUC collected by		Fuel Levy % of Pump Price		Regularity of Collection		Cost Cov (1)		Allocation of RF resources: Types of Maint. (% of Budget)			Allocation of RF resources: Types of networks (% of RF Budget)			Ave. period for paying undisputed bills (days)		Rate of rejection of bills		RF Management	
	RUC	Oth	RF	Other s	Petrol	Diesel	Period	Months	Rout	Per	Prim	Rur	Urb	W/O reject	With reject	% of bills	No.	Budg %				
Ghana	100	0	100	0	8.5	9	fortnightly	one	26	47.5	37	32	31	3	-	-	12	0.2				
Kenya	96	4	0	100	7.6	8.9	monthly	one	44	40	57	28	10	90	135	-	48	-				
Madagascar	76.4	23.6	100	0	4.28	3.14	monthly	two	33	42	72	14	12	7	22	10.3	23	2				
Malawi	99	1	96	4	6.5	5	monthly	two	60	10	45	25	10	5	20	2	0	-				
Mali	25	75	0	100	0.5	0.6	monthly	three	100	0				7	15	20	11	2.7				
Namibia	48	52	100	0	15.4	15.4	daily	one	37	52	80	10	10	30	60	<5	16	1				
Tanzania	100	0	100	0	8.2	8.6	monthly	one	29	29	70	30	0	-	-	-	10	1.1				
Zambia	100	0	100	0	6	7	monthly	three	80	20	50	33	17	5	30	0.5	11	5				

Source: RMI-Matrix, 2006

(1) Coverage of operation costs indicates capacity of RF to pay contractors continuously

Green denotes good indicator (characteristic of second generation RF)

Red denotes poor performance (characteristic of first generation RF)

1.140 **Politics may dominate economics in the sector.** The original Act failed to safeguard the NCA's independence from politically motivated intervention. All members of its Board of Directors were appointed by the President and could be removed by the President at any time "for stated reasons" (Republic of Ghana 1996). Board members are appointed for a term of four years and can be re-appointed on completion of term; terms are not staggered. Thus, nothing prevented the President from replacing the board after each election or whenever he deems advisable. The NCA's independence was further weakened by its subservience to the Minister of Communications. The Act specifically empowers the Minister to instruct the NCA: "The Minister may give to the Authority such directions of a general character as appear to him to be required in the public interest relating to the discharge of the functions of the Authority" (Republic of Ghana 1996). Parties that disagree with a ruling of the NCA must first appeal to the Minister. Only if they are unsatisfied with the Minister's ruling can they appeal to the High Court.

1.141 **Regulation still matters in telecoms.** The NCA amendment bill is a result of numerous complaints from industry operators about the regulations. The amendment expects NCA to make itself capable of considering how competitive constraints in Ghana might impede anticipated future developments in the telecom industry. After its passage, stakeholders in the industry expect the regulator to use various platforms to explain in simple terms, for the benefit of the consumer, industry practices that relate to call termination on each mobile network, which subject is key to the affordability of services by consumers and users of mobile phones.

1.142 **One of the key regulatory issues facing the sector at the moment is that of interconnection.** There have been a number of disputes between operators over the levels of interconnect charges and payment. Other key regulatory constraints include lack of clarity/on the rules of engagement for Voice over Internet Protocol (VoIP) and inter-operability of infrastructure. The harmonization of regulatory regimes in West Africa could go a long way in addressing this issue.

1.143 **Progress had been slow up to now in developing a comprehensive legal and regulatory framework to improve sector competitiveness and to reduce the risk of investment.** It is encouraging that currently four Information and Communication Technology (ICT) bills have been prepared, including the New Telecom Bill, the National Communications Authority Amendment Bill, the Electronic Transaction Bill and the National Information Technology Agency (NITA). These bills are reviewed by the Cabinet before being submitted to the Parliament for approval. The new Telecommunication Bill will provide regulations for control of electronic communications as well as broadcasting. After being passed, it will in relation to electronic government (e-government) applications and intra-government communication. The e-government project is expected to help increase ICT-based jobs and also raise export-led revenues generated by the ICT industry by approximately US\$90 million per annum. It also is intended to protect the interest of subscribers, purchasers and other users of electronic communications, networks and broadcasting services. The Electronic Transaction Bill seeks to regulate electronic communications and transactions. This is in accordance with National Information and Communication Technology policy, to remove and prevent barriers to electronic communications and transactions. It also aims at promoting legal certainty and confidence in electronic transactions. After passage, the Act will oversee the recognition of electronic messages and original writings, secure electronic records and digital signatures. When established, the National Information Technology Agency (NITA) the agency will perform all the functions of a certifying agency established under the Electronic Technology Act (ETA) and also monitor the implementation of national information communication technology policy. It also will resolve all matters involving domain names within the Domain Name Register under the ETA in accordance with the provisions of the NITA Act; and monitor, enforce and ensure effective compliance with conditions contained in licenses and tariffs. The reasons for the slow uptake of e-government applications include: (i) lack of technical skills in government; (ii) weak IT infrastructure, including limited penetration of computers; and (iii) limited public resources to finance e-government applications.

1.144 **There are good prospects for rural areas thanks to rural telecom fund.** The Government is charging all operators one percent of their revenues for a fund for rural telecommunications, this fund, called GIFTEL. Progress has been slow but prospects are good. GT and Westel were given the right of first refusal over all regions of the country during their first two years, after which underserved areas not claimed were to be opened to competitive bidding. One firm, Capital Telecom, was the only bidder on an earlier plan to initiate service to rural areas in the South. Capital reports one site in service and only several hundred customers, most of them in district capitals and similar semi-urban areas.

Private Sector Involvement and Introduction of a Competitive Market Structure

1.145 **Making greater use of public-private partnership agreements for infrastructure projects, while protecting public finances by adequately provisioning for the guarantees provided, is essential.** It is important to instill in the public sector a new Value-for-Money and productivity-enhancing mindset that will lead to better use of resources and wider space for private sector innovation in the new, technology intensive sectors and non-traditional export industries that offer opportunities for leapfrogging and diversification. Screening public investment proposals, requiring that project selection is guided by clearly defined priorities, and the preparation of pre-feasibility studies, including the calculation of net present social value using either cost-benefits or minimum cost analysis. These steps should allow funds to flow on the margin to projects with the highest rate of return or the lowest cost of delivery to beneficiaries. The issue of guarantees is particularly important because with the completion of HIPC and MDRI there are renewed opportunities for Ghana to borrow from international capital markets, especially in an environment of external liquidity. Although the Ghanaian debt management is considered to have only moderate with remaining debt reporting problems, improvements will be needed in integrating debt management into the budget and increasing controls over borrowing by state-owned enterprises. Also, there will be the need to better track and provision of guarantees, as there have been several instances where under-provisioned guarantees have entailed unplanned budget expenditures.

Telecom

1.146 **Getting the residual SOE assets right is essential.** Implementing a clear strategy for the remaining state-owned assets in the context of the National Telecommunications Policy is crucial. At present, there is an effective monopoly in the access to the SAT-3 cable, almost doubling the rates charged for comparable connections, for example, from India. The planned privatization of Ghana Telecom and the upgrading of the regulations on access to capacity on SAT-3, following the expiration of exclusivity requirement on the SAT-3 contracts, will be important first steps in reducing the wholesale price of international connectivity. Also, actions by the government, as well as the new proposed Telecommunications Act, should help establish an environment conducive for private sector investments. This is important because there are concerns that a national fiber optics network may not be financially viable in some parts of the country, leading the Ghanaian authorities to consider the option of completing the existing the fiber optics backbone by publicly financing the investment by a state-owned enterprise. However, in doing so, the government might limit the opportunities for complementary private sector investment in the sector, which is critical for reaping the full benefits of this investment. Since there are concerns about possible administrative discretion in setting rates and in providing access to the backbone, there is the need to have in place a system of cost-based regulation of interconnection, a formal dispute resolution procedure, and cost-base terms of access to the network

1.147 **Both privatization of GT and Westel are expected to be completed by December 2007.** Three companies have been short-listed to acquire a majority 66.7% of the second national operator (SNO) Westel. The firms are Celtel, African Soft, and Etisalat/Kinz Telecom. The scope of the SNO licence granted to it in 1997 covers fixed and wireless services, including basic (voice) telephony, paging, international long distance, payphones, data communications, private networks, and satellite communications. Crucially, the licence also contained the option for a cellular licence, which the operator

had not sought to exercise until this point. However, in November 2006 Westel was granted a national mobile licence, presumably as a prelude to the government selling a stake in the operator. It is instructive to draw the lessons from the unsuccessful privatization (Box 1.4).

Box 1.4: Political Economy of Private Sector Participation in Telecom

Ghana Telecom and Westel were renationalized in 2005, following the settlement of disputes between strategic investors and the government. A management contract signed with Telenor Management Partner (TMP) in 2003 for the management of GT has recently been terminated in preparation for the re-privatization of the company. The sale of GT and the SNO license was carefully planned. In 1995, Ghana Telecom (GT) was incorporated as a public limited liability company and separated from postal services. (Also that year, value added services were liberalized.) Legislation to regulate the privatized GT and SNO was passed in 1996. The licenses set network expansion and quality of service targets for the two operators that were estimated to require a total capital investment of approximately US\$500 million. There were no universal service obligations, although the two national operators were asked to inform the regulator of intended expansion into rural areas so these would not be targeted for other operators. In addition, as we mentioned, it was agreed that GT would not lay off workers to reduce the workforce. Five-year exclusive duopoly over fixed voice telephony and international voice gateways was provided. This left two bidders for two licenses: G-com (Telekom Malaysia and local investors), which bid for both licenses, and African Communications Group (ACG and Western Wireless (US)), which bid for the SNO license only. G-com was awarded a 30% stake in GT and majority representation on GT's board, which gave them management control, for US\$38 million. The price paid for GT was slightly above the independent valuation prepared by the advisors to the government (US\$100 million for the entire firm). ACG's outbid G-Com's for the SNO, thus winning the second license for US\$10 million on December 16, 1997. The NCA Board was not named until just prior to the 2000 elections, meaning that the NCA had no substantive director-general in its first few years of life. Even the Acting Director changed three times within a period of 4 years. The longest serving acting director general and several of the staff were retired professionals from Ghana Telecom, which reduced NCA's credibility as a neutral regulator in the eyes of some operators consulted for the case study analyzed by Haggarty and others, 2003. The new government suspended the board appointed in the last days of the Rawlings administration and put together a new board, but with the Minister of Communications as chair, further compromising the NCA's independence. As a result, the NCA has remained directly under the direction of the Ministry of Communications, led by interim management, and operated without the full complement of trained professionals to carry out its responsibilities.

Source: (Haggarty and others, 2003)

Energy

1.148 **Independent power producers (IPPs) can help deal with the energy crisis.** IPPs usually represented one of the first modes of entry in a power market dominated by state-owned power utilities. IPPs have provided timely and cost-effective solutions to chronic supply shortages in some countries under appropriately structured contracts. In developing countries, IPPs have generally entered the power market by setting up new power generating capacity and selling the output to the state owned utility on the basis of a power purchase agreement (PPA) with a state-backed guarantee for the off-taking utility. Where IPPs signed long-term PPAs, they generally accepted construction and operating risks. In many cases, they shared fuel availability risk with fuel suppliers. IPPs are generally insulated under the terms of their PPAs against demand risk, dispatch risk, price risk, and exchange rate risk. Successful investments for IPPs can contribute to the success of power sector reform, but several pre-requisites emerge from the experience of IPPs in developing countries (Box 1.5).

Box 1.5: Key Prerequisites for Successful IPPs

Pre-requisite 1: The transparency of the selection process for IPPs is critical to ensure their success. Countries that engaged in transparent and competitive bidding processes for contracting with IPPs on the whole have got lower prices, especially in countries able to provide low cost natural gas to IPPs (Bangladesh, Egypt), and more sustainable contracts than countries that adopted non-competitive processes. In many developing countries, the initial contracts with IPPs were concluded under non-transparent processes. Allegations of corruption exposed these contracts to pressure for renegotiation that substantially reduced the returns for IPPs. In a few cases, PPAs were cancelled or remained in dispute for years (India, Indonesia, Tanzania), particularly where the off-take prices were extremely high by international standards for generation costs in US dollar terms. Other developing countries have resorted to lowering PPA rates in exchange for an extension of the PPA, as in the case of Pakistan, Thailand, and Guatemala.

Pre-requisite 2: Access to the transmission network on transparent and equitable terms is a pre-requisite to avoid presenting IPPs with a serious risk to the sustainability of their investments. The most credible way is to establish an independent transmission entity that is regulated in accordance with these terms and is legally barred from cross-ownership with generators. Some countries that opened their power sector to IPPs in response to capacity shortages were slow or weak in reforming the transmission and distribution sectors, resulting in significant downstream bottlenecks to fully utilizing the new generation capacity. In Pakistan, the failure to address downstream reform and capacity provision resulted in under-utilization of the IPP capacity even as demand remained unmet.

Pre-requisite 3: Countries with poor governance and contract protection need to take fully into account contingent liabilities, for instance coming from the failure of off-takers to honor their payments commitments to IPPs. This endemic risk for developing countries arises when off-takers do not have sufficient revenues to meet these commitments because their retail tariffs are kept below supply costs by political pressure and a large proportion of their bills are not paid by consumers, or because of a macro-economic shock that resulted in a major devaluation of the local currency. As a result of the 1997 Asian financial crisis, for example, state-owned power utilities in Indonesia, Pakistan and Philippines were obliged to continue payments to IPPs under the PPAs for energy that they did not need when retail sales fell below forecast levels. They were also prevented them from raising their retail power tariffs to cover increases in power purchase costs in local currency terms under PPAs following currency devaluations. This issue has been clearly demonstrated by the problems that have arisen over power purchase agreement (PPAs) in Indonesia, Pakistan and Thailand in the face of the 1997 Asian financial crisis. Long term PPA prices also proved to represent a formidable challenge to the introduction of competitive power markets. The prices that emerge from a liberalized wholesale power market are likely to undercut the PPA prices and the difference between these prices become stranded costs that are have to be absorbed under the restructuring of a power utility. One way to remove stranded costs would be to renegotiate more flexible off-take terms to PPAs, but IPPs and their lenders generally resist this policy to avoid exposing their power plants to lower market prices that might occur under competition. Looking at the experience of countries that are now engaged in the second round of reforms, such as Hungary and Poland faced stranded cost issues with their single-buyer approach to contracting with IPPs. In Poland, the transmission company took on long-term PPAs with all the generating companies formed from restructuring the sector, but at prices that were later undercut by prices realized in the new competitive wholesale power market. In the other countries, the problem stemmed from payment arrears by the state-owned utility to the IPPs caused by low retail tariffs and low collection rates. In any event, there remain substantial legal and other staffing needs for the recipient countries in negotiating, writing, monitoring and enforcing the contracts. This also is a frequent but rarely discussed problem in many developing countries.

Source: Besant-Jones (2006)

Water

1.149 **There is scope for PPP, including small-scale PPP.** A significant development in the urban water subsector is the introduction of private sector participation in the running of the dominant water utility, in the form of a management contract based on a set of agreed performance indicators. A management contract with a private operator (Aqua Vitens Rand Ltd) was signed in the last quarter of 2005, and an estimated 1,500 workers are being retrenched and re-trained under the Urban Water Project. To assist Aqua Vitens to accomplish this mission, the government of Ghana guaranteed a loan of US\$103 million from the World Bank, and US\$5 million from the Nordic Development Fund with an equity

contribution of US\$12 million, all totaling US\$120 million for the financing of the project. This private sector involvement is seen as critical to the achievement of financial viability and improved performance of the utility and is at the core of the strategy for improving services in urban areas. The regulatory authority (PURC) estimates that had Public Private Partnerships (PPPs) taken place in the form of enhanced lease contracts losses from leakage and illegal connections could have been reduced from 50% to 25% of water produced. However remains a negative perception of the process (Box 1.6).

Box 1.6: Political Economy of Private Sector Participation in Water

Just six months into the takeover of Ghana Water Company Ltd (GWCL) by Aqua Vitens Rand Ltd, cracks are beginning to emerge in the management of the company. Civil society organizations opposed strongly against the management-contract deal. The bone of contention is about Aqua Vitens' inability to deliver what it had promised Ghanaians in its bid to take control of GWCL. According to the management contract signed between the Ghana government (Grantor) and Aqua Vitens Rand Ltd (Operator), performance improvement is the responsibility of the operator. Aqua Vitens Rand Ltd's obligations under the agreement, include increasing the amount of treated water for sale, extending water service to low income areas, rehabilitating existing network to reduce non-revenue water and dam safety upgrades, procurement and installation of meters etc within a five-year period. Failure on the part of Aqua Vitens to achieve this and other performance benchmarks shall mean the termination of the contract. What was left for Aqua Vitens is the development of a strategic implementation plan to show proof of its ability to deliver by the contract terms. By the terms of the agreement, Aqua Vitens is obliged to within six (6) months from the commencement date of the contract "produce and maintain water quality, pressure and flow rates at all discharge points." It has to within, 12 months of the agreement date, submit to government a plan for the measurement and reduction of waste. However, indications are that for now delivery of water has failed. It appears that apart from the drilling based workshop and Central workshop, which existed even when GWCL was around, all staff was seconded to AVRL. However, the workers-management relations is not only about non-performance, it is also about perceptions of fairness of the management process.

1.150 A recent study reports interesting evidence from private sector involvement in Ghana in three small towns (Valfrey-Visser and others, 2006). In this case, the private operators operate within a formal framework, having negotiated their contract with the CWSA. They belong to the category of independent operator, with their own water source and distribute water via a network made up of standpipes and individual connections. In the last 5 years, each operator has signed a management contract with their District Assembly. Under the management contract, their level of financial investment is limited by the operator are looking to grow their business by expanding to other small towns.

1.151 It is estimated that 12 independent operators manage small piped networks. This is not particularly impressive considering that in the same study it is reported that 25 operators manage independent networks in Mali and more than 300 operators (even if most of them are individuals) are present in Mauritania. Comparison of small town water supply in Ghana and Mauritania is quite instructive. In both countries there are several hundred small towns that are not served by the dominant operator, despite strong demand for modern water services. Whereas in Ghana GWCL has long aspired to serve many towns, in Mauritania small rural schemes were first delegated to municipalities. The Ghanaian experience has been unimpressive as GWSC found itself operating 212 networks, half of which were severely dilapidated. There have been attempts to transfer rural schemes to community structures (Water Boards), whose management performance has also been disappointing. Limited efforts have been made to bring in the local private sector. In Mauritania, by contrast, a broader strategy has been developed to attract private independent operators, also seeking to create jobs for unemployed graduates.

1.152 Inherent in the rural water delivery strategy is the provision of goods and services by the private sector. Consulting services including design and capacity building activities, drilling of boreholes, construction of water and sanitation schemes, supply of hand pumps and other equipment required for water supply are all provided by the private sector, usually through competitive tendering.

1.153 Scaling up rural water delivery through decentralized structures such as the District Assemblies will entail a significant build up of local private sector capacity. Such capacity will

respond effectively to increased demand for goods and services. Without this supply capacity, scaling up of rural water delivery will be hindered. It is estimated that provision of goods and services in the rural water subsector amounts to close to US\$20 million per year. However, it must be noted that private sector investments in rural water infrastructure is minimal. Such investment mostly is taking place at the household level and intended to provide self-supply; in some cases, water from such investments is sold to community members. A recent trend worth noting in small towns water supply is the emergence of local private entrepreneurs who are developing a business around operation and maintenance of small town water systems on a contract basis. This service is rendered to communities who do not possess adequate skills to manage their water systems. This is good for sustainability of the investments made with scarce public funds.

CONCLUSION AND POLICY RECOMMENDATIONS

1.154 **The preceding analysis of access, affordability, costs, and institutions in Ghana's infrastructure sectors provides a robust sense of its main infrastructure policy challenges.** The analysis shows the presence of important *infrastructure bottlenecks* in the Ghanaian economy. Elimination of these bottlenecks would substantially boost short- to medium-term growth and the welfare of the population. It would also reduce poverty via higher incomes and greater and better quality of service delivery. As expected, the policy priorities cut across all infrastructure sectors. The emphases are *energy, water and sanitation, and ICT but also rural roads.*

1.155 **Ghana may wish to act immediately on three of these priorities:**

1. ***Restore the energy balance.*** This would immediately improve prospects for a large number of energy-intensive sectors, including some nontraditional exporting industries. To create a healthy energy sector that moves from being a major constraint to become a foundation for accelerated growth, ***urgent and depoliticized action is critical on three fronts: tariffs and subsidies, regulation, and supply and demand management.*** Current efforts are focused on ensuring adequate new generating capacity. However, to be effective, policy also must focus the on significant transmission and distribution problems and the other areas of sector management.
2. ***Address urgently the water and sanitation crisis.*** Perhaps even more important in the short run because of its obvious social dimensions is the “silent crisis” in water and sanitation—even in the capital, Accra. This crisis threatens not only the achievement of important MDGs. It also constrains numerous economic and social activities in both the private and public sectors that rely on the supply of clean water and adequate sanitation to operate. In the water sector, the failure to extend coverage to the many urban poor results in their having to pay far higher prices than the official rates approved by PURC. Moreover, despite the higher prices, there is evidence that the water quality is compromised by the way that the water is handled and stored. Lack of access to potable water also is causing adverse health effects. For example, despite the government's intense efforts for years to eradicate certain diseases, disease rates such as guinea worm infection continue to rise in the poorest Northern Region. Urgent attention to this neglected infrastructure sector by the investment, policy, and operations and maintenance fronts is essential.
3. ***Accelerate reform and attract private participation in the ICT sector.*** It also is essential to recognize quickly that, to achieve many of the MDGs as well as higher growth, ICT development is needed. The most obvious priorities are the lack of a robust domestic backbone infrastructure and complex regulatory challenges, particularly those related to defining cost-based interconnection charges. These two priorities have hindered progress in the sector, making it harder for Ghana to fully realize the opportunity of becoming an attractive destination for business-process outsourcing.

1.156 More strategically, it may be useful consolidate the various excellent efforts to develop subsector specific strategies into a macroeconomic vision of the infrastructure needs, costs, and financing options.

- In some ways, the current vision may be too narrowly focused on the specific MDGs. This narrow focus may underestimate sectoral infrastructure demand and the *spatial dimensions of the growth and poverty reduction agenda*. Ultimately, Ghana may need to spell out and publicize as a commitment device a vision that can become the basis for the implementation of an integrated infrastructure action plan consistent with both the users' and the country's needs and abilities to pay.
- ***Based on a very basic modelling of the demand for infrastructure expenditure, Ghana's infrastructure needs are likely to be approximately 10-12% of GDP/year for at least the next 10 years.*** With current spending of about 5-6% of GDP this model implies annually doubling spending. Microsectoral estimates may increase these estimates, particularly in the energy sector. These are significant needs that are expressed in terms of both investment and O&M. Ultimately, they can be paid from only six sources:
 - Users
 - Today's taxpayers
 - Tomorrow's taxpayers
 - Grants from developed countries
 - PPPs
 - Prudent borrowing.
- ***Budgetary and efficiency constraints mandate that Ghana further develop public-private partnership schemes to meet these investment needs.*** However, to develop these partnerships, it is necessary to resolve issues concerning tariff-setting and access to the market.
- ***It is crucial to instill in the public sector a new Value-for-Money and productivity-enhancing mindset.*** This change of mindset will result in better use of resources and wider space for private sector involvement. This must be done without ignoring the need to implement socially and fiscally viable strategies if Ghana is to avoid major social and political crises in implementing its vision for the role of the sector in stimulating growth and poverty alleviation.
- ***Simultaneously with attracting the private sector, restructuring and improving the performance of SOEs also should be a key priority.*** A number of studies quantified that even a relatively small improvement in operational efficiency on the order of 5% could free resources of approximately 1-5% of GDP. These resources could finance an additional 50 or more of Government's current expenditures in the sector. Performance-based contractual agreements are powerful instruments to help define sector development goals and resources and improve performance. Such contracts impose a timeframe in which monitorable performance targets are to be achieved, while allowing increased managerial autonomy.

REFERENCES

- Agenor, P-R and B. Moreno. (2006). "Public Infrastructure and Growth: New Channels and Policy Implications", mimeo.
- Aryeetey, Ernest and A. Asantewah Ahene. (2005). "Utilities Regulation in Ghana", Institute of Statistical, Social and Economic Research, University of Ghana.
- Benmaamar, Mustapha. (2006). "Financing of Road Maintenance in Sub-Saharan Africa", Road Management and Financing Discussion Paper n. 6.
- Besant-Jones, John. (2006). "Reforming power markets in developing countries: what have we learned?" Energy and Mining Sector Board Discussion Paper No. 19, World Bank.
- Bogetić, Željko, Bussolo, Maurizio, Ye, Xiao, Medvedev, Denis, Wodon, Quentin and Daniel Boakye. (2007). "Ghana's Growth Story: Looking Back, Looking Forward", draft paper for the Ghana CEM.
- Bogetić, Željko and Johannes W. Fedderke. (2006) "Forecasting Investment Needs in South Africa's Electricity and Telecom Sectors", *South African Journal of Economics*, vol. 74, 3, 557-574.
- Calderón, C. and A. Chong. (2004) "Volume and quality of Infrastructure and the Distribution of Income: an Empirical Investigation, *Review of Income and Wealth*, vol. 50, n. 1, pp. 87-106.
- Calderón, C. and L. Servén. (2003) "The Output Cost of Latin America's Infrastructure Gap", in Easterly, W. and L. Servén THE LIMITS OF STABILIZATION-INFRASTRUCTURE, PUBLIC DEFICITS, AND GROWTH IN LATIN AMERICA, Stanford University Press, Stanford.
- Calderón, C. and L. Servén. (2004) "The Effects of Infrastructure Development on Growth and Income Distribution", World Bank Policy Research Paper WPS 3400, World Bank.
- Camos-Daurella, Daniel and Thomas Leonard. (2007) Costing the Electrification of Africa with Grid and Off-Grid Strategies, Master Thesis, J. F. Kennedy School of Government, Harvard University.
- Campos, J., A. Estache, N. Martin and L. Trujillo. (2003) "Macroeconomic Effects of Private Sector Participation in Infrastructure" in Easterly, W. and L. Servén THE LIMITS OF STABILISATION, Stanford University Press, Stanford.
- Canning, David and Esra Bennathan. (2000) "The Social Rate of Return on Infrastructure Investments", World Bank Policy Research Working Paper WPS 2390, World Bank, Washington DC.
- Chivakul, Mali and Robert C. York. (2006) "Implications of Quasi-Fiscal Activities in Ghana", IMF Working Paper, n. 24.
- Coady, David and David Newhouse "Ghana: Evaluating the Fiscal and Social Costs of Increases in Domestic Fuel Prices."
- Coulombe, Harold and Quentin Wodon. (2007) "Poverty in Ghana: An Overview"
- de la Fuente, A. and X. Vives. (1995). "Infrastructure and Education as Instruments of Economic Policy: Evidence from Spain", *Economic Policy*, 20.
- Esfahani, H.S. & Ramírez, M.T. (2003), Institutions, Infrastructure and Economic Growth, *Journal of Development Economics* 70, 443-477.
- Estache, Antonio. (2005) "What Do We Know about Sub-Saharan Africa's Infrastructure and the Impact of Its 1990s Reforms?" World Bank. Mimeo.
- Estache, Antonio. (2006) "Infrastructure: A Survey of Recent and Upcoming Issues" paper presented at the Annual World Bank Conference on Development Economics, June, Tokyo.

- Fay, Marianne and Tito Yepes. (2003) "Investing in Infrastructure: What is Needed from 2000 to 2010?" World Bank Policy Research Working Paper WPS 3102, World Bank, Washington, D.C.
- Fujita, M., P. Krugman and A. Venables. (1999) THE SPATIAL ECONOMY: CITIES, REGIONS AND INTERNATIONAL TRADE, MIT Press, Cambridge.
- Hewitt Associates. (2006) "Improving Competitiveness and Increasing Economic Growth in Ghana: the Role of ICT-ITES", mimeo.
- Krugman, P. (1991) "Increasing Returns and Economic Geography", *Journal of Political Economy*, 99, 483-499.
- Econ. (2007) Costing Power Infrastructure Investment Needs in Africa, Report commissioned by the World Bank, mimeo.
- ECOWAS. (2006) White Paper for a Regional Policy, available at www.energy4mdg.org.
- Ghana, STATE OF THE NATION ADDRESS, 8th February, 2007
- Haggarty, Luke; Mary M. Shirley and Scott Wallsten. (2003) "Telecommunication Reform in Ghana", World Bank Policy Working Paper, WPS 2983.
- Keener, Sarah and Sudeshna Ghosh Banerjee. (2005) "Ghana: Poverty and Social Impact Analysis of Electricity Tariffs", ESMAP Technical Paper, 88.
- KITE. (2005) Country Report for "Regional Policy based on Increasing Access to Energy Services for Populations in Rural and Sub Urban Areas to achieve the Millennium Development Goals", UNDP-REPP & ECOWAS.
- Lovei, L. Gurenko, E. Harey, M. O'Keefe P. and M. Shkaratan. (2000) MONITORING UTILITY SERVICES FOR THE POOR, World Bank, Washington D.C.
- Modi, Vijay, McDade, Susan, Lallement, Dominique and Jamal Saghir. (2005) "Energy Services for the Millennium Development Goals", Millennium Project, UNDP, World Bank, ESMAP.
- Overseas Development Institute. (2005) "Economic Growth in Northern Ghana", Draft Report commissioned by DFID.
- Prasad, Gisela. (2006) "Energy Sector Reform and the Pattern of the Poor: Energy Use and Supply, a Four Country Study: Botswana, Ghana, Honduras and Senegal", ESMAP Technical Paper, 95.
- Romp, W. and J. de Haan. (2005) "Public Capital and Economic Growth: A Critical Survey", EIB Papers, Vol.10, Luxembourg.
- UN-Energy. (2005) The Energy Challenge for Achieving the Millennium Development Goals, New York.
- Vagliasindi, Maria. 2007) "SOE Performance Evaluation and Monitoring" World Bank, mimeo.
- Vagliasindi, Maria and Ashish Khanna, (2006) "SOE Performance Based Contracts", World Bank, mimeo.
- Valfrey-Visser, Bruno, Schaub-Jones, David, Collignon, Bernard and Emmanuel Chaponniere. (2006) Access through Innovation: Expanding Water Service Delivery through Independent Network Providers, BPD Water and Sanitation, London, UK.
- World Bank. (2006) "An Investment Framework for Clean Energy and Development".
- World Bank. (2007) Ghana: Energy Development and Access Project, PAD.

APPENDIX 1: AN ASSESSMENT OF THE ENERGY CRISIS

The current energy crisis is, unfortunately, nothing new in Ghana. A similar situation occurred back in 1998. In 2006, generation capacity was reduced as result of:

- (a) low inflows into the Akosombo Dam;
- (b) the de-commissioning of the Tema Diesel plant; and
- (c) unreliable supply from Takoradi power plant and Côte d'Ivoire.

The supply shortfall coincided with the government's decision to restart the VALCO smelter, thereby raising demand.

There is a consensus among analysts that energy crisis is largely self-inflicted due to poor planning and inadequate tariff policy. Poor planning includes the excessive reliance on hydropower and the absence of a strategy to diversify generation sources. Inadequate tariff policy is reflected in the level of tariffs that do not reflect costs and associated subsidies to selected sectors of the economy (including the aluminium and mining sectors), despite the heavy cost of power cuts that such a policy exacts on the rest of society.

In terms of supply of electricity, the Volta River Authority (VRA) generates both hydropower and thermal power, and imports the remainder from Côte d'Ivoire. The Government is seeking to add further thermal capacity in 2007 to reduce the supply shortfall. For example, emergency plants to supply 136 megawatts of power have been brought into service in mid-2007. A consortium of mining companies has built a plant at Tema to supply 80 megawatts of power. VRA also expects to add 126 MW of new thermal plant in late 2007. A further 400 MW of capacity is expected to be commissioned in 2008. Additionally, it has accepted to take over the supply of power to Benin and Togo, to take off the burden on Ghana and bring some relief to the country.

President Kufuor in February 2007 in his State of The Nation Address outlined a number of emergency actions to arrest the deteriorating energy situation. The emergency measures include: a) stepping up the load curtailment on the mining companies and shutting down of major industries, including the Volta Aluminum Company (VALCO) (see Figure 1.14). The shutdown is the 11th in the history of VALCO, the smelting plant in which the state has 90% shares¹⁴ since its establishment in 1967. Just before the crisis, the company operated one line with a production capacity of 20%. In June 2006, the company reduced its power consumption by 355 MW, which led to a cut in production by 255 MW to complement the national load-shedding program. The long-term objective of VALCO was to develop a coal-fired power plant to take the smelter plant off the national grid. VALCO was working with an independent power provider (IPP) to start the construction as early as possible. The plant, which would cost about US\$400 million, would generate about 500 megawatts of power.¹⁵ This project has stalled and the smelter remains closed. Pre-paid meters would eliminate the problem of chronic indebtedness of Government entities toward the power distribution company (ECG) by requiring them to pay in advance for the electric power they consume. The new envisaged clearinghouse arrangements should contribute toward eliminating cross indebtedness and improving the cash flow within the energy sector. Ultimately, given growing consumption, bulk supply and retail tariffs will have to reflect the cost of developing new capacity, i.e., the long-run marginal cost of supply.

¹⁴ The Government of Ghana took the majority shares from Kaiser after its closure and re-opened it for operations in June, 2005.

¹⁵ To enable VALCO to produce at full capacity, the company required (i) about 350 megawatts of power and an acute load-shedding exercise; (b) recapitalizing VRA to restore the company's capacity to operate and carryout needed investment; and (c) installing pre-paid meters in all Government departments, ensuring proper and transparent tracking of settlements between the power utility companies and their bulk customers (for example, public sector entities, VALCO and mining companies) and restoring PURC approved tariffs to all other customers.

APPENDIX 2: INCENTIVE-BASED PERFORMANCE CONTRACTS FOR SOES

As a tool for reforming and evaluating the performance of SOEs, Performance Contracts (PC) were designed and implemented in several countries. These range from South Korea, to India and to France and later in West and East Africa in the 1980s between the governments and the SOEs' public managers. They were often monitored by a third party or an oversight agency. While South Korean (signaling system) and Indian PCs (Memorandum of Understanding or MoU) were based on performance information, performance evaluation and performance incentive system, the French style "contract plan" lacked all those elements and they were not incentive-based. As a result, it was difficult to evaluate the performance of the public managers and get results. Well-designed counterparts in South Korea and India led to significant performance improvements.

South Korean and Indian style PCs did not make it to Sub-Saharan Africa. To a large extent, non-incentive based Performance Contracts emulating the French style contracts were introduced and implemented in few selected countries in Sub-Saharan Africa with mixed success. Senegalese PCs were reviewed widely. However, the recent experiments with privatizing the state-owned infrastructure enterprises did not always lead to remarkable performance improvements either. It might, therefore, be timely for the African governments including Ghana to re-consider the performance contracts. Nonetheless, the international community needs to show some willingness to put in the similar kind of technical assistance and training to drafting and implementing performance contracts as it did into privatization in Sub-Saharan countries in the past.

Performance contracts can particularly useful if they are part of a reform package which advocates mechanisms to evaluate SOE performance. A management improvement system through incentive-based performance contracts needs three elements:

- **Performance evaluation system**, which translates national goals into explicit and quantifiable entrepreneurial targets captured in performance criteria which are fair to the manager as well as being simple and easily monitorable; each performance criterion has to have a criterion value and targets.
- **Performance information system**, which monitors and measures the actual performance of an SOE using the accurate information needed to evaluate the management performance;
- **Performance incentive system**, which directly links the well being of the managers and employees of and SOE to national welfare through a system of bonuses, either monetary or non-monetary. Managers are thus either rewarded or penalized for their performance, based on the contract goals and criteria and calculated composite score, at the end of each year of the contract period ranging from 3 to five years.

APPENDIX 3: MDGs FOR THE ELECTRICITY SECTOR

This impact of the electricity sector's performance could be measured by the following success indicators related to the MDGs:

- **Indicator 1:** 100% of administrative headquarters and localities with more than 2000 inhabitants will be equipped with a modern electricity service for the running of essential infrastructure such as drinking water, health centers, primary, secondary and professional schools, computer services and internet access.
- Contribution: [MDGs 1 to 6]
- **Indicator 2:** 100% of administrative headquarters and localities with more than 2000 inhabitants and 80% of localities with more than 1000 inhabitants will be equipped with mechanical motive power.
- Contribution: [MDGs 1 to 6]
- **Indicator 3:** 60% of the rural population of ECOWAS member countries will live in a locality equipped with modern energy services.
- Contribution: [MDGs 1 to 6]
- **Indicator 4:** At least 36% of households in rural areas will be electrified, thus easing access to, at least, communication and lighting services, thereby doubling the 2005 level.
- Contribution: [MDGs 1, 2, 3, 5, 6]
- **Indicator 5:** 100% of urban and peri-urban households will be provided with an electricity service.
- Contribution: [MDGs 1, 4, 5, 6]
- **Indicator 6:** 100% of the total population in the region will have access to a modern fuel service (LPG, kerosene, mineral coals, etc) or improved stoves and to sustained biomass supply.
- Contribution: [MDGs 3, 5, 7]
- **Indicator 7:** As a result, the share of traditional biomass in the average energy balance in the region will decrease by at least 20% from its current level of 80%.
- Contribution: [MDGs 3, 5, 7]

APPENDIX 4: GPRS TRANSPORT CG RESULT MATRIX

INDICATOR	Definition	BASELINE	TARGETS			
		2005	2006	2007	2008	2009
1. Proportion/length of roads maintained/Rehabilitated		67%	89%	95%	100%	100%
<u>Trunk Roads (in km):</u>						
a. Routine maintenance		12,127	12,168	13,000	13,130	13260
b. Periodic maintenance		281.31	293	316	378	454
c. Minor Rehab & Reconstruction		198.62	699	513	540	552
d. Major Rehab & Reconstruction		209.75	200	200	200	200
<u>Urban Roads (in km):</u>						
e. Routine maintenance		2,972	3,950	4,024	4,598	5,173
f. Periodic maintenance		240	235	345	360	384
g. Minor Rehab. & Reconstruction		83	36	200	255	298
h. Major Rehab. & Reconstruction		13	13	13	16	12
<u>Feeder Roads (in km):</u>						
i. Routine maintenance		17,119	25,000	25,945	26,048	26,913
j. Rehabilitation			1,321	1,436	1,113	868
k. Regravelling			552	552	552	0.0
l. Spot Improvement			2,474	2,659	1,771	1,533
m. Reconstruction			20	20	0.0	0.0
n. Surfacing			365	363.5	316	144
2. Annual accident statistics for each transport mode		10,440	10,330	10,220	10,110	10,000
3. Passenger traffic and good traffic by railways						
a. Passenger traffic (in 1000 passengers-km)		62,000	93,000	130,200	169,260	220,038
b. Good traffic (1000 tonnes-km)		220	231	242.6	254.7	280.1
4. Maritime traffic : Goods loaded and unloaded (in 1000 tonnes)						
a. Goods loaded (in 1000 tonnes)		12161.6	12769.7	13408.1	14749.0	16223.9
b. Goods Unloaded (in 1000 tonnes)		7423.7	7794.9	8184.7	8430.2	8683.1
5. Total air freight and number of air traffic passengers:						
a. Total air freight (Loaded and Unloaded) in thousand tonnes		44.0	45.5	46.7	49.3	51.0
b. Number of air traffic passengers (arrival and departure) in thousand		676.7	710.5	746.0	783.3	822.4

Source: ECOWAS 2006.

2. GHANA'S AGRICULTURAL POTENTIAL: HOW TO RAISE AGRICULTURAL OUTPUT?

INTRODUCTION

2.1 After lackluster growth for several decades following independence, Ghana's economic performance in the recent period has been impressive. Aggregate GDP growth of 4.12% per annum (p.a.) during 1991—2001 and an average of 5.48% from 2001—2006, are amongst the best in Africa. With population growth a little less than 2.5% p.a. per capita incomes have risen steadily. According to data from the latest living standards survey (GLSS V), these macroeconomic trends have had a positive impact on poverty, with improvements—in many cases substantial improvements—across a number of wellbeing indicators. The national poverty rate has fallen from 51.7% in 1991/92 to 39.5% in 1998/99 and 28.5% in 2005/2006. If these trends continue, Ghana is expected to achieve the overall poverty-related Millennium Development Goals (MDGs)—although not in all regions (IFPRI, 2006).

2.2 Overall agricultural performance has been good, further improving in recent years. The average annual increase in agricultural value added over 1991—2000 was 3.51% per annum. This is in excess of the SSA average of 3.44% per annum (Byerlee *and others*, 2005). Over 2002—2006 the (simple) average rate of agricultural GDP growth (including forestry) was 5.46%.

2.3 Maintaining these positive growth and poverty trends is the challenge for the Government of Ghana (GoG) and for her development partners (DPs). Achieving the ambition of the GoG to achieve middle income country (MIC) status by 2015 requires an active policy agenda and continued support: to ensure existing sources of growth are sustainable (economically, socially and environmentally); and to identify and harness new sources of growth, both internally (for example, increasing economic activity within Ghana) and externally (for example, through new markets).

2.4 Agriculture will surely play a critical role in these endeavors. Agriculture remains a critical sector for the economy accounting for fully one-third of aggregate GDP. Crops and livestock subsector dominates, with cocoa, forestry and fishing each providing about 3.5—5% of national income (Table 2.1). Moreover, the statistical attribution of economic activities to 'agriculture' frequently underestimates the true influence of natural rural-based activities. Estimates from Latin America suggest that the contribution of agriculture and related activities to national development is approximately twice its share in GDP (de Ferranti and others, 2005).¹⁶ According to the GLSS V, agriculture is the primary occupation for 57% of Ghanaian households (and 77% of rural households).

Table 2.1: Composition of GDP 2000 – 2006

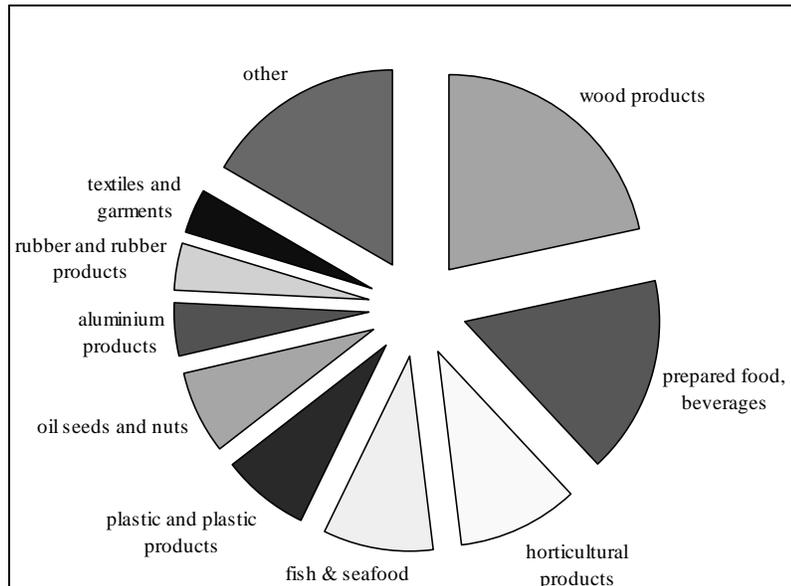
	2000	2001	2002	2003	2004	2005	2006*
Agriculture	36.0	35.9	35.8	36.1	36.6	36.0	35.8
Crops & livestock	24.3	24.5	24.7	24.7	24.4	23.8	23.8
Cocoa	3.5	3.3	3.1	3.5	4.3	4.6	4.7
Forestry & logging	3.5	3.6	3.6	3.6	3.6	3.6	3.4
Fishing	4.6	4.5	4.4	4.4	4.4	4.1	4.0

Source: SSRID, MoFA. Notes: * provisional.

2.5 Agricultural exports (including timber) are the primary source of foreign exchange accounting for over half of export receipts in 2006 (Figure 2.1; details in Appendix 1). The ratio is higher if agro-based processed industries such as prepared food and beverages.

¹⁶ For example, in Chile agriculture—defined as primary agriculture, plus forestry plus fisheries—accounts for 4.92% of GDP, but if one includes inter-sectoral linkages, its true contribution is 9.32%. Respective figures for Columbia (14.92% and 18.31%) and Mexico (5.26% and 8.00%) reinforce the point.

Figure 2.1: Composition of Exports; 2006



Source: CEPS

2.6 **Perhaps more importantly, Ghana's agriculture is widely held to have potential.** A cursory review of the sector suggests substantial scope to increase physical yields; opportunities to substitute low-value production for higher value crops, including those for export; and further scope to attract additional processing to take place in Ghana rather than in other countries.

2.7 **Moreover, agriculture has obvious links to spatial dimensions of the national economy.** Ghana's growth record has been associated with rapid urbanization, and many of the 'drivers' of growth are physically located in particular regions of the country, especially the Greater Accra area. This is natural: a key feature of the positive structural transformation story involves both actual and virtual migration: shifts in occupation from agriculture into high-productivity sectors such as manufacturing and services and the physical relocation from rural areas to urban conurbations. Yet the two are not necessarily synonymous: a buoyant rural economy that prevents rapid urbanization depends on linkages between agriculture, manufacturing and services sector. Examples of successful development illustrate the diversification of rural incomes beyond agricultural self-employment into rural-based services including retail and transport services (see Byerlee *and others*, 2005).

2.8 **Of special interest in this regard is the small-holder issue: to what extent are small-holder farms able to take advantage of emerging opportunities in an increasingly commercialized and globalized agricultural economy?** As reviewed in Byerlee *and others*, (2005), agro-pessimists argue that the challenges are substantial, that the inherent productivity advantage of family farms based on family labor inputs is being undermined as additional costs of meeting standards and marketing requirements embody significant economies of scale (Maxwell *and others*, 2001). Evidence from Ghana suggests a successful role for small holders conditional on external support to address these coordination failures associated with atomistic agents and economies of scope (if not scale). Both cocoa and pineapple sectors—beacons of success on the Ghanaian landscape—are both primarily small-holder based.

2.9 **Opponents of the agro-pessimists perspective point out that there are a number of potential institutional solutions.** Two notable accomplishments of cocoa and pineapple sectors illustrate two contrasting models of institutional arrangements that are associated with success: respectively, state

intervention to support input and output markets and consolidate the supply chain, and private sector firms using out-grower-type arrangements. This issue will feature throughout the following analysis.¹⁷

2.10 Finally, while growth is fundamental, the poverty impacts of such growth and the ability of Ghana's poor to share in growth is a key concern. While the empirical evidence strongly rejects an 'either/ or' scenario, it is clear from international experience that of the feasible set of growth strategies, some are more poverty-reducing than others. Indeed, a review of performance in the 1990s showed that the poverty impacts of aggregate growth differed amongst different groups in Ghana, depending on their occupation, location and other household characteristics (Coulombe and McKay, 2003). Notwithstanding the rapidly rising phenomenon of urban poverty in Ghana, agriculture remains the primary livelihood of the majority of Ghana's poor; harnessing agricultural growth will therefore not only deliver the greatest benefit to the economy but will ensure the largest number of those in most need will benefit.

2.11 This chapter assesses the opportunities for such a shared growth strategy from the perspective of the agriculture sector. It seeks to: identify remaining constraints to increasing agricultural productivity; to rank these according to which are binding now and which will become binding once others are alleviated; and to propose a sequence of measures that could form the basis of a reform agenda for the sector. The over-riding framework of the analysis is to address the following three questions:

- What explains the recent performance of the agricultural sector?
- What are the risks to this performance continuing, assuming this is desirable insofar as it delivers welfare improvements?
- What needs to be done to (i) mitigate those risks that may exist and/ or (ii) to step-up sector performance to make an even stronger contribution to Ghana's growth and poverty reduction trajectory?

THE ROLE OF AGRICULTURE IN GHANA'S STRUCTURAL TRANSFORMATION

2.12 At the most fundamental level, the development of a robust agricultural sector that contributes fully to the structural transformation of a low-income economy is based on increases in land and labor productivity. A simple Hayami-Ruttan (1985) typology of growth paths illustrates Ghana's performance against a sample of regional comparators (See Figure 2.2). Land and labor productivity is estimated using averages across three-year periods ending 1983, 1988, 1993, 1998 and 2003. GDP data is converted using purchasing power parity (PPP).¹⁸ Land productivity has increased consistently over the period; however, labor productivity declined from 1983—1993 before rebounding although it has only just recovered lost ground. On these axis', Ghana's recent performance has been modest over the longer term.

2.13 Note that labor productivity has only just recovered lost ground since the economic crises of the early 1980s—crises that, as the data for Cote d'Ivoire and Cameroon suggest, was not restricted to Ghana. Ghana suffered a collapse in aggregate labor productivity from levels of between US\$376—400 over the period 1978—1981 to US\$344 in 1982 and US\$309 in 1983 (all data in real US dollars) and did not return to 1982 levels for two decades. This was not due to a collapse in land productivity, however—

¹⁷ At this moment, we restrict our observation to one of association rather than ascribing causality. A more thorough assessment of the detailed modalities of the two respective institutional arrangements is required to indicate the extent to which success was conditional on these efforts against a counterfactual of likely trends in the absence of these interventions.

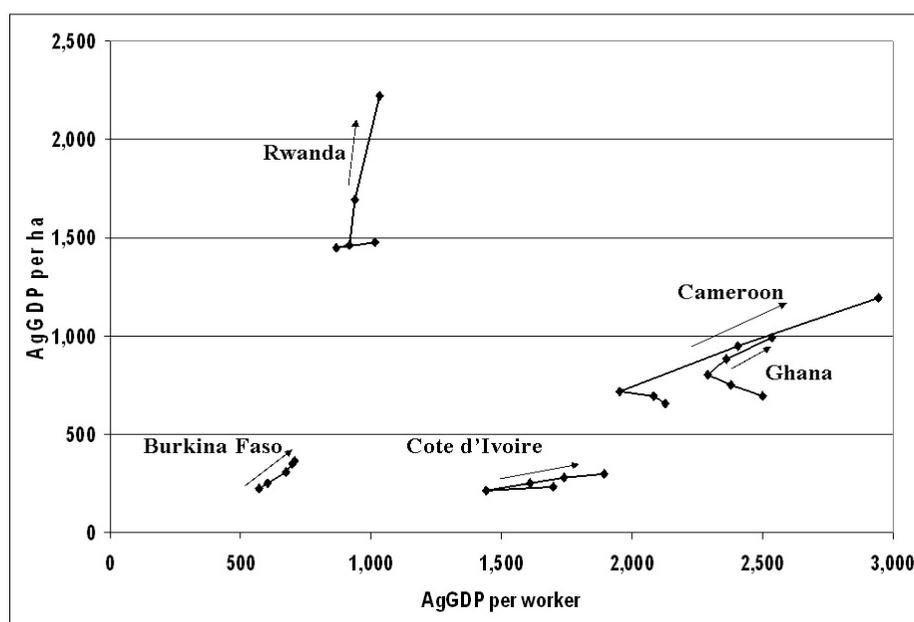
¹⁸ Using official exchange rates does not change the overall trend of each country. See Appendix 1: Composition of Exports 2006.

Appendix 2: Revised conversion required—current estimate averages for three-year periods based on constant 2000 USD then adjust to PPP by end of period PPP-constant USD conversion.

which showed a steady increase over the period (at least in value terms—see below. See Steedman, 2003, for a review). Rather, the increase in the agricultural labor force from 3.2 million in 1981 to 4.3 million a decade later—an (simple) average annual rate of growth of 3%—far outstripped both the increase in land productivity and the rate of expansion of the cultivated area.¹⁹ Part of the labor increase was the result of the forced repatriation of economic migrants from Nigeria in 1983²⁰: over 1 million returned when Ghana was already facing drought and other economic problems and another 300,000 in early 1985 at short notice.

2.14 Notwithstanding the upheavals from the ERP and the large influx of labor into the agricultural sector from elsewhere in Ghana as well as from Nigeria, it is clear that the performance of the agricultural sector contributes to Ghana’s reputation as ‘adjustment’s star pupil’ (Alderman, 1994). As shown in, the introduction of the ERP in 1983 brought an end to the volatility in agricultural GDP growth rates and set the foundation for the impressive performance thereafter—outcomes that extended also to the non-agricultural sector also.

Figure 2.2: Trends in Land and Labor Productivity 1981: 2003 for a selection of SSA Countries

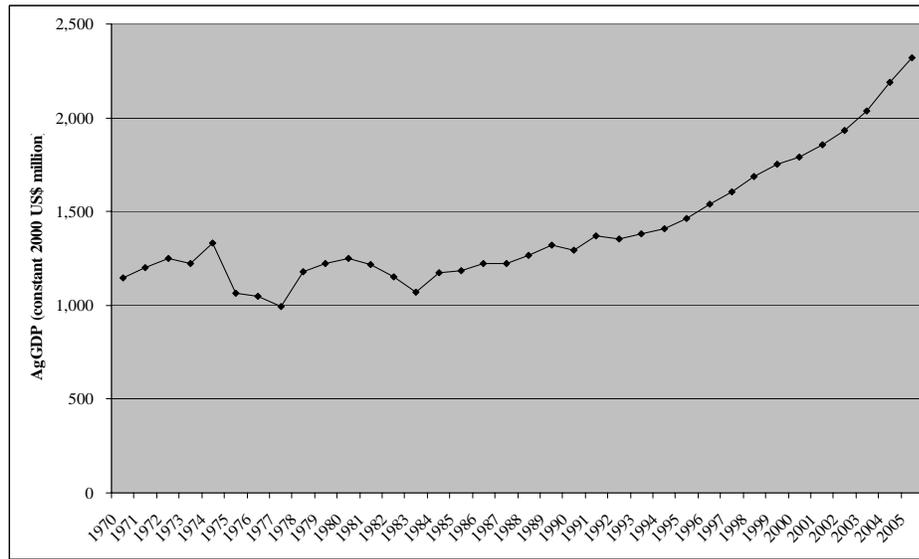


Source: Author’s calculations based on DDP data.

¹⁹ Both exhibited simple average growth rates of less than 1% over 1981—1991.

²⁰ In total, about 2 million economic migrants were evicted from Nigeria.

Figure 2.3: Trends in Agricultural GDP 1970 – 2005



Source: FAOSTAT

Evidence on the Role of Agriculture in Poverty Alleviation

2.15 Agriculture has an important role to play in facilitating the structural transformation of an economy; equally, it is often the most important sector in terms of improving well-being and **reducing poverty**. Ghana has achieved significant reduction in poverty in recent years, as summarized above. Rural poverty—most obviously impacted by agriculture-based livelihoods—has also shown significant reductions. National rural poverty has decreased from 64% in 1991/92 to 50% in 1998/99 to 39% in 2004/06—a major achievement. Moreover, the depth of poverty among rural households as measured by the poverty gap has also fallen over the same period from 0.24 to 0.18 to 0.14 (Appendix 3). Given that the majority of rural population depends on agriculture as their primary occupation, a growing agricultural sector has clearly been an important factor.

2.16 Poverty rates and the speed of poverty reduction, however, differ significantly between rural households across different agro-climatic regions. Households in the savannah region (predominantly in the North of Ghana) face higher rates of poverty and slower progress in reducing poverty compared to rural households in the forest zone and the coastal areas (Appendix 3). These divergent trends both between rural households and between rural and urban households (which are more severe) contribute to the continued rising inequality observed in the data (Coloumbe and Wodon, 2007).

2.17 Empirical evidence from elsewhere shows the importance of agricultural growth in reducing poverty in countries with similar structural characteristics to present-day Ghana. Evidence from China suggests the poverty-reducing impact of agricultural growth is four-times that of other sectors (Ravallion and Chen, 2007). Using poverty data from 82 countries including African countries, for a total of 282 periods, Christiansen and Demery (2007) show econometrically that a one percentage point growth in agriculture is 2.56 times more effective in reducing poverty than an equal percentage point aggregate growth in industry, which is consistent with similar empirical studies. Compared to services, the impact of agricultural growth is even stronger. While the poverty reducing impacts of agricultural growth falls as countries become richer, Ghana shares characteristics similar to the lower income countries in the sample and therefore the impact of agricultural growth is likely to be strong. Strong poverty impacts from tertiary sector growth occur when the tertiary sector is dominated by

small, rural-based and informal activities that are dependent on agricultural activities and a healthy rural economy—as shown for India by Ravallion and Datt (1996; 2003).

2.18 Spatial distribution of agricultural growth is uneven and corresponds at an aggregate level with dynamics of rural poverty. For example, certain crops have performed more strongly than others in terms of either (or both) increase in cultivated areas or increased yields; those areas where poverty remains pervasive and has improved little are precisely those areas regions in which these same crops are relatively more important.

2.19 Agriculture is one of the most vulnerable livelihood strategies yet it can provide effective means to alleviate vulnerability and, in particular, risk of hunger and food insecurity. According to a recent survey of 20 districts around Ghana, respondents identified twelve ‘frequent’ natural disasters and shocks, and another eleven ‘less frequent’. These include natural events such as floods, draught, bush fire and livestock diseases as well as the consequence of human activity including alien herdsmen, livestock theft and soil and water pollution (MoFA 2007b). Another survey in 25 districts in five regions²¹ identified a set of risk coping strategies, many of which are agriculture-based. The survey identifies 5% of households as vulnerable, characterized as extremely low labor return, high dependency ratio, poor quality housing, and land holdings of less than 0.5 hectare. Households are typically unable to avail themselves of economic opportunities, although they are not necessarily socially excluded (MoFA, 2007b).

2.20 Agriculture has important links with health and nutrition. Improved food production can play an important role in improving the health of women and children, which in turn affects future labor productivity. While not a major conduit of the agriculture-growth relationship, it is nevertheless important.

RECENT SECTOR PERFORMANCE: TRENDS IN PRODUCTION

2.21 A comprehensive review of Ghana’s economic rejuvenation since the 1983 Economic Recovery Program (ERP) is provided elsewhere—see, for example, Bogetic and others in volume 1 of this CEM (2007). Suffice to note that performance of the agricultural sector has been an important determinant of aggregate macroeconomic performance with the growth in the agricultural sector mirroring aggregate trends in most years (Table 2.2). Indeed, aggregate growth in the agricultural sector—including fishing and forestry—has exceeded 4% in every year since 2000.

Table 2.2: GDP Growth Rates 2000 – 2006

	2000	2001	2002	2003	2004	2005	2006*
GDP	3.7	4.2	4.5	5.2	5.6	5.9	6.2
Agriculture	2.1	4.0	4.4	6.1	7.0	4.1	5.7
Crops & livestock	1.1	5.0	5.2	5.3	4.3	3.3	6.0
Cocoa	6.2	-1.0	-0.5	16.4	29.9	13.2	8.7
Forestry & logging	11.1	4.8	5.0	6.1	4.2	5.6	2.6
Fishing	-1.6	2.0	2.8	3.0	6.2	-1.2	3.6
Manufacturing							
Services							

Source: SRID, MoFA. Notes: * provisional.

2.22 Although this suggests the aggregate structure of production within the agricultural sector has changed little, there are important trends indicative of an emerging competitive, commercial

²¹ The survey took place in the following regions: Upper West, Upper East, Northern, Brong Ahafo and Ashanti Regions.

agricultural sector. For instance, there is a steady shift from food staples to cash crops with overall production of cash crops increasing by 10.4% over the period 2001-2006; horticultural exports are currently at US\$65 million, a 132% over the baseline established in 2000;²² Marine fish exports have grown substantially. We examine these trends below.

Food Staples

2.23 **The staple foods of maize and cassava dominate food crop production in Ghana, with 1.5 million hectares allocated equally to these crops.** (The next most important by area planted is commands less than half the area.) At least within the food staple subgroup, the total planted area has increased roughly proportionately save for a more-than-proportionate increase in land allocated to yam at the expense of sorghum²³ (Table 2.3). This area expansion has driven the increase in production over the last decade. While most crops have seen an upward trend, **sorghum** and **millet** have remained stagnant, implying a reduction in per capita production. **Cassava** has seen a steady increase, albeit one that has tailed off in recent years. The International Institute of Tropical Agriculture (IITA) had been supporting cassava production in Ghana for many years under an IFAD-funded Roots and Tubers Improvement Program, utilizing the various new varieties collectively known as the Tropical Manioc Selection (TMS). TMS varieties are disease resistant, high yield, early bulking and embody root shapes that can accommodate mechanical processing. Tests show yields 40% higher than traditional varieties even in the absence of fertilizer (Nweke *and others*, 2004). Because it requires few inputs and is not dependent on coordinated input systems, it is ideal for small farmers, who are able to propagate easily. Since it can be planted in the rainy season, and harvested over a period of 18 months, the timing of labor inputs can be adapted to fit other more pressing obligations (Hazell, 2007). Other roots and tubers (**yam** and **cocoyam**) as well as **plantain** have all seen production increase but little change in yields. However, this does not imply they are not important sources of growth with some estimates suggesting that fully one-third of agricultural growth is attributable to root crops (IFRPI, 2006).

Table 2.3: Area Planted to Major Food Crops; 1995 – 2005

	1,000 Hectares			Share of Total		
	1995	2000	2005	1995	2000	2005
maize	669	695	740	27%	26%	25%
cassava	551	660	750	23%	24%	25%
sorghum	335	289	305	14%	11%	10%
millet	193	208	185	8%	8%	6%
yam	176	261	300	7%	10%	10%
cocoyam	205	247	255	8%	9%	9%
plantain	212	244	290	9%	9%	10%
paddy	100	115	120	4%	4%	4%
Total*	2,441	2,719	2,945	100%	100%	100%

Source: MoFA SRID. Notes: * this is not total cultivated area since non-food crops are ignored.

2.24 **Maize** production was largely stable over 1994—2001 but has seen dramatic increase since then. Farmers shifted into maize production in response to high prices using new varieties (in particular *Obatanpa*²⁴) which provided yields of 4—5 mt/ha with the right amount of fertilizers. However, simultaneous increases in fertilizer prices (the subsidy has already been removed, in 1990) undermined the impact of this new variety and resulting yields remained far below their potential (Steedman, 2003).

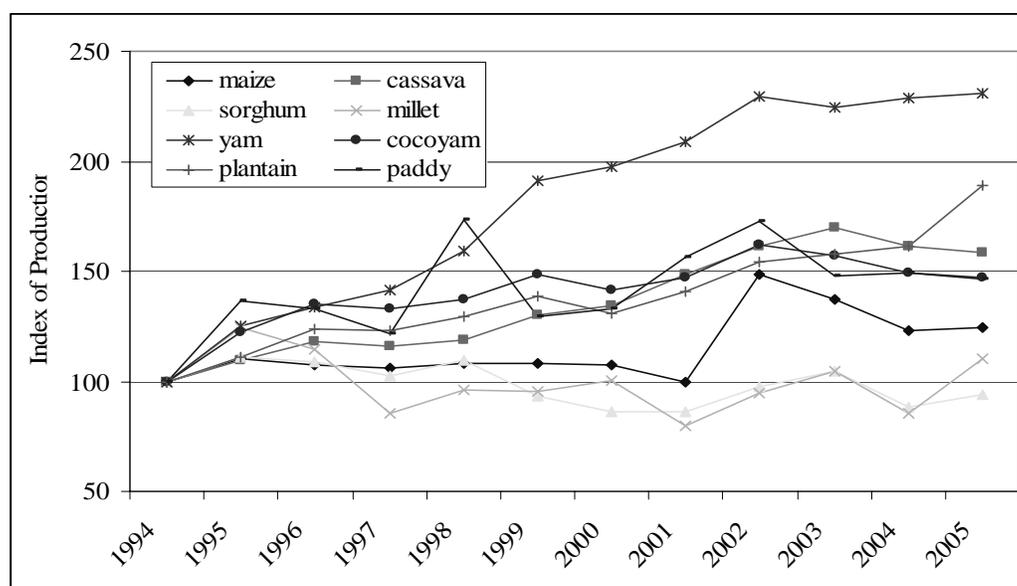
²² Data from AgSSIP ICR.

²³ We cannot make the claim that shifts in cultivation from sorghum to yam occurred at the level of individual plots.

²⁴ Introduced under the Sasakawa Global 2000 program.

More recently, maize has significant potential as an input to the livestock and poultry sector and is likely to be a growing market.²⁵

Figure 2.4: Trends in Food-Crop Production, 1994 – 2005



Source: MoFA SRID.

2.25 **Paddy** retains special status as a major food crop for which Ghana is a net importer, importing approximately two-thirds of annual consumption (500,000mt). Although production has increased by 20% in the decade to 2004, this is insufficient to keep pace with population.²⁶ Intensive rice cultivation is typically only found on large irrigated commercial farms; it is mostly inter-cropped with roots and tubers (cassava and plantain), cereals (sorghum, maize and millet) and other crops (tomato, okra, beans and sugar cane). Intercropping with 3–4 crops is common, with paddy grown in the furrows and sorghum, maize, millet grown on the ridges. Survey evidence suggests that rice is produced for cash-crop and subsistence across all production systems (ODI, 2003).

2.26 **This growth in output is characterized as extensive rather than intensive growth: yields in food crops have remained largely stagnant.** Table 2.4 reports average yields for three-year periods over the last decade or so. Smoothing for the effect of annual climatic factors²⁷ shows modest yield growth in maize and cassava (5% and 6% respectively over 1994–2005). In some instances (millet, cocoyam and paddy) average yields have actually fallen. Clearly, this recent data confirms previous analysis that agricultural expansion of food crops is due largely to an expansion in area and not due to improved yields (Steedman, 2003).

²⁵ IFPRI are embarking on a major study of the maize market in Ghana which will feed into this analysis.

²⁶ By comparison, in the mid-1970s domestic production of 40,000mt met 99% of domestic demand. In addition, changing consumer preferences (driven in part by urbanization and the preference for higher quality American or Thai rice). Ghana is the third largest export market for US rice exports.

²⁷ Using yearly data gives annual changes in yield in the ranges -37% to 43%.

Table 2.4: Average Yields for Food Crops 1994 – 2005

	1994 – 1996	1997 – 1999	2000-2002	2003-2005
maize	1.52	1.48	1.43	1.60
cassava	11.88	11.84	12.30	12.62
sorghum	1.09	1.02	0.92	0.98
millet	0.99	0.87	0.77	0.88
yam	12.01	13.04	12.75	12.48
cocoyam	6.87	6.05	6.54	6.49
plantain	7.90	7.98	8.00	8.75
paddy	2.09	1.95	2.01	2.01

Source: MoFA SRID. Data for three-year (weighted) averages in mt/ha.

2.27 **Farm households still remain dependent on basic staples for food security, particularly in the North.** Farms in the southern half of Ghana tend to specialize on one or two food crops. For instance, households in the Western region average 1.4 types of major field crops (including cocoa). On the other hand, farm households in the North cope with prevalent risk by diversifying across food crops with the average household in the Upper West growing 4.5 different food crops. Sorghum, millet, maize and groundnut dominate. Households in Southern Ghana are better able to diversify into higher-value cash crops including a combination of fruits vegetables for the domestic and export markets (see below). (Table 2.5) reports data on the number of households reporting positive harvests in specific crops as a share of all households in each region, based on the GLSS V. It is illustrative of the divergence in cropping patterns across different regions of Ghana and further emphasizes the dominance of food staples in the Guinea Savannah regions of the north.

Table 2.5: Distribution of Crop Production across Farm Households, 2005/2006

Region	cocoa	sorghum	millet	maize	groundnut	paddy	bananas	tomatoes	oil palm	pepper
Western	65%	0%	0%	69%	1%	2%	20%	40%	39%	50%
Central	42%	0%	0%	86%	1%	0%	12%	36%	49%	57%
Greater Accra	3%	2%	0%	95%	6%	0%	2%	28%	3%	40%
Volta	4%	3%	1%	91%	19%	4%	18%	37%	40%	50%
Eastern	31%	0%	0%	88%	4%	1%	24%	20%	36%	35%
Ashanti	33%	0%	0%	87%	3%	1%	20%	24%	28%	47%
Brong Ahafo	23%	0%	7%	83%	9%	6%	16%	39%	20%	62%
Northern	0%	52%	40%	95%	72%	20%	1%	44%	1%	60%
Upper East	0%	62%	88%	58%	68%	63%	0%	22%	0%	56%
Upper West	0%	75%	62%	79%	72%	48%	0%	57%	0%	63%

Source: Author's calculations based on GLSS V data.

The Continuing Importance of Cocoa

2.28 **Cocoa continues to play a major role in Ghana's agricultural economy.** From 1911 until the mid-1970s, Ghana was the world's leading producer.²⁸ It was, and still is, small-holder based, with about 1.6 million small farms averaging about 3 hectares. While the structure of production has remained constant, the policy environment in which cocoa farmers operate has changed significantly. Private

²⁸ Some observers argue that cocoa has shaped social, economic political life in Ghana: "Cocoa built the roads, harbors, railways, schools, hospitals, and universities; it capitalized domestic trade and its local markets; it gave impetus to the nationalist movement... it has continued to finance the state and its civilian and military rulers" Asutin.

marketing arrangements were replaced during World War Two, at which time the colonial government sold directly to the British Food Ministry. In 1947 the Cocoa Marketing Board (CMB) was established which became the Ghana Cocoa Board or COCOBOD in 1979. Ostensibly established to counter price volatility, the remit of CMB rapidly expanded to cover extension services, input marketing and even extended to include the operations and maintenance of rural roads leading to cocoa-producing villages (Brooks *and others*, 2006). Moreover, CMB rapidly transitioned to an instrument of taxation rather than support, with rents obtained from producer prices being kept below world prices and the use of an over-valued exchange rate applicable to producer prices (Stryker, 1990).

2.29 During the 1970s and 1980s, the state-administered marketing system collapsed. Distortions worsened, logistical systems broke down (in 1981/82 the amount of shipped cocoa was one-half that harvested) and corruption and inefficiencies within CMB were rife. Aging plantations, disease, and widespread bush-fires²⁹ combined with falling producer prices led to a collapse in output by the early 1980s to less than one-third of the peak 1964/65 crop. Ghana's global market share fell commensurately to 17% from 36% in 1965.

2.30 Notwithstanding these other factors, the decline in output was largely attributable to overvalued exchange rates and high taxation, effected through the monopsonistic marketing board (Teal and Vigneri, 2004). By 1983, farmers received only 23% of the fob price.³⁰ A major thrust of the ERP was to improve the terms of trade for the agricultural sector, including a convergence of producer and world cocoa prices. The share of producer prices steadily increased to 40% by 1994/95, 50% by 2000/01 and 68% in 2003 (Brooks *and others*, 2006; Steedman, 2003). Currently, 70% of the world price is passed on to producers.³¹ While producer prices (as well as rates for fees in purchasing and marketing) continue to be fixed by COCOBOD, the Producer Price Review Committee (PPRC) now includes representatives from cocoa farmers, licensed buyers (see below), Government agencies as well as expert observers.³²

2.31 Parallel reforms in the marketing side—both inputs and outputs—and in the operational efficiency of COCOBOD gathered pace after the 1994 elections. Increasing the efficiency of COCOBOD was essential if greater share of world prices were to be passed to consumers while maintaining fiscal viability. Staffing numbers of COCOBOD were reduced from over 100,000 in the 1980s to 10,400 in 1995 and 5,100 by 2003. In addition, the monopsony enjoyed by the Produce Buying Company (PBC) was broken up with the introduction of Licensed Buying Companies (LBCs). By 2000/01 the market share of the PBC had fallen from 80% to 37% in five years. In some areas, farmers can choose one of ten prospective LBCs although a local monopsony may remain in less accessible areas. Research into the decision criteria for farmers selecting particular LBCs suggests a combination of social and financial relationships; relationships typical of 'contract-farming' arrangements do not appear as important as liquidity concerns (Figure 2.5).

²⁹ Bush fires in 1983 destroyed about 60,000 hectares.

³⁰ Free on board (fob) is the export price obtained at the port-side, excluding all transport for down-stream costs of international shipping.

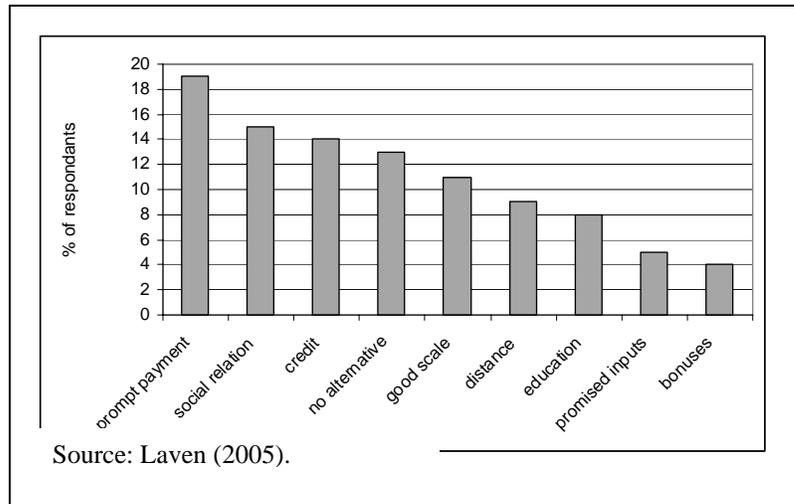
³¹ The other effect of the ERP—controlling inflation—complemented the shift in managed prices. By the end of the 1980s the real producer price and increased three-fold from their low of 2983/84 (Brooks *and others* 2006).

³² The full list includes: representatives of farmers, licensed cocoa buyers, Ministry of Finance (The Minister of Chairman of PPRC), the Bank of Ghana, the Institute of Statistical, Social and Economic Research of the University of Legon and COCOBOD officials (Brooks *and others* 2006).

Figure 2.5: Determinants of the Choice of LBCs

2.32 However, **COCOBOD retains the de facto monopoly on exports**: although LBCs are now permitted to export up to 30% of their through-put directly to external buyers, minimum tonnage requirements has meant that only nine are registered to do so and none have become operational (Brooks and others, 2006).

2.33 **The impact of this steady reform has been impressive** (see Appendix 5). The effect of the increasing ratio of producer to world prices has been compounded by high world prices. Ghana's cocoa is extremely high quality and commands an additional premium over world (spot) prices. According to statistics from the state marketing agency COCOBOD (see below), Ghana's cocoa production has increased rapidly in recent years and currently stands at over three-quarters of a million tones)—three-times the annual average for 1985—1990 and approximately 100,000mt above projections.³³ Some of this expansion may be explained by smuggling of cocoa from Cote d'Ivoire³⁴ (see Box 2.1). Ghana now accounts for about one-fifth of global cocoa trade, second only to Cote d'Ivoire (which accounts for about 40%).



2.34 **Production has been greatly assisted by a range of extension services provided by COCOBOD.** The increase in output during the 1990s was driven by area expansion—of the 37% increase in output over 1991—1998, only 6% was due to yield growth with the majority from new cocoa producers (Teal and Vigneri, 2004. See also Figure 2.7). However, recent anecdotal evidence suggests a greater role for productivity growth.³⁵ This productivity growth is reportedly dependent on public efforts to combat disease (including swollen shoot disease and capsid insect attack)³⁶ through free mass spraying, the provision of new planting varieties which provide higher yields and faster maturity, and improved public infrastructure that has reduced transport costs (Brooks and others, 2006). Most farmers attribute yield increases to mass spraying program (Laven, 2005) although the effectiveness of previous exercises

Box 2.1: Smuggling of Cocoa from Côte d'Ivoire

The illegal inflow of cocoa from Cote d'Ivoire is estimated to be between 120,000—150,000mt (2003/04), equivalent to 16%–20% of reported gross domestic production. Cocoa production from Cote d'Ivoire is inferior quality—only 5% of production is Grade I quality, down from 50% a few years ago—and the smuggling may have contributed to significant drop in the average premium enjoyed by Ghanaian cocoa from between \$50—\$80 per mt to about \$20 per mt.

Source: Brooks and others, 2006.

³³ Projections of the International Cocoa Organization for the 2005/06 season were 640,000mt.

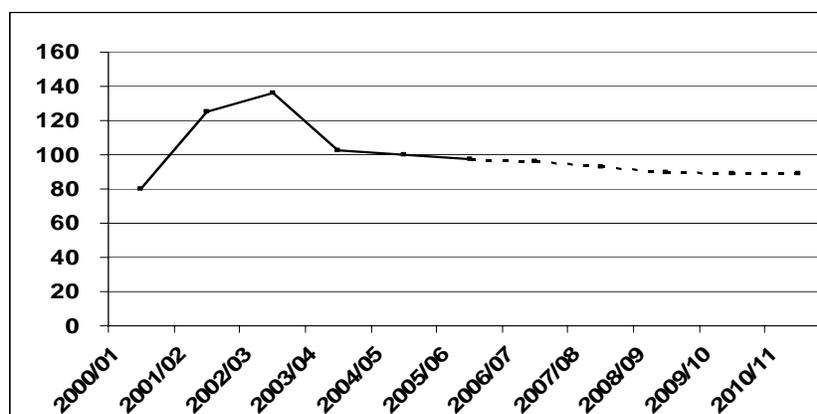
³⁴ There is a long history of smuggling in response to differential prices between Cote d'Ivoire and Ghana; it is the direction of this illegal exchange, not its existence, which changes over time (ICCO 2004). For instance it is reported that in 2001/02 over 60,000mt of cocoa was smuggled from Ghana into Cote d'Ivoire (Steedman 2003).

³⁵ It is left for future analysis to update this conclusions.

³⁶ The Cocoa National Disease and Pest Control Committee (CODAPEC) was established in June 2001 to develop two strategies to control capsid (insecticides) and black pod (fungicides).

is contested (Steedman, 2003)³⁷. Mass spraying is available to any farmer who cleared his or her land: in 2003 93% of farmer surveyed linked mass spraying with yield improvements and 48% thought this was the primary cause. Other factors included improved weeding (17% of respondents), individual use of inputs (15%), good farm practice (13%) and shade management (7%). However, the perceived effectiveness of the program has since fallen, and only 63% of respondents fully agreed that the mass spraying had helped them. Some observers suggest that since free spraying is available only to farmers with well-tended cocoa farms, it is in fact the improved husbandry and not the spraying *per se* that is the reason for improved yields.

Figure 2.6: Index of World Cocoa Prices; 2001/02 – 2010/11



Source: (ICCO 2006).

Table 2.6: Annual Cocoa Production; 1999 – 2006

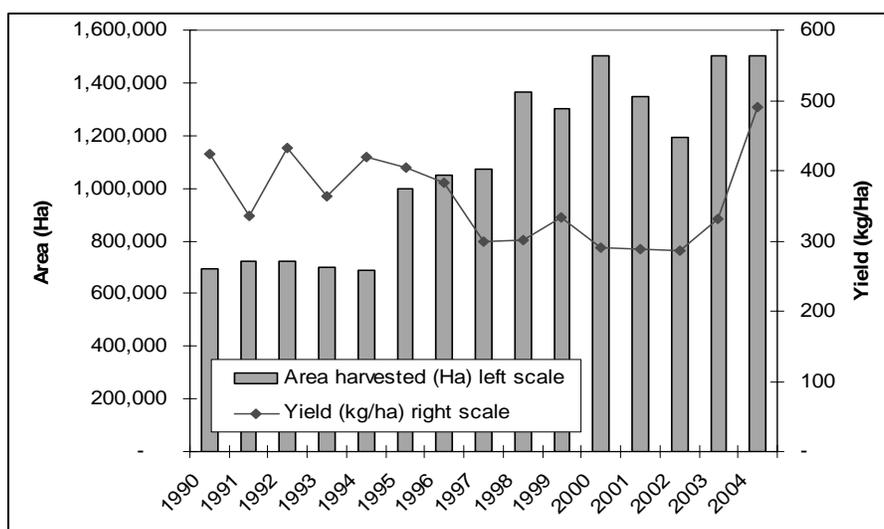
Year	Production (1,000mt)	Share of Production in Western Region
1998/99	397	53%
1999/00	437	55%
2000/01	390	52%
2001/02	341	53%
2002/03	497	56%
2003/04	735	57%
2004/05	599	57%
2005/06	740	57%

Source: COCOBOD.

2.35 **New varieties appear to have an important impact on current production with recently released varieties providing at least 42% higher yields** (Edwin and Masters, 2005). There seems to be little impact of improved management techniques: the same study finds that improved varieties account for most of the correlation between tree age and yield, and the marginal impacts of fertilizer pesticide use and labor are the same for old and new trees. Improved varieties also reach maturity after only 3—4 years (compared to 5—6 years for traditional varieties). Moreover, until 1999/2000 the projected annual seed pod requirement of 2.2 million pods were available at a heavily subsidized price of ₡10 per pod although this has now been increased to ₡200 per pod (AfDB, 2002).

³⁷ An earlier exercise in 1978/79 was widely seen as a failure when only 11% of funds were used for their intended purpose. In the 1990s, spraying apparatus was distributed to farmers at subsidized rates; however, utilization was low leading to major (negative) externalities and the Government took control again (Steedman 2003).

Figure 2.7: Area under Cocoa Production and Average Yields; 1990 – 2004



Source: FAOSTAT

High Value Exports

2.36 **Ghana has enjoyed strong growth in the horticulture sector** (Table 2.7). Total horticultural exports have increased by 230% since 2000 and, according to CEPS, have exceeded US\$76 million in 2006. While this remains a minor share of total foreign exchange receipts (8.5% based on latest estimates of gross export revenues)³⁸ horticulture is an important contributor to export diversification, providing a third of revenues from non-traditional exports.

2.37 **Ghana’s horticulture industry is private sector driven.** More than 80% of the sector’s entrepreneurs own small- to medium-sized businesses. While horticulture growth has been driven by pineapples, it includes in addition: pawpaw, soybeans, aubergines, banana, mangoes, fruits of the genus capsicum, dried apricots, oranges, spinach, beans, tomatoes, berries, avocados and sweet potatoes. (See Appendix 6 for further details). Sales to Europe of Asian vegetables have also increased the unit value of air freighted exports while fresh produce processing (fresh-cut fruits and juices) and fresh produce sales in local and regional markets have also picked up.

2.38 **Latest data from the GLSS-5 shows the expansion of horticulture production across the country.** For example, pineapple Pineapple exports are an interesting success story in horticultural exports. The market exploded in volumes from practically zero in the late 1980s to about 70,000mt (fresh cut and juices combined) in 2004, capturing a 10% market share of the European fresh produce import market. Sea freight has been a major factor, increasing from 15,000mt in 1997 to 70,000mt in 2004 (even

Table 2.7: Horticultural Exports 2000 – 2006

	Horticultural Exports (US\$million)
2000	28.082
2001	29.988
2002	33.614
2003	29.218
2004	60.520
2005	50.264
2006*	76.000

Source: MoFA.
Notes: *Provisional data from CEPS.

³⁸ CEPS report aggregate exports of US\$893 million in 2006.

though only one shipping company is available to transport freight from Ghana). The pineapple export industry has a large base of small farmers contributing up to 50% of the total export volume.

Table 2.8: Export Crop Production by Farm Households; 2005/2006

Region	pineapple	mango	bananas	sheanut	cashew
Western	22%	5%	20%	0%	1%
Central	12%	3%	12%	0%	0%
Greater Accra	8%	1%	2%	0%	0%
Volta	9%	20%	18%	2%	0%
Eastern	14%	3%	24%	0%	0%
Ashanti	15%	6%	20%	0%	0%
Brong Ahafo	13%	12%	16%	0%	13%
Northern	0%	2%	1%	4%	1%
Upper East	0%	0%	0%	2%	0%
Upper West	0%	4%	0%	28%	4%

Source: Author's calculations based on GLSS V data.

2.39 However, Ghana experienced a dramatic reduction in market share and export earnings from horticulture with the introduction of the MD2 pineapple cultivar by Del Monte. In 2005 horticultural exports declined by 27% primarily due to a decline in pineapple exports by 35%. The industry is now switching to the MD2 and trying to meet standards for food safety. Smallholders, who contribute over 40% of exported pineapple, should be able to export 23,000mt by November 2009 and a new cold storage facility at the Sea Port could help the industry reach a capacity of 300,000mt by 2010.

2.40 To address market demand for new varieties and certification of good agricultural practices, a certification scheme for accessing high quality planting materials of mango, citrus and pineapple coupled with knowledge of improved production techniques has been initiated by the government. Like pineapple, mango is likely to become an important export crop for smallholders. About 2,000 out-growers have been supplied with planting materials on a 50% grant basis. Public/private collaborative research has been facilitated by the Public/Private Research Committee and a Geographic Information System (GIS) Database Management System has been established to provide reliable and accessible data for planning.

2.41 Similarly, efforts are being made to address food safety conditions so as not to loose out on markets. A harmonized pesticide list, to guide pesticide usage in line with international standards, has been published by the Environmental Protection Agency. The Ghana Standards Board laboratory is being upgraded to meet ISO17025 certification.³⁹ Most of Ghana's larger pineapple producers have achieved EurepGAP certification, but small farmer certification schemes have yet to be addressed although efforts are on-going to obtain group certification.

Livestock

2.42 Global demand for livestock products (meat, milk and eggs) is increasing as global trade is liberalized and incomes increase. Developing countries are increasing meeting this demand: over the period 1990—1995 the production of meat, pork, milk and eggs in developed countries fell (only poultry

³⁹ ISO17025 is the international standard for testing and calibration of laboratories and enshrines generic quality management standards covered by the more familiar ISO9001 plus additional specifications related to laboratory-based management systems.

production increased) while it increased substantially in developing countries⁴⁰—evidence of the ‘livestock revolution’. Data on livestock populations is notoriously poor⁴¹ but it is clear that domestic production of livestock products falls far short of consumption: over 74,000mt of meat product imports were reported in 2005, over half of which is chicken (Table 2.9). There would appear to be a major opportunity at import substitutions, as well as exports (which currently amount to just over US\$1 million, over half of which is live sheep and goats).

2.43 Local slaughters declined over 2004—2006 period, further widening the gap between domestic demand and supply. Weaknesses in the livestock value chain, including poor location of abattoirs, high charges and deliberate circumvention of inspection regimes are cited as important causes (MoFA, 2007b). Disease control is a major constraint to animal production, with outbreaks of scheduled and notifiable diseases in all species in all regions of the country. In terms of losses, poultry was most severely affected, and mortality rates of chicks generally are very high dissuading investment in poultry production. Most chicks are imported since domestically-bred chicks often lack the necessary vaccinations (Steedman, 2003). In the North of Ghana guinea fowl have been identified as a promising small-holder breed (ODI and CEPA, 2005).

2.44 Shifting consumer preferences also matter. Increasing awareness over food hygiene is raising the bar for domestic producers (motivating the circumvention of inspections observed above) with more sophisticated tastes demanding attention to presentation and packaging. If domestic production is to displace imported meat products particularly in urban consumption, it will require significant improvements in the value chain and greater attention to marketing and meeting consumer preferences.

2.45 Livestock are often assumed to be an important coping mechanism acting as a store of wealth to be drawn down in cases of negative shocks (Binswanger and McIntire, 1987). In case of income short-falls, households typically prefer to sell live animals and purchase grains rather than killing livestock for own-consumption. However, empirical surveys from West Africa suggest the magnitude of the contribution of livestock to consumption smoothing is overstated, with livestock sales compensating for about 20%—30% at most of income shortfalls (Fafchamps and others, 1996). Nevertheless, a stronger livestock sector could have important secondary growth effects by providing an effective safety net and therefore encouraging risky but productive investments by farm households.

Table 2.9: Meat Imports, 2006

Product	Imports (mt)
beef	9,578
buffalo	4,499
chicken	40,429
duck	608
mutton	4,445
pork	11,778
turkey	2,625
milk products	297
total	74,259

Fisheries Sector

2.46 Ghana is blessed with access to substantial marine and inland fisheries, including a 550 km coastline and the largest inland lake in Africa, as well as many rivers and ponds. Fishing is an important source of income for local communities: Data from the GLSS IV revealed that communities on the coast derive 40%–50% of their incomes from fishing, while those on the Volta figures are 75%–80%. (GDP data only captures Volta lake inland fisheries and the coastal fishing resource—and even these data are subject to wide margin of error.) It is reported that the fishing industry provides livelihoods for 1–2 million fishermen, processors and traders, including 200,000 marine and inland fishermen and 500 public

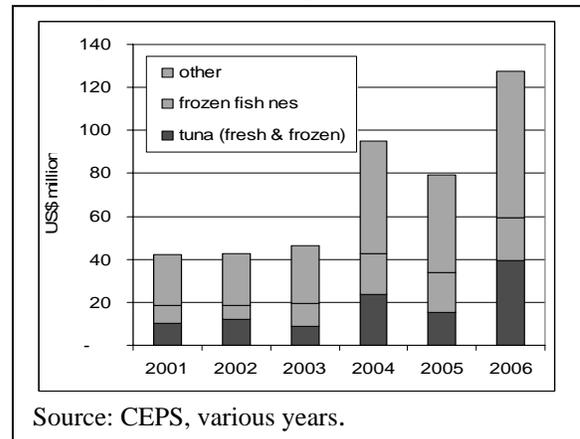
⁴⁰ Aggregate production of ruminant meat increased by 4%, as did poultry (12%), pork (8%), milk (3%) and eggs (9%) (Waicent, 1996).

⁴¹ The last comprehensive livestock census was conducted in 1996. Livestock population trends since then are assumed to be a continuation of the average annual increase from the previous decade.

servants responsible for fishing-related policy and services. Forward and backward linkages from artisanal fishing are reckoned to be substantial. It is well documented that fish provide a major source of animal protein—about 60% of recommended daily intake (Aggrey-Fynn, 2001), although domestic supply falls short of the government’s recommended per capita consumption of 40—50kg per year.

2.47 **Marine fishing** is characterized by: (i) artisanal coastal fishing; (ii) domestic commercial fleet; and (iii) illegal encroachment into Ghana’s Exclusive Economic Zone (EEZ) by foreign vessels. According to IMM (2003), there are 200 fishing communities along Ghana’s 550km coastline with 310 beach landing sites. Small pelagics dominate artisanal fishing, and account for about 70% of total marine fish landed. In 1996, Ghana’s commercial fleet currently consists of 35 tuna vessels and 9 shrimp vessels trawlers supplying a number of domestic processing plants. There are no recent estimates of the extent of illegal commercial fishing in Ghanaian waters.

Figure 2.8: Fish Exports; 2001 – 2006



2.48 **Inland fishing is focused on Lake Volta**, home to approximately 1,200 fishing communities producing approximately 50,000mt per annum (Braimah, 2000) as well as other (unrecorded) communities dependent on fishing in other lakes, rivers and ponds. It is estimated that Lake Volta’s potential yield is being exceeded and catch per unit is reported to be falling, with many observers attributing this to over-exploitation, as well as environmental degradation (including poisoning from the use of insecticide as a method of fishing). Aquaculture has recently (since 1950s) emerged as a growing industry, with latest available estimates reporting 2,000m ponds with a total area of 240ha and an output of nearly 400mt (FAO, 1998). As such, it remains marginal source, although is an important source of tilapia and catfish, often sold to urban markets.

2.49 **Cold storage facilities exist on the coast, in regional capitals and in some strategic towns.** There are no ice houses in most fishing communities. Traders will take ice blocks with them to landing sites, although pelagic fish do not command sufficiently high price to justify ice packing. It remains impractical for most fisher-folk to access these marketing channels and consequently most landings are either smoked, dried or salted and dried. This facilitates long-term storage and distribution and helps to smooth out seasonality in supply. Urban consumers—especially the poor—enjoy fried fish as a snack or street food.

2.50 **There is very little processing beyond:** (i) freezing and/ or canning commercial marine landings; and (ii) smoking or drying artisanal marine and inland production. Notable exceptions are the production of *momone* or “stinky fish”. At the same time, post-harvest losses from artisanal fishing are high—some estimates report levels of up to 70%, particularly in high season when there is a glut of production and landing sites are saturated. The limited processing means very short value chains, with little value addition between steps except the marketing margin.⁴²

2.51 **Official export data reports significant increase in fish exports, increasing three-fold over from 2001—2006** (Figure 2.8: Fish Exports; 2001 – 2006). Tuna dominates, although high-value seafood is exhibiting a steady increase, with fresh octopus and cuttlefish exports now worth over US\$3 million (2006) compared to US\$1.5 in 2003. Spain is the biggest importer accounting for 41% of official exports

⁴² One estimate from 2002 reports one kg of frozen sardinella costing US\$1.3 at retail, compared to US\$0.55 at wholesale and only US\$0.4 from the broker IMM (2003).

(by value) in 2005. Other important destinations are France (11% of exports), Cote d'Ivoire (10%), Portugal and Chile (7% each), and Greece, Panama and Mauritania (4% each). Overall, the export industry has undergone major consolidation in recent years, with the number of exporters falling from 328 in 1996 to 120 in 2002 even though the value of exports has doubled from US\$12.4 million to US\$24.5 million. Tuna has come to dominate exports, increasing from US\$2 million to US\$12 million over the period, attracting new entrants into this segment of the market.⁴³

2.52 A number of factors threaten the continued important contribution that inland and marine fisheries make to agricultural economy. Stocks—both inland and marine—are falling, due to over-fishing, especially due to illegal practices. Second, the decline in available firewood is threatening smoke-fish enterprises; local deforestation also leads to decline in water quality. Changing consumer preferences also are affecting demand: overseas Ghanaians are a ready market for 'local' fish exports, and the urban non-poor are increasing their consumption of tilapia. Exporters to the EU now have to meet stringent sanitary and phyto-sanitary (SPS) conditions. Standards have been met but the clear evidence is that meeting these standards is costly, and act as a fixed costs thereby generating economies of scale that provide an advantage to larger operators.

2.53 There are a number of on-going efforts to improve the fisheries sector, both in terms of maximizing the economic opportunities from this important natural resource and in improving the wellbeing of disadvantaged fisher-folk. Key efforts to increase value addition include: improved fisheries management including traditional management, government regulation and a recent innovation of co-management by government and stakeholders (particularly in the marine subsector). In addition, a number of interventions in support of improved landing and handling facilities in artisanal fishing communities aim to reduce post-harvest losses and strengthen the value chain. This includes new improved smoking technology although the update has been low due to high cost compared to the traditional alternatives, breakages and the absence of young entrants into the industry. Credit is a recurring problem to necessary investments to raise productivity, with reluctant lenders and insolvent concessional credit schemes. Reciprocal credit arrangements between fisher-folk and processors/ traders exist and are an important source of credit, although fisher-folk remain highly vulnerable to indebtedness (IMM, 2003). The subsidy on fuel helps to reduce the operational costs of boats. Moving forward, the overall policy agenda for the sector is set out in the Ministry of Fisheries' Aquatic Strategic Framework (published in August 2006).

THREATS TO SOURCES OF GROWTH AND OPPORTUNITIES TO STEP-UP PERFORMANCE⁴⁴

2.54 The major threat to agricultural growth is the disappearance or saturation of existing markets. The shift in consumer preferences for pineapple is a particular stark case. For food staples—often ignored as a major source of agricultural growth—the situation is more promising. As Rosegrant *and others*, (2005) note, with over 600 million people, and population growth of over 3% p.a., Africa's demand for food staples will grow at 3%—4% p.a. and this is likely to continue until 2020 at least. IFPRI (2006) notes that although most countries in West Africa are net food importers, the potential for regional trade does exist for livestock, pulses, oilseeds and maize.

⁴³ The number of tuna exporters rose from 3 to 8 over the period.

⁴⁴ This will be complemented by on-going econometric analysis of the determinants of agricultural production based on household level production function analysis using the GLSS V dataset.

2.55 Critical issues affecting existing sources of growth and the potential for agriculture to contribute more fully to growth and poverty reduction include:

- threats to environmental sustainability;
- stagnant or declining productivity;
- inadequate supporting infrastructure, such as irrigation;
- insufficient improvements in access to purchased inputs, credit and land resources;
- low levels of technology adoption, for production, value addition and processing; and
- ineffective value chain development.

2.56 These are expanded on in the following sections.

Environmental Impacts of Recent Growth Trends

2.57 Environmental effects matter in Ghana. Together, the fisheries, forestry and wildlife and mining sectors account for 15% of GDP, 25% of government revenues and 60% of foreign exchange, artisanal subsectors form the basis of employment for half a million of the rural poor, and over 70% of the population are dependant on natural resources for basic food, water and energy requirements. In addition, urban air pollution, inadequate potable water supply, sanitation and hygiene and indoor air pollution represent the largest constraint to quality of life and labor productivity and thus the sustainability of growth in fast growing economies.

2.58 The consequence of environmental degradation could be as large as 1% annual reduction in Ghana's potential economic growth. Recent estimates of the cost of environmental degradation suggest that the equivalent of 10% of GDP is lost annually through unsustainable management of the country's forests, land resources, wildlife, and fisheries and through health costs related to water supply and sanitation, and indoor and outdoor air pollution. This has a significant impact on the capacity of the country to sustain its growth. The genuine savings rate (a measure of growth sustainability that takes environmental factors into account) per capita is calculated as being a negative US\$18, after accounting for population growth and resource depletion.

2.59 The Country Environmental Analysis concluded that the mean estimated annual cost of environmental degradation is nearly US\$850 million or 10.0% of GDP. The degradation of natural assets (agricultural soils, forests and savanna woodlands, coastal fisheries, wildlife resources, and Lake Volta's environment) costs at least US\$520 million annually (6.0% of Ghana's annual GDP) and health effects account for nearly US\$330 million or 3.8% of GDP. Among the natural assets, the large majority of the estimated costs of environmental degradation come from in- and off-reserve forests (63%), and to a lesser extent, from soil nutrient depletion (20%). About 55% of the total estimated health cost comes from inadequate water supply and sanitation, 36% of the cost from indoor air pollution, and 9% of the cost from urban outdoor air pollution (PM10). The cost of environmental degradation to GDP represents almost one half of Ghana's US\$1.5 billion annual Official Development Assistance (ODA).

Closing the Yield Gap

2.60 It is widely acknowledged that substantial yield gaps exist in all crops across Ghana (IFPRI, 2006). Even without new science, there is substantial opportunity to raise yields, although the exact impact will depend on local agro-ecological conditions. In fact, from the perspective of soil quality, Ghana is relatively well placed compared to other countries in the region (Table 2.10). It has a reasonably high share of land in the most suitable category, notwithstanding the fact that very little is irrigated. Poor quality land is scarce. IFPRI (2006) report two simulations for yield growth based on: (a) recovering yield due to biotic constraints (i.e. pests, diseases and weeds) in which 5%–35% of yield loss would be

regained through technological improvements; and (b) where actual yields ‘catch up’ with those observed in similar agro-climatic conditions.⁴⁵ The Table of results for Ghana are provided in Appendix 7 and illustrate the substantial benefits (on a per hectare basis) to producers from technology improvements to raise yields.

Table 2.10: Soil Quality Characteristics for a Selection of West African Countries (%)

	Best suitability		Modest suitability		Least suitable	
	Irrigated	Non-irrigated	Irrigated	Non-irrigated	Irrigated	Non-irrigated
Ghana	0.1	60.8	0.1	26.1	0.0	12.8
Cote d’Ivoire	0.1	90.7	0.4	6.9	0.0	1.9
Mali	0.4	3.3	3.7	57.1	3.2	32.2
Nigeria	0.3	4.3	1.0	16.0	2.8	75.7

Source: IFPRI 2006).

2.61 Particular interventions are necessarily crop-specific. Efforts to increase **cocoa** production will require continued upgrading of plantations to new varieties. Over half national cocoa production comes from the Western region, which is a relatively recent source. The older trees in the original cocoa-growing areas of Eastern Region, Ashanti and Brong Ahafo will need to be replaced—although this will take place in an environment without the significant subsidized seed pods of previous years. There is still a yield gap in cocoa, with major producers reporting yields of 350kg/ha in Ghana compared to 740kg/ha in Cote d’Ivoire.⁴⁶ There also is a demographic concern: while the cocoa expansion of the 1990s was motivated by new cocoa-growing households (Teal and Vigneri, 2004), it is estimated that by 1999 the average age of the cocoa farmer was 55 years (Steedman, 2003). Cocoa farming does not have the prestige it once had, particularly amongst the young who are keen to migrate to the cities.

2.62 There may also be opportunities for organic and/ or fair trade cocoa. The premium for organic cocoa could reach 30% (in addition to the existing quality premium that Ghana enjoys). This need not be at the expense of yields: yields of 1mt/ ha are reported. Moreover, given the substantial additional costs segregating organic beans from regular beans during transportation⁴⁷, there is a stronger financial case for local processing thereby. One major producer already heavily engaged in Ghana is seeking to source 20,000mt of organic cocoa from Ghana. Kuapa Kokoo is an established cooperative and LBC, and is the only source of fair-trade cocoa. The global organic food and beverage market is growing⁴⁸ although organic cocoa accounts for only about 0.5% of global cocoa production. However, organic cocoa has a higher market share than fair-trade cocoa.⁴⁹ Most organic cocoa (about 70%) is currently sourced from South America (ICCO, 2006b) with the Dominican Republic accounting for about 5,000mt (Appendix 8).

2.63 Yields of roots and tubers can be increased with the application of existing knowledge and necessary complementary inputs. For example, **cassava** yields of 30mt/ha has been observed in Brong Ahafo, compared to the current national average of about 12mt/ha. Greater use of NERICA variety for upland **rice**, plus the adoption of the lowland variety will increase production. However, for some cases the beneficial impacts from adoption is conditional on the application of new cultivation techniques,

⁴⁵ Potential yields are taken from the FAO’s AEZ project.

⁴⁶ Personal communication with Barry Callebaut representatives, April 2007.

⁴⁷ For example, organic produce avoid contamination from the fumigation of trucks, containers and ships normally required under international sanitary and phyto-sanitary requirements.

⁴⁸ Datamonitor estimate the total value in 2005 to be US\$18 billion in the US, \$5.4 billion in Germany and \$4.1 billion in the UK. Green and Black’s is the UK’s leading manufacturer of organic chocolate and has seen turnover increase by 69% in 2004 (to 22million) compared to an increase of only 2% for the industry as a whole (ICCO 2006b).

⁴⁹ Statistics for organic cocoa report 15,500mt produced of which 11,170mt is traded; exports of fair trade cocoa amounted to 3,901 mt.

including the need for additional purchased inputs and/ or irrigation. Outstanding constraints in these factors of production will undermine the projections foreseen in these simulations.

2.64 Gender disparities within the agricultural sector are pervasive and reflect complex socio-economic interactions. This is reflected in the data indicating that women are less productive than men. This is rarely the case and detailed empirical analysis typically concludes the opposite once all pertinent factors are taken into account. Evidence from other countries emphasizes the importance of understanding intra-household dynamics and the invalidity of assuming efficiency in intra-household decision-making (Udry and others, 1995; Blackden and Bhanu, 1999). Delineated roles within the farm household typically confine women to food crop production while men dominate cash-crop production. Hence agricultural development, including efforts to diversify into marketable crop production, and/or into higher value crops normally implies a shift in the relative roles of men and women. Conversely, increasing seasonal and semi-permanent migration is feminizing agriculture, which has implications for labor supply, for instance the need for women-headed households to hire in manual labor for heavy tasks previously undertaken using family labor. Moreover, inefficient allocation of resources within the household between men and women implies suboptimal aggregate household production—with the potential to increase production and household-level productivity by equalizing access to inputs. Credit, land and information (through lower literacy rates) are areas where indicators differ largely by gender. For example, simulations for Burkina Faso suggest that equalizing access to inputs would increase output by 10%–20% (Udry and others, 1995) while in Kenya the increase is estimated to be 10%–15% (Saito and others, 1994).

2.65 Recognizing gender differences in agriculture and seeking to improve the condition of marginalized groups (predominantly women) can raise the economic potential of the sector, as well as advance gender equality more generally. Experience in other countries—as well as Ghana—highlights the importance of designing interventions that are sensitive to gender roles⁵⁰ and in adopting delivery mechanisms that best meet the needs of women farmers.

Declining Agricultural Prices

2.66 According to Coloumbe and Wodon (2007), the increase in real incomes due to falling prices is a factor contributing to the observed rapid poverty reduction. The consumer price index (CPI) increased at a significantly lower rate than the GDP deflator implying a greater potential for poverty reduction than suggested by GDP figures alone (see Appendix 9 for trends in staple food prices).

2.67 While declining relative food prices benefits net food consumers, it obviously disadvantages food producers. Moreover, food producers as a whole will see a decline in comparative status with non-agricultural households if this divergent trend of GDP deflator and CPI continues. If food prices continue to fall, then farmers will need to continue to increase their output to compensate for falling average revenue. They have been able to do so in the past—hence the absence of data showing a reduction in living standards. However, as noted above, increased production has been achieved through area expansion which will be limited in the future and farmer's ability to compensate for continued price decline will depend on raising land productivity.

⁵⁰ The well-known example in the literature relates to a project in Togo which was targeted at women and promoted soybeans as a legume—a women's crop—instead of a cash crop which would have transferred responsibility to men (Dankelman and Davison, 1986). A counter-example is the case reported by Poats (1991) in which households were encouraged to intercrop maize (a man's crop) with beans (a women's crop) which failed because women refused to adopt to this change because they would have lost ownership of the beans.

Expanding Irrigation

2.68 Ghanaian agriculture remains essentially rain-fed, with farmers subject to the vagaries of unpredictable and insufficient rainfall (Appendix 10).

Assured water supply could permit two or three crops per year—not only raising incomes of farmers but also providing the year-round inputs essential for commercially competitive processing industries. Of the 13.66 million hectares of cultivable land, 500,000ha are believed to be irrigable and an additional 120,000ha are amenable to water harvesting, recession and other valley-bottom technology as well as shallow tube wells (MoFA, 2006). Existing irrigation schemes funded either publicly or through public-private partnerships (PPP). Existing schemes include 10 small-scale schemes (less than 200ha command area), 6 medium scale schemes (200ha—500ha) and 6 large schemes (above 500ha), using one of three technologies: gravity, pump and gravity and pump and sprinkler systems (see Appendix 11). Utilization rates (area actually receiving irrigation as a ratio of the possible command area) are extremely low with estimates of 64%, 8% and 40% respectively for the three technologies. Low utilization rates for those systems requiring pumps reflect the perennial problems with such schemes: lack of funding for operations and maintenance (O&M) and the failure to pay electricity charges and the resulting termination of connection.

Box 2.2: Commercial Irrigation

Early commercial farms including the Korean Farm and Kpong Farms of the VRA have now folded. However, new commercial irrigated farms have been established for the production of high-value non-traditional export crops. Volta River Estates Ltd farm 280ha of banana plantation; Afrique Link Ltd have 200ha of irrigated tomato production; while Integrated Tamale Fruit Company grows 453ha of mango.

2.69 There are a number of community schemes as well as others operated entirely by the private sector. For example, 26 schemes covering 2,500ha are being supported by the Small Scale Irrigation Development Project and another 11 schemes over 820ha under the Small Farms Irrigation Project⁵¹. According to an inventory by the Ghana Irrigation Development Authority (GIDA), there are an additional 377 dams and 237 ostensibly for irrigation purposes (although the dams are not really intended for this purpose) concentrated in the Upper East, Northern and Upper West regions. Most are in a state of disrepair (Steedman, 2003). Furthermore, commercial irrigation schemes have been established by large-scale growers of vegetables (11 schemes using trickle or sprinkler technology) and fruit production (7 schemes for mango, pineapple, papaya, banana and mangoes using trickle systems).

Table 2.11: Actual and Potential Yields for Major Crops

	Present Yield (mt/ha)	Potential Yield (mt/ha)
Tomatoes	5–10	10 - 12
Pepper	4.5	6–8
Cabbage	15	20
Onion	10	15–20
Maize	1.7–2.5	3

Source: MoFA (2005).

2.70 The potential impact on productivity from putting more land under irrigation is substantial. According to the baseline study of nine irrigation schemes included in the AgSSIP program, better access would help close the yield gap (Table 2.11). Irrigation typically features amongst the highest

⁵¹ Both these projects were funded by JICA.

priorities in community's self-assessed economic development needs in the Savannah regions especially.⁵²

2.71 **While this appears impressive, the economics of irrigation are notoriously precarious.** Cost-effective irrigation typically requires shifting into high-value crops. Costs associated with pump irrigation are substantial: diesel is expensive and water users are charged at commercial rates. GIDA estimate that irrigation for rice production is uneconomic below ₵1,600 per kg of paddy (Steedman, 2003). Ghana is littered with examples of poorly-administered irrigation schemes and a major effort is needed to sustain cost-effective irrigation in the future.

2.72 **Lessons for the future administration of irrigation schemes include the following:**

- The recent rehabilitation of 9 irrigation sites covering 2,391 hectares provides an opportunity for a longer cropping season and higher incomes from high value crop production. Before the rehabilitation, only 69% of the irrigable area was being cultivated, of which 4 sites were doing some level of irrigated farming and the rest were cultivating under rain-fed conditions only. Expected increase in cropping intensity to at least 200% is possible. These schemes, particularly gravity flow schemes in the northern regions could become a driving force in income generation.
- However, while some training has been conducted for water user associations, they remain generally passive in the management and maintenance of the minor delivery systems. User fees in some cases is nominal only while in other cases (pump schemes), farmers have expressed concerns regarding current energy pricing policy, namely imposition of the Maximum Demand Charge, and constant increase in tariffs by the electricity company—which cumulatively undermine the competitiveness of agricultural commodities produced under irrigation.
- The development of small and medium scale irrigation in the country will critically depend on the implementation of a sound irrigation policy that addresses the business environment, and devolves more responsibility to water users associations in the selection of irrigation equipment, routine maintenance and rehabilitation/renewal of irrigation infrastructures and equipments. Furthermore, the non formal irrigation being applied in about 80-85% of irrigated land in the country is not monitored.

2.73 **Indeed, the government has already set out their agenda** for expanding irrigation in their new Policy and recognizes the need to devolve more responsibility to water user associations and to improve data collection. Implementing the policy will be the true test of this commitment.

Increasing Access to Purchased Inputs, Credit and Land

2.74 **Access to high-quality inputs is essential if productivity targets are to be achieved.** Regional and district agricultural offices report 21 districts without crop-related input suppliers and 52 districts without livestock-related input suppliers. Pesticide retailers are prevalent in the regions of Ghana with more commercial-oriented agricultural production but absent from those areas where food staples dominate. A beneficiary survey of fertilizer users highlighted limited availability and poor service, although the poor quality of the fertilizer was not prevalent. A similar pattern in availability and perceptions is observed for agro-chemical supplies (MoFA, 2007b). The recent Poverty and Social Impact Assessment conducted in the agricultural sector applied econometric techniques to identify the important correlates with fertilizer use and concluded that access to credit to finance input purchases were the binding constraint (Asuming-Brempong *and others*, 2004).

⁵² A recent livelihood survey conducted by MoFA (2007b) surveyed communities across all regions. Agricultural development needs accounted for 28% of stated priorities, of which irrigation featured second after animal/ tractor power.

2.75 **The importance of, and difficulty in gaining access to, agricultural credit is well known.** It is essential to manage cash flow over the agricultural cycle and is necessary to finance productivity-enhancing investments. Absent agricultural credit, farmers and particularly small-holders are unable to maximize the potential yields of their farms thereby suffering a productivity penalty. Lack of credit, particularly for input purchase, was the most prevalent constraint to agricultural development in a recent survey of communities in 24 districts (MoFA, 2007b). Agricultural credit is largely excluded from the formal banking system, with only about 9% of total bank credit destined for the sector (plus an additional 2%–3% to cocoa marketing under COCOBOD (IMF, 2005). Instead, rural finance (which extends beyond agricultural credit, of course) is based on various forms of micro-finance with outstanding loans of over US\$200 million in 2005. The micro-finance sector is comprised of NGOs (6% of lending), savings and loans companies (40%), rural and community banks (40%), credit unions (17%) and *susu* collectors (who rarely offer credit).⁵³ Rural and community banks have the greatest reach in terms of numbers of borrowers (54%) as well as the majority of depositors (73%). However, average loan size is small at a little under US\$300 (Table 2.12). In keeping with experience in other countries, micro-finance tends to assist the ‘entrepreneurial poor’: 80%–90% of clients are at or above average quintile relative to local standards (Anon, 2006) with less than 5% in the lowest quintile.

Table 2.12: The Profile of Micro-Finance Sector, 2005

Institutions	Institutions	Loan Portfolio	Borrowers	Total Deposits	Depositors	Ave loan
Financial NGOs	25	12,106,973	98,386	–	–	123
Savings & loans companies	10	84,390,180	58,598	36,897,908	329,957	1,440
Credit Unions	273	30,135,257	93,298	46,885,945	192,367	323
Rural & Community Banks	120	85,455,995	298,473	186,048,486	2,116,428	286
<i>Susu</i> collectors*	1,016	–	–	39,063,176	271,959	
Industry total	1,444	212,088,405	548,755	308,895,516	2,910,711	386
Excluding <i>susu</i>	428	–				

Source: Jean and others, 2006). Notes: * Registered *susu* collectors only. There are over 3,000 *susu* collectors in total.

2.76 **Financial sustainability of microfinance is a constant concern.** High overheads are associated with low population density, poor repayment rates and frequent manipulation of beneficiaries outside banking norms. A survey of the financial health of a sample of institutions from across the sector found high operating costs well above international benchmarks⁵⁴. Repayment rates are reasonable for financial NGOs (in excess of 95%) and rural and community banks (92%) but lower for credit unions (84%) and savings and loans companies (56%). However, there are wide disparities within each institution depending on the type of program: rural banks administer their own schemes and schemes subsidized by Government. One rural bank reports good repayment rates for their own schemes (for example, salary loans and group schemes with a repayment rate of 100% and 77% respectively) but worse performance on government schemes (including women in development scheme at 73% and the poverty alleviation fund at 1%). Obligations to implement government programs appear to present a major constraint on the financial viability and hence sustainability of rural micro-financial institutions (Anon, 2006). As well documented in the literature, **tenure security** creates an important incentive to encourage farmers to

⁵³ *Susu* collectors are individuals who collect daily amounts from their clients (for example, market traders) and return the accumulated sum at the end of the month, less one days’ contribution for commission.

⁵⁴ For instance, operating costs as a proportion of loan portfolio was estimated to be 54% for Rural and community banks and 34% for NGOs. Low ratios of loan officers to overall staff (17%) in rural banks and savings and loans companies also is evidence of high overheads (Anon 2006).

undertaken productivity-enhancing investments as well as providing mechanisms to access credit (see Deininger, 2003, for an excellent review).

2.77 Land systems in Ghana are complex with tenure security often differing within—as well as between—households, rendering the assumption of the household as the unit of analysis invalid. Decisions regarding the application of new technologies—an important conduit for tenure-productivity relationships—are therefore dependent on the security at the individual level. This has important gender dimensions (Goldstein and Udry, 1998) but also is dependent on the ‘political influence’ of the individuals, independent of gender (Goldstein and Udry, 2005). In Ghana, the most important ‘investment’ to improve land quality is the ability to leave the land fallow, without the risk of it being reallocated/ usurped by others (*ibid*).

2.78 The current land tenure arrangements are the result of evolutions in heterogeneous arrangements applicable to previously disparate tribes, clans and families, colonial rule and wars that, over time, have expanded and now overlap. The commonality across all indigenous groups is the communal nature of land holdings, with land held in trust for the clan or family and administered by *tendambas* or heads of those social groupings.

2.79 Such arrangements are optimal in environments of low population density, since additional demands for land—whether from indigenes or strangers (individuals from outside)-could be met from the remaining land stock with no impacts on existing users. However, the emergence of commercial plantation agriculture and mineral prospecting plus the colonial policy of indirect rule (which vested more power in the chiefs) endowed chiefs with greater executive power over their communities, removed a degree of social restraint and allowed them to pursue private gains at the expense of communal interests. The advent of more *de facto* commercialized systems allowed chiefs to freely dispose of land (to indigenes and outsiders) rendering their role more akin to landlord with ‘trustees’ relegated to tenants. At the same time, urbanization led to situations in which families sold land without reference to their head, resulting in confusing and overlapping claims. Not only did these malpractices generate conflict, the sheer number clogged up the existing formal dispute resolution mechanisms (i.e. the courts).⁵⁵

2.80 There are also important institutional and use rights issues. Institutions existing at independence have been abused (for example, through the misuse of eminent domain—a concept alien to indigenous land tenure systems) and subsequent legislation has further rested responsibility for tenure in favor of public agencies (for example, the Administration of Land Stools) which are now widely mistrusted. The allocation of use rights and the distribution of land revenues have not always transparent. Incidences of abuse serve to undermine tenure security.

2.81 The prospective economic impacts of improved security and more efficient land administration systems were estimated as part of the World Bank’s Land Administration Project (LAP). Based on household data from the 1998/99 GLSS IV, it was calculated that the overall economic rate of return of holding a land title is about 39% (having controlled for a host of other variables typically found in the literature). Although the literature cautions against over-estimating returns from title (see Feder *and others*,)⁵⁶ it is clear from the magnitude of this estimate—which is consistent with other studies from around the world⁵⁷—that the economic potential from improved security is substantial.

2.82 Moving forward, sustainable management of Ghana’s land resources is a critical factor in sustained agricultural growth. The recognition of this is implicit in various national and sectoral

⁵⁵ The Greater Accra region alone is reported to have had 15,000 land disputes pending court adjudication.

⁵⁶ The reason being that because landowners are more risk averse than society as a whole (which is risk neutral) landowners will value title more than society. That said, even if title-holder’s valuation is discounted by one-third (i.e. a relatively high risk of eviction) the ERR to society is still 28% (World Bank 2003b).

⁵⁷ For instance, similar econometric evidence in Thailand identified a range of 30%–34% return; in Indonesia the ERR of 33% was calculated.

policies, strategies and action plans, including the National Environmental Action Plan (NEAP), the Soil Fertility Management Plan, the Accelerated Agricultural Growth and Development Strategy (AAGDS), the National Wildlife Policy and Water Policy and the National Irrigation Policy. The National Land Policy is the key policy that addresses land sector issues in Ghana. This policy strives toward judicious use of the nation's land and other natural resources in support of the various socio-economic activities, and endorses the principle of sustainable resource management. The Land Policy specifically provides the framework for dealing with the issues of land/ownership, security of tenure, land use, and conservation on a sustainable basis but falls short of laying out an action plan or an implementing strategy. However, the development of an Agricultural Land Management Action Plan could be an important tool to implement the policy provisions of the Land Policy and provide an opportunity to better integrate sustainable land management into the existing policy frameworks. In this development, efforts should be directed at the root causes rather than symptoms of land degradation. This is necessary to inform the goal, objectives and policy actions to facilitate increased attention paid to sustainable land management in Ghana.

Adoption of New Technology: Agricultural Research and Extension

2.83 It is important to ensure farmers actually utilize new science and that scientific endeavors reflect the actual needs of farmers. In terms of food staples, the experience of high-yielding varieties of cassava provides important lessons on the vital ingredients to a successful research and extension effort in West Africa. Nweke *and others*, (2004) draw the following lessons:

- A long-term and sustained approach to research. Sustained research effort will be required to respond to the continuing mutation of the cassava mosaic virus as well as to continue to achieve on-going productivity gains.
- Multiplication and distribution of improved cuttings. This required a coordinated public effort in the early years of new varieties release. Since cassava farmers clone new cuttings there is no private incentive to distribute cuttings.
- Mechanical processing and production. The cassava crop is highly perishable and marketing and processing will need to improve if production is to continue to grow. Drying and processing must be at the centre of any strategy.
- Regional cooperation. Cassava reflects the significant achievements of regional collaboration, particularly the role played by IITA in generating synergies from individual country programs. As well as generating synergies in research effort, the spill-over from the rapid spread of diseases can only be addressed through regional collaboration. This last aspect is reflected in a new effort in the West Africa context to pursue a more efficient regional research strategy that builds centers of specialization while ensuring that scientific advances remain accessible to all countries.

2.84 Pushing back the boundaries of science is an important aspect of technological advancement but ensuring that this new knowledge is disseminated to farmers—and that it is relevant to their farming practices—is equally important. Farmer-based organizations (FBOs) have shown themselves to be—in the right circumstances—an effective mechanism for galvanizing farmers own research needs and articulating these demands to influence national research agendas. Ghana has a history of such organizations, both within and without the formal cooperative institutions and social networks can be an effective mechanisms for technology adoption (Conley and Udry, 2001).⁵⁸

2.85 Over the past 7 years, support to demand led research and extension and capacity building for farmer based organizations has been a focus of the Food and Agriculture development policies

⁵⁸ Note the important qualification that these networks are typically based on households as the agent. As discussed in the context of gender roles, it is often necessary to examine networks between household members and to avoid assuming cooperative behavior within the household.

of the government. There are currently 326 farmer groups registered with the Department of Cooperatives, with 6,553 female and 3,853 male members. The efforts support:

- Policy and regulatory framework. This involves revision of the co-operative law, setting up of an NGO database, and preparation of a framework for the registration of non-cooperative FBOs.
- Promotion of the development of FBOs. Activities under this subcomponent include facilitating the federation of FBOs; transfer of the audit function of DOC to the GCC in two pilot regions and education and training for FBOs.
- Strengthening the capacity of agencies promoting FBOs. The institutions are the Department of Cooperatives (DOC), the Ghana Co-operatives Council (GCC), the Co-operative College (CC), the Directorate of Agricultural Extension Services (DAES), the Directorate of Women in Agricultural Development (WIAD), and the NGO unit of the Ministry of Manpower, Youth and Employment (MMYE).
- Upgrading the Co-operative College. The main activity here is the strengthening of the CC to be able to cater for the needs of both co-operatives and other FBOs.
- Establishment of the FBO Development Fund. This provides capacity building of FBOs through training and provision of matching grants, mainly for small projects. Except for eight proposals for purely training, all the others were for a combination of training and equipment for value addition. 100 of the projects approved went to women groups whilst the remaining went to mixed groups.

Supporting Value Addition and Processing

2.86 The FBO development fund is an important instrument for garnering support for basic processing enterprises, to be run at the community level. This supports the view that farmers are aware of opportunities for value-addition but lack the means to make the necessary investments.

2.87 Most FBOs have invested in processing and marketing equipment. Uptake of improved agricultural production technologies (new varieties) has come largely through targeted support for specific commodities such as pineapple, citrus, mango, roots and tubers and oil palm. For example, 75 smallholder farmer groups (900 farmers) have been supported by MOFA to establish nurseries to generate 19.8 million pineapple plantlets by October 2008 and about 300 FBOs have planted 13,771ha of improved oil palm with support received under the President's Special Initiative. Linkages between research systems, extension services, farmers, and agribusinesses remain weak. Hence, even when technologies are generated, dissemination and adoption mechanisms are poor. Furthermore, the lack of harmonized regulations on technology use is a barrier to the dissemination of technologies across borders.

2.88 Large scale farmers, and in particular those investing in cash crops have shown their willingness to invest in improved planting material but these are relatively few in number. In some cases, out-growers have been supported by private agro-business to adopt improved varieties.

2.89 Access to credit remains a constraint to farmers, even when they are formed into groups. However, there are certain benefits which are now becoming evident to these groups. For example, the tractor leasing or hiring scheme initiated by the Ministry of Food and Agriculture through the districts is more affordable by a well functioning farmer group than by any one small holder. These groups also are finding it possible to access credit from rural banks under donor supported programs.

Table 2.13: Projects Approved for Funding under the FBO Development Fund

Activity Type	Number
Palm oil mills	46
Rice mills	35
Poultry Feed Mill	5
Beekeeping	11
Small irrigation equipment	21
Rehabilitation of storage structure	12
Rehabilitation of piggery	5
Training only	8
Shea-butter processors	32
Rehabilitation of kraal	8
Groundnut oil processors	19
Donkey carts	5
Corn mills	20
Rehabilitation of FBO offices	7
Fishing Boats maintenance workshop	1
Gari processors	26
Construction of one-stop centers	3
Grasscutter and snail rearing/mushroom production	16
Sugarcane crushing equipment	10
Construction of fish pond	5
Sunflower production and processing	20
Soyabean production	11
<i>Total</i>	<i>326</i>

Source: MoFA 2007a).

2.90 **An extension development fund (EDF) to enhance the capacity of private actors involved in extension activities and in the training of FBOs has been set up by the GoG.** The Fund financed the running costs for extension activities in 8 pilot districts. Early lessons show that diversifying extension delivery is a preferred option. Farmers have expressed strong satisfaction with these pilots. However, it is equally clear that public extension will continue to be the mainstay of the vast majority of rural agriculturists since private sector delivery of extension services will still take a considerable while to develop. Private coverage outside the public extension is about 2% and may improve by another 10—12% with proactive interventions. The second limiting factor in the expansion of private sector extension is the cost which at present is about 7—8 times the cost of public sector extension.

2.91 **Value addition in the cocoa sector remains essentially from cocoa production with very little processing taking place.** In 1998/99 about 11% of domestic production was processed into butter, liquor, cake and powder as well as small amounts of finished chocolate; it is currently (2003) about 15%. This makes sense insofar as processing utilizes beans from the second crop or ‘light’ harvest which are smaller and have lower fat content (Steedman, 2003). Processing capacity is restricted to about one-fifth of current production⁵⁹ meaning that substantial investment is required if more domestic cocoa bean production is to be processed domestically.⁶⁰ That said, according to FAO data,⁶¹ export earnings from

⁵⁹ Capacity is reported to be 145,000 in 2004–05 (Brooks and others 2006).

⁶⁰ The Cocoa Processing Company, a privatized subsidiary of COCOBOD, has rehabilitated two plants capable of processing 25,000mt. More recently, Barry Callebaut has invested substantially in Tema Free Zone and has just opened a second production line.

⁶¹ Reported in Brooks and others 2006.

existing processed cocoa already amount to US\$102 million (2002–04); these exports increased three-fold over the previous decade.

2.92 **One major constraint to additional processing is tariff escalation:** the fact that tariffs levied on cocoa-based exports increase the higher the degree of processing. Tariff escalation is evident across all the main import regimes of the EU (Table 2.14), including those available to low income countries (the special arrangement for former colonies in the African, Caribbean and Pacific—ACP—countries as well as the non-ACP low income countries that benefit from the Generalized System of Preferences—GSP—scheme).

Table 2.14: Tariff rates for cocoa and cocoa products into the EU, November 2006

HS Code and Description	MFN rate	GSP rate	ACP rate
1801 Cocoa beans	0%	0%	0%
1803 Cocoa paste	9.60%	6.10%	0%
1804 Cocoa butter	7.70%	4.20%	0%
1805 Cocoa powder	8.00%	2.80%	0%
1806102 Cocoa powder containing 5%-65% sugar	43% or 8%+ €5.2/100kg	2.8% + €5.2/100kg	0% + €5.2/100kg
1806103 Cocoa powder containing 65%-80% sugar	43% or 8%+ €1.4/100kg	4.5% + €1.4/100kg	0% + €1.4/100kg
1806109 Cocoa powder containing more than 80% sugar	43% or 8% + €1.9/100kg	4.5% + €1.9/100kg	0% + €1.9/100kg
1806201 Chocolate in slab	43% or 8.3% + EA MAX 18.7 +ADSZ	4.8% + EA MAX 18.7 +ADSZ	0%

Source: TCA 2006.

2.93 **There are few opportunities for raising the quality of cocoa beans, since Ghana already enjoys a quality premium.** This is based on a well established institutional arrangements associated with the operation of COCOBOD, which starts at the buying posts when trained clerks accept beans only after inspection for dryness, smell, color, infestation and size consistency. COCOBODs quality control division take samples and checks for moisture content, size consistency and for defects (Fold 2002). However, there is concern that the quality is diminishing and the premium being eroded. Some observers attribute this to the effects of LBCs which lack the strict quality control systems of COCOBOD. Moreover, their current inability to export directly means they operate essentially as middle agents selling their through-put to COCOBOD for agreed commission. Since their product is mixed with beans sourced directly by COCOBOD, there is less incentive to maintain quality standards throughout the value chain.

2.94 **Nevertheless, there has been some progress in increasing processed cocoa exports in recent years** (Table 2.15). Even basic processing into paste and butter has increased significantly; cocoa powder is now mixed with other ingredients at source; chocolate blocks and cocoa-based food preparations have all increased. Total exports of processed cocoa-based food stuffs now amount to US\$153 million per annum, almost twice the level of three years previously (Appendix 12).

Table 2.15: Export Volume of Processed Cocoa Products; 2004–2006

HS code	Product	2004	2005	2006
1802000000	Cocoa shells, husks, skins and other cocoa waste	13,474,031	7,829,151	3,992,951
1803100000	Cocoa paste, not defatted	20,452,190	15,277,886	45,081,396
1803200000	Cocoa paste, wholly or partly defatted	12,782,800	11,010,000	16,139,746
1804000000	Cocoa butter, fat and oil	6,700,408	8,186,748	13,860,626
1805001000	Cocoa powder, (no sugar or sweetening matter) in packaging with content <	47,920	26,800	2,643
1805009000	Cocoa powder (no sugar or other sweetening matter) otherwise presented	977,846	204,738	244,136
1806100000	Cocoa powder, containing added sugar or other sweetening matter	3,621,779	354,095	588,854
1806200000	Chocolate, etc, containing cocoa, in blocks, slabs or bars >2kg	36,403	8,616	86,162
1806310000	Chocolate, etc, containing cocoa, in blocks, slabs or bars, filled	25,335	10,053	2,570
1806320000	Chocolate, etc, containing cocoa in blocks, slabs or bars, not filled	0	10,338	1,080
1806901000	Other confectionery containing cocoa and chocolate	109,973	30,276	43,325
1806909000	Other food preparations containing cocoa and chocolate	68,664	172,419	382,062
Total		58,297,349	43,121,120	80,425,551

Source: CEPS. Data in Kgs.

2.95 Other opportunities for value addition face similar issues of tariff escalation in export markets.

Facilitating the Transition to High-Value Crops

2.96 Recent achievements in Ghana's agriculture strategy include:

- Diversification and export promotion efforts to diversify from traditional to non-traditional exports. The trend must continue to reduce dependency on a few crops, increase market access and increase earnings.
- Increased efforts to address pro-poor investments through public and private sector collaborations. Examples of the cocoa and horticulture subsectors demonstrate that stronger value chains can result in significant welfare gains even for small holders.
- Multi-sectoral approaches are being strengthened. Supporting sectors such as rural finance, private sector and infrastructure are being recognized as critical partners in changing the nature of agricultural growth from a sustaining base to a force for growth and generation of wealth.

2.97 **To support improved productivity of staples and to maintain the positive transition to high-value crops, access to improved technologies and delivery systems to increase technology adoption is needed.** Besides an increase in the yield per ha of cassava, yields per ha of the main other crops have remained stagnant over the last 5 years. Technology delivery has been hampered by ineffective delivery systems. A more diverse system of delivery, using public-private partnerships, needs to be developed, which can cater for the more complex needs of the entire commodity chain needed for successful development of high value crops and livestock products. Research technologies are generally not making it off the shelf and to the farm unless focused attention is paid to the commodity through the provision of subsidized planting material, with contributions made by farmers or farmer groups. The sustainability of

recent improvements in agriculture is seriously constrained by the slow adoption of improved technologies.

2.98 **The series of Bank-supported PRSCs has tackled many issues of governance and macro-management.** However, at the same time, Government has not fully addressed investment needs at sector level. The rural economy could utilize significant investment in infrastructure. This investment through rural development and agriculture projects has provided for faster agricultural growth and exports of non-traditional products. Nonetheless, strengthening the sector's ability to plan and implement using budgetary resources instead of project resources is a critical element of implementing a coordinated and internally consistent development policy in the sector which also addresses the need of the sector at the local government level.

2.99 **For the current trend in the transition to high value crops to continue, the sector will have to address factors that influence profitability** (input and output prices/costs, transport, technology, management) and facilitate coordinated service provision and access to inputs, finance, land, labor, skills, market information and transport.

2.100 **For traditional export cash crops in Ghana, the public and increasingly, the private sector have provided coordination mechanisms** since there are high potential returns and good horizontal coordination among buyers. For new high value products (for example, horticulture), the private sector has similar incentives for coordination to ensure supply contracts but with smallholders dominating the production side, factors of perishability, reliable supply, traceability and quality assurance and flexible investment become issues. Public investment has been needed therefore in helping develop well organised farmers and stronger supply chains in high value crops.

DISTRIBUTIONAL ASPECTS: NORTH AND SOUTH; LARGE AND SMALL FARMS

2.101 **This section will discuss two main distributional aspects:** Do the growth strategies opportunities identified in previous sections have spatial consequences based on e.g. agro-climatic disparities and what might this mean in the context of 'shared growth'? Second, building on the previous section, what prospects are there for the small farmer in the contemporary agricultural sector? How prevalent are economies of scale in production and /or marketing? What measures are needed to ensure that small farmers can avail themselves of these opportunities? Are there sub-sectors where farm consolidation is required?

2.102 **Strong economic performance and poverty reduction at the national level masks significant spatial differences.** For instance, while the proportion of poor people fell dramatically in the 1990s, poverty rates actually increased or fell only marginally in the three administrative regions of Northern Ghana.⁶² The pattern of agricultural growth explains a large part of these differences (although not all—see Aryeetey and McKay, 2004) and it is well documented that in general agricultural growth offers the broadest growth. 'Shared growth' is not a zero-sum game in that growth in one region precludes growth elsewhere—on the contrary, if the North had performed according to the national average over the 1990s, aggregate GDP would have increased by an additional 0.7% age points (ODI and CEPA, 2005). Simply ensuring shared growth will make a significant contribution to stepping up growth rates from 6% to 8%.

2.103 **The determinants of Northern Ghana's disadvantage are many.** The agro-climatic conditions are more challenging, with poorer soils and less rainfall; the perpetual effects of the colonial legacy in which it was subordinate to the South and viewed simply as a source of cheap labor. More recently, the drivers of growth in agriculture—which provides livelihoods to 70% of households in the North, compared to 56% nationally⁶³—have been in crops of marginal importance to farmers in the North,

⁶² The three administrative regions of Northern Ghana are Upper East, Northern and Upper West regions.

⁶³ Based on 1999 GLSS IV.

namely non-traditional exports and cocoa. Yields in food staples have remained largely stagnant. Moreover, the constraints to private sector activity are arguably more severe in rural areas further encouraging agglomeration of employment opportunities in the Greater Accra area.⁶⁴ For example, of 1,779 investment projects registered with the GIPC in 2005, 80% were located in the Greater Accra area. According to this data, only 23 investments were made in the Northern Region. The full potential from a virtuous cycle of increased farm incomes providing forward and backward linkages to local enterprises, which in turn generates a robust rural economy, is yet to be realized.

2.104 The challenges identified above are not insurmountable: while agro-climatic conditions and historical factors are largely exogenous, a number of policy options are available that would bolster the economic performance of the Northern regions, augment aggregate macro-economic performance and reverse the trends of increased regional inequalities currently observed. Indeed, the experience of Burkina Faso—which shares many agro-ecological similarities with Northern Ghana—is illustrative of what can be achieved.⁶⁵ Important ingredients have been identified as the following (ODI and CEPA, 2005):

- A consistent policy environment that promotes small-holder agriculture and offers a better balance between state, foreign and domestic investments.
- Strong and effective commodity-based producer organizations that provide real services to members (including credit, linked to formal financial institutions) and are endowed with competent staff; moreover these are powerful lobby groups with substantial political influence.
- Intervention in the cotton sector including state subsidies and institutional arrangements that allow companies to profit and provide security for farmers.
- Water resource management has a high priority with a comprehensive effort to expand irrigation.

2.105 Analytical work by IFPRI shows that agricultural growth based in food staples will have a greater poverty reducing impact than a strategy focused exclusively on (traditional and non-traditional) export crops (Al-Hassan and Diao, 2007). Moreover, the North has comparative advantage in certain export crops, and prospects for processing exist. Improving the rural investment climate through easing business regulation, increasing access to finance and addressing power shortages will be critical if rural processing and ancillary industries are to expand. Improved transport infrastructure—both southwards to the rest of Ghana, but also toward neighboring countries—will be critical.

2.106 The challenge moving forward will be for Government and donors to adopt a stronger spatial analysis to growth strategies than has hitherto been the case. This needs to manifest in institutional arrangements more likely to: (i) ensure a balance in coverage (perhaps even a bias in favor of the more disadvantaged areas); and (ii) encourages local responsibility for services and greater accountability. This does not imply that development assistance should by-pass domestic systems at the national level—on the contrary, it demands a strengthening of a decentralized structure in which fiscal and administrative devolution is supported and in which fiscal allocations across regions take account of the relatively greater need of these more sparsely populated regions.

2.107 In 2003, MOFA developed a ‘Food and Agriculture Sector Development Policy’ (FASDEP). The objectives of this program include food security, poverty reduction, supplying raw materials to industry and ensuring the sector’s continued contribution to GDP, foreign exchange and government revenue. Reflecting the market orientation of government policies more generally, the private sector is seen to be the main engine that will deliver on these objectives.

⁶⁴ A Rural Investment Climate Assessment planned for FY2008 will specifically investigate these constraints.

⁶⁵ There also are important differences at the macro-economic level, including membership of the CFA zone, and later and slower economic liberalization.

FUTURE INSTITUTIONAL SUPPORT TO THE AGRICULTURAL SECTOR

2.108 **In 2003 MOFA developed a Food and Agriculture Sector Development Policy (FASDEP).** The objectives of this program include food security, poverty reduction, supplying raw materials to industry and ensuring the sector's continued contribution to GDP, foreign exchange and government revenue. Reflecting the market orientation of government policies more generally, the private sector is seen to be the main engine that will deliver on these objectives.

2.109 **The main break with the past is FASDEP's focus on a sector-wide approach to agricultural development.** This contrasts with the discrete project approach pursued in the past. FASDEP is expected to contribute to Ghana's Poverty Reduction Strategy (GPRS) via infrastructure development, the promotion of appropriate technologies, and improved extension services. However, a Poverty and Social Impact Assessment (PSIA) of the strategic objectives for agricultural policy criticized noted that the policy that does not take account of the diverse needs of different stakeholder in the agricultural sector, notably the very poor and women.

2.110 **Accordingly, a broader revision of FASDEP has been completed and submitted to the Cabinet.** This involves spelling out more clearly what a sector wide approach entails, providing guidance for a six-year policy plan, and achieving consensus among stakeholders (including donors) with a view to implementing a new sector-wide policy by 2008.

2.111 **The Government has a commitment to abide by the Maputo declaration of allocating 10% of budget to the agricultural sector.** Current levels of budget are under 2%, including funding to the Ministry of Fisheries. Under the revised FASDEP, the Ministry of Food and Agriculture intends to (a) Develop the sector program under a clear policy and strategy and corresponding expenditure framework; and (b) Strengthen management systems, common mechanisms and procedures. The Ministry of Food and Agriculture has developed a road map to achieve a sector wide approach for agriculture which will enable investments to be made across the sector to support agricultural growth. Donor support for the approach has been positive.

2.112 **Significant improvements in the impact of public expenditure to the agricultural sector are possible.** A large proportion of the Ministry's budget remains personnel costs. The majority of investments remain donor funded. Although it is improving, few resources are decentralized to the local authorities with personnel charges taking up the majority of allocations. Allocations to the sector are low and although there are opportunities for internally generated funds, receipts fall below annual targets.⁶⁶ Unrealistic budgeting and planning results to inefficient use of available resources. Of almost 9,000 activities planned at the district level, most secure are budgeted. Yet one-quarter are started but not finished and aggregate budget efficiency (the number of projects completed on schedule as a ratio of those budgeted for) is about 62% (MoFA, 2007b). As the agricultural sector develops the role of the public sector will need to evolve to one in which it delivers the twin functions of supportive and enabling services to the private-sector led subsectors (for example, horticulture) combined with a stronger service provision stance for food staples sector unattractive to private enterprise (beyond the small-holder).

2.113 **In March 2007 donors signed the Ghana Joint Assistance Strategy (G-JAS) in Accra.** The 17 donors are African Development Bank, CIDA, Danida, DFID, EC, France, Germany, IFAD, Italy, Japan, Millennium Challenge Corporation, Netherlands, Spain, Switzerland, UN, USAID and World Bank. The G-JAS notes that modernization of agriculture is central to the diversification and expansion of exports needed to achieve and sustain higher economic growth. Strategic priorities include strengthening rural infrastructure, especially rural roads and irrigation, improving land tenure, promoting promising

⁶⁶ For example, in 2006 MoFA planned to receive over ₵7 billion in internally generated funds, yet realized only ₵4.3 billion (MoFA 2007b). This excludes revenues generated by the National Directorates which are not included in these accounts and therefore cannot be allocated in line with budget priorities.

agricultural value chains, enhancing access to credit for women and men by strengthening rural financial institutions, and strengthening the provision and targeting of agricultural research and extension services.

CONCLUSIONS AND RECOMMENDATIONS

2.114 **This paper set out to answer three questions:** what have been the factors driving strong agricultural growth in recent years? Can these be sustained or are there downside risks? And what measures can be adopted to improve performance further?

2.115 **Clearly, the evidence points to, in aggregate, a strongly performing agricultural sector.** Yet efforts are needed to manage better natural resource exploitation as a driver of growth. Moreover, the evidence clearly points to additional growth opportunities. Macro-economic simulations highlight the potential of stronger agricultural growth based on improved yields and improvements in marketing (IFPRI, 2006).

2.116 **Growth has largely been driven by increasing the area under cultivation with few improvements in physical yields.** The technology to raise productivity largely exists (at least, in the medium term) but farmers are yet to fully exploit these opportunities. Adoption is low because of disconnects between the research and extension system, and in the access to critical complementary inputs. In some instances farmers lack the incentives to make productive investments. Uncertainties on the marketing side deter the adoption of risky strategies which, while presenting a significant opportunity to raise incomes, also have more serious downside risks. Important lessons have emerged on the ingredients of success. These serve as a source of optimism, but also as a cautionary tale on the complexity of the rural sector and the scale of the effort need to ensure results. This experience and the analysis of this paper, illustrate the potential of the agricultural sector as a driver for sustained future economic growth. It also illustrates makes the case that agricultural growth is likely to be the most important for future poverty reduction, particularly for rural poverty.

2.117 **The evidence also shows that this growth is not being shared widely.** The most successful subsectors—high value horticulture, cocoa—are geographically limited largely due to agro-climatic conditions. Large areas of Ghana, agro-ecologically inferior with more limited production opportunities, have grown only slowly. The cost of this lagging growth is significant: in terms of the challenge of increasing the growth rate from 6% to 8%, ensuring these areas grew at the same rate as the rest of Ghana would get is one-third of the way there.

2.118 **What does this mean for small-holders?** The up-coming analytical work based on the GLSS V will provide more solid evidence on the impact of these trends at the sector level on households. However, the evidence to date suggests four broad conclusions:

2.119 First, **small-holders can be successful.** The two beacons of cocoa and horticulture, particularly pineapples, is based squarely on the small-holder systems.

2.120 The second conclusion is that **the challenges of penetrating global markets** for both primary commodities (cocoa) and high-value exports (horticulture) are indeed significant. There are high costs associated with essential marketing infrastructure, in meeting necessary standards and in negotiating with international. Moreover these costs are ‘lumpy’ and are the source of significant economies of scale beyond the reach of atomistic small-scale farmers. Intervention to address both the coordination failures as well as realize public good characteristics of some of these services is essential.

2.121 The third conclusion is that, in fact, **Ghana has shown an ability to overcome the global challenges and export successfully.** Production and exports of cocoa have risen dramatically in recent years (even accounting for the distortions in the data dues to smuggling from Cote d’Ivoire). Moreover, this experience is based not on one particular institutional model, but on a range of different arrangements resulting in part from historical precedence (COCOBOD) and in part from an organic evolution in

response to changing market demands (horticulture). More research is required to conclude whether one is 'best'—this appears unlikely, although each has its merits. What can be said at this stage is that both models address the challenges facing small-holders although there is scope for further improvement.

2.122 The fourth conclusion refers to **the large number of small-holders** not engaged in cocoa or horticulture but depend on basic food staples. These tend to be located in Northern Ghana and illustrate the interface between small-holders, agriculture and poverty. However, the same factors that encouraged the effective institutional arrangements to support small-holder agriculture in horticulture and cocoa have not yet emerged in the food crops sector. Yet the potential for economic growth driven by the food crop sector is significant partly because of the scale of production. Shared growth—the ability of all Ghanaians to benefit from their endowments to provide a decent living for themselves and their families—will depend in the future not just on sustaining the recent high profile success stories (cocoa, horticulture), but on broadening and deepening the sources of agricultural growth to include the food-crop sector.

REFERENCES

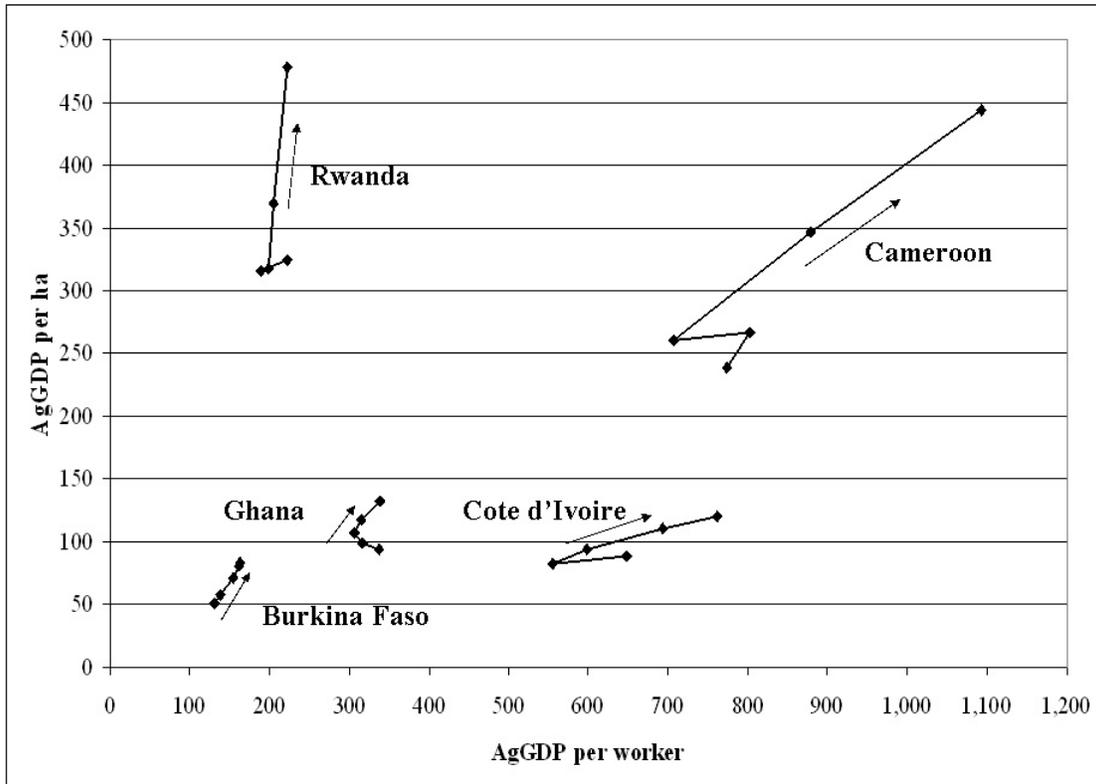
- Aboagye, A, B. Narteh, L. Kuukpen and T. Winther (2007). **Promotion of Competitiveness and Innovation Through Cluster Initiatives – Feasibility Study**, University of Ghana Business School/ Innogate
- African Development Bank (2002). Ghana: Cocoa Rehabilitation Project Performance Evaluation Report, ADF/BD/WP/2002/125
- Alderman, H. (1994). “Ghana: Adjustment’s Star Pupil?” in Sahn (ed)
- Austin, D. (1978). **Politics in Africa**, Manchester: University of Manchester Press
- Braimah, L.I. (2000). **Full Frame Survey ay Lake Volta (Ghana), 1998**, IDAF Project, Accra: DoF
- Brooks, J. A. Croppenstedt and E. Aggrey-Fynn (2006). Distortions to Agricultural Incentives in Ghana, draft Agriculture Distortions Research Project Working Paper, October 2006
- Byerlee, D. X. Diao and C. Jackson (2005). **Agriculture, Rural Development and Pro-Poor Growth**, Discussion Paper 21, Agriculture and Rural Development, Washington DC: World Bank
- Conley, T. and C. Udry (2001). Social Learning Through Networks: The Adoption of New Agricultural Technologies in Ghana”, **American Journal of Agricultural Economies**, 83(3), pp668—673
- Coulombe, H. and A. McKay (2003). Selective Poverty Reduction in a Slow Growth Environment: Ghana in the 1990s, mimeo, Washington DC: World Bank
- Dankelman, I. and J. Davison (1986). **Women and Environment in the Third World**, Geneva: International Union for the Conservation of Nature
- Deininger, K. (2003). **Land Policies for Growth and Poverty Reduction**, Washington DC: World Bank
- de Ferranti, D., G.E. Perry, W. Foster, D. Lederman and A. Valdes (2005). **Beyond the City: The Rural Contribution to Development**, Washington DC: World Bank
- FAO (1998). **Fishery Country Profile – Ghana**, FID/CP/GHA Rev. 3, Rome: FAO
- Fold, N. (2002). “Lead Firms and Competition in ‘Bi-Polar Commodity Chains: Grinders and Branders in the Global Cocoa-Chocolate Industry””, **Journal of Agrarian Change**, 2(2), pp228—247
- Al-Hassan. M. and X. Diao (2007) “Regional Disparities in Ghana: Policy Options and Public Investment Decisions”, **IFPRI Discussion Paper #00693**, Washington DC: IFPRI
- ICCO (2006a). Annual Forecasts of Production and Consumption and Estimates of Production Levels to Achieve Equilibrium in the World Cocoa Market, mimeo, available at <http://www.icco.org/statistics/production.aspx> (accessed on 12 April 2007)
- ICCO (2006b). **A Study on the Market for Organic Cocoa**, EX/130/20, London, UK: ICCO
- IFPRI (2006). Regional Strategic Alternatives for Agriculture-led Growth and Poverty Reduction in West Africa, mimeo, Washington DC: IFPRI
- IMF (2005). **Ghana: Statistical Appendix**, Washington DC: IMF
- IMM (2003). **Ghana Post Harvest Fisheries Overview**, report for DFID Post Harvest Fisheries Research Program R8111, London: IMM
- Jean, L. A., C. Fosu, D. Andah and P. Opuku-Mensah (2006). **An Overview and Performance Benchmarks of Ghana’s Microfinance Industry**, mimeo, Accra: GHAMFIN
- MoFA (2006). Draft National Irrigation Policy, Strategies and Regulatory Measures, Accra: MoFA

- MoFA (2007a). Rural Livelihoods in Ghana: Preliminary Survey, mimeo, Accra: MoFA
- MoFA (2007b). Annual Progress Report: January—December 2007, Accra: MoFA
- Laven, A. C. (2005). Relating Cluster and Value Chain Theory to Upgrading of Primary Commodities: The Cocoa Chain in Ghana, AMIDSt, University of Amsterdam
- Nweke, F. Haggblade and Zulu (2004) [reference from Hazell paper]
- ODI (2003). **Rice Production and Livelihoods in Ghana**, report to the Multi-Agency Partnership for Technical Change in West African Agriculture
- ODI and CEPA (2005). **Economic Growth in Northern Ghana**, Report to DFID, London: Overseas Development Institute
- Poats, S. (1991). “The Role of Gender in Agricultural Development”, **Issues in Agriculture 3**, Washington DC: CGIAR
- Asuming-Brempong *and others* (2004). Poverty and Social Impact Analysis, Accra: University of Ghana
- Rosegrant, M., S. Cline, L. Weibo, B. Sulser and R. Valmonte-Santos (2005). **Africa Facing Alternative Futures: Prospects for and Paths to Food Security in Africa**, 2020 Africa Conference Brief 17, Washington DC: IFPRI
- Sahn (ed). (2004). **Adjusting to Economic Failure in African Economies**, Ithica: Cornell University Press
- Saito, K., H. Mekonnen and D. Spurling. (1994). **Raising the Productivity of Women Farmers in Sub-Saharan Africa**, World Bank Discussion Papers, Africa Technical Department Series, 230, Washington DC: World Bank
- Steedman, C. (2003). **Agriculture in Ghana: Some Issues**, mimeo, Washington DC: World Bank
- Stryker, J. D. (1990). Trade, Exchange Rate, and the Agricultural Pricing Policies in Ghana, **World Bank Comparative Studies**, Washington DC: World Bank
- Technical Centre for Agriculture and Rural Cooperation (2006). **Cocoa: Executive Brief**, http://agritrade.cta.int/en/resources/agritrade_documents/executive_briefs/cocoa_executive_brief, accessed on 22 April 2007
- Udry, C., J. Hoddinott, H. Alderman and L. Haddad. (1995). “Gender Differentials in Farm Productivity: Implications for Household Efficiency and Agricultural Policy”, **Food Policy**, 20(5), pp407—423
- World Bank. (2003). Project Appraisal Document for a Ghana Land Administration Project, Washington DC: World Bank
- World Bank (2006). **Ghana: Country Environmental Analysis**, Washington DC: World Bank

APPENDIX 1: COMPOSITION OF EXPORTS 2006

Description	Value (US\$)	Share
Wood products	160,391,878	22%
Prepared food, beverages	120,388,164	16%
Horticultural products	75,642,148	10%
Fish & seafood	67,902,789	9%
Plastic and plastic products	52,133,275	7%
Oil seeds and nuts	51,701,309	7%
Aluminium products	32,942,417	4%
Rubber and rubber products	29,406,301	4%
Textiles and garments	26,401,621	4%
Hydrocarbons	14,204,020	2%
Articles of base metals nes	12,402,399	2%
Fertilizers, dyeing extracts and paints	11,137,304	2%
Machinery and equipment	10,180,786	1%
Cosmetics, washing preparations etc and soaps	9,496,459	1%
Mineral products	6,747,086	1%
Animal feed	5,954,111	1%
Dairy products	5,311,511	1%
Iron and steel products	4,746,193	1%
Handicrafts	4,490,389	1%
Animal or vegetable oils	4,489,591	1%
Other agricultural products	4,427,006	1%
Prepared cereals/ tubers	4,374,793	1%
Vehicles and parts	2,875,284	0%
Other manufactured articles	2,556,651	0%
Articles of stone and glass	2,424,157	0%
Chemical or industrial preparations nes	2,229,813	0%
Electrical appliances	2,093,430	0%
Sugar and sugar confectionary	1,884,091	0%
Organic and inorganic chemicals	1,779,318	0%
Articles for printing	1,701,176	0%
Coffee/mate/spices	1,602,663	0%
Pharmaceutical products	1,146,854	0%
Cereals	978,663	0%
Game & wildlife	868,939	0%
Tobacco and tobacco substitutes	721,569	0%
Photographic materials	621,759	0%
Footwear and headgear	604,347	0%
Musical instruments	456,172	0%
Meat and offal	217,610	0%
Precious stones and metals	169,068	0%
Leather articles and travel goods	71,299	0%
Vegetable saps and extracts	21,075	0%
Essential oils	17,851	0%
Optical products, clocks etc	12,456	0%
Dairy products	6,526	0%
Articles of cork	216	0%
TOTAL	739,932,534	100%

APPENDIX 2: HAYAMI-RUTTAN TYPOLOGY USING OFFICIAL EXCHANGE RATES



APPENDIX 3: RURAL POVERTY RATES 1991 – 2006

	1991/92				1998/99				2004/06			
	Population share	Poverty headcount	Poverty gap	Contribution to national poverty	Population share	Poverty headcount	Poverty gap	Contribution to national poverty	Population share	Poverty headcount	Poverty gap	Contribution to national poverty
Region												
Urban	33.2	0.277	0.074	17.8	33.7	0.194	0.053	16.6	37.6	0.108	0.031	14.3
Rural	66.8	0.636	0.24	82.2	66.3	0.496	0.182	83.4	62.4	0.392	0.135	85.7
Locality												
Rural Coastal	14.2	0.525	0.161	14.4	14.4	0.456	0.142	16.7	11.0	0.24	0.053	9.2
Rural Forest	29.6	0.616	0.227	35.3	31.3	0.380	0.108	30.1	28.0	0.277	0.068	27.2
Rural Savannah	23.1	0.730	0.305	32.6	20.6	0.700	0.323	36.6	23.4	0.601	0.254	49.3
National	100.0	0.517	0.185	100.0	100.0	0.395	0.139	100.0	100.0	0.285	0.096	100.0

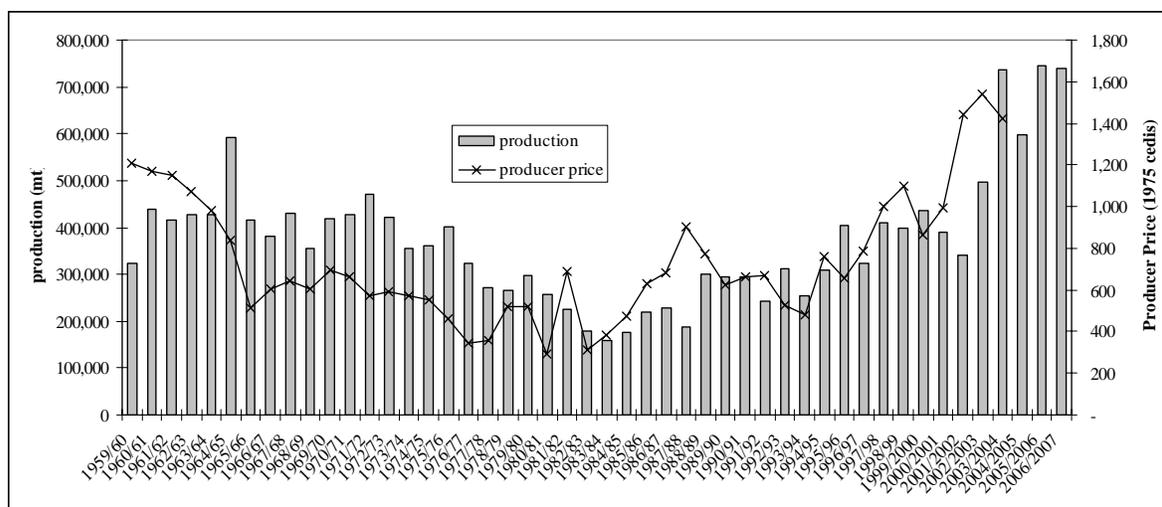
Source: Coloumbe and Wodon (2007).

APPENDIX 4: AREA AND PRODUCTION OF FOOD CROPS 1994 – 2005

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Area planted (1,000 Ha)												
maize	629	669	665	652	697	697	695	713	940	792	733	740
cassava	520	551	591	589	630	640	660	726	794	807	784	750
sorghum	299	335	314	324	332	312	289	329	337	346	298	305
millet	191	193	190	170	181	186	208	193	198	207	182	185
yam	154	176	178	187	211	243	261	287	300	321	311	300
cocoyam	179	205	214	206	218	372	247	262	282	277	270	255
plantain	184	212	229	225	246	253	244	265	277	286	281	290
paddy	81	100	105	118	130	105	115	135	123	118	119	120
Production (1,000 Mt)												
maize	940	1034	1008	996	1,015	1,015	1,013	938	1,400	1,289	1,158	1,171
cassava	6,025	6,611	7,111	7,000	7,172	7,845	8,107	8,966	9,731	10,239	9,739	9,567
sorghum	324	360	353	333	355	302	280	280	316	338	287	305
millet	168	209	193	144	162	160	169	134	159	176	144	185
yam	1,700	2,126	2,275	2,408	2,703	3,249	3,363	3,547	3,900	3,813	3,892	3,923
cocoyam	1,148	1,408	1,552	1,530	1,577	1,707	1,625	1,688	1,860	1,805	1,716	1,686
plantain	1,475	1,637	1,823	1,818	1,913	2,046	1,932	2,074	2,279	2,329	2,381	2,792
paddy	162	221	216	197	281	210	215	253	280	239	242	237
rice*	97	133	130	118	169	126	129	152	168	143	145	142

Source: MoFA SRID. Notes: * Assuming constant 60% milling ratio.

APPENDIX 5: PRODUCER PRICES AND PRODUCTION LEVELS 1960 – 2007



Source: GDP Deflator from DDP. Production and (nominal) producer price data from COCOBOD.

APPENDIX 6: HORTICULTURAL EXPORTS, 2005 AND 2006

HS Code	Description	Kg	Cedis	US\$	Share	Cumulative
2006						
0810900000	Fruit, fresh - other, nes	4,490,995	238,270,566,812	25,869,191	34%	34%
0804300000	Pineapples, fresh or dried	60,751,084	175,641,477,927	19,086,134	25%	59%
0714901000	Yams	20,296,517	130,231,345,375	14,156,905	19%	78%
0803001010	Banana, Fresh	44,098,203	94,990,394,139	10,297,106	14%	92%
0709909000	Vegetables, fresh or chilled - other, nes	3,952,710	19,240,162,049	2,089,071	3%	95%
0703100000	Onions and shallots, fresh or chilled	8,381,341	12,861,807,913	1,398,290	2%	96%
0807200000	Pawpaws (papayas), fresh	1,911,978	8,619,934,785	936,536	1%	98%
0805100000	Oranges, fresh or dried	6,283,378	4,258,897,461	462,316	1%	98%
	Other	2,948,606	12,399,901,903	1,346,597	2%	100%
	Total	153,114,812	696,514,488,364	75,642,148	100%	
2005						
0810900000	Fruit, fresh - other, nes	2,267,960	122,485,154,264	13,429,736	27%	27%
0804300000	Pineapples, fresh or dried	46,694,534	116,608,462,462	12,784,322	25%	52%
0714901000	Yams	18,376,958	99,890,719,355	10,951,355	22%	74%
0805100000	Oranges, fresh or dried	5,845,736	35,266,353,406	3,865,853	8%	82%
0703100000	Onions and shallots, fresh or chilled	9,835,155	23,038,342,750	2,524,068	5%	87%
0713390000	Dried beans, shelled, nes	1,263,400	18,283,011,119	2,004,699	4%	91%
0709909000	Vegetables, fresh or chilled - other, nes	3,048,565	14,525,918,107	1,592,515	3%	94%
0807200000	Pawpaws (papayas), fresh	3,211,829	9,860,084,334	1,081,280	2%	96%
0803001010	Banana, Fresh	1,116,607	4,184,892,004	458,940	1%	97%
	Other	3,591,726	14,335,396,878	1,571,009	3%	100%
	Total	95,252,470	458,478,334,679	50,263,776	100%	

Source: CEPS.

APPENDIX 7: SIMULATION RESULTS FOR YIELD GROWTH: PRODUCER BENEFITS (US\$ PER HECTARE 2006 – 2015)

	Rice	Maize	Millet	Sorghum	Cassava	Yams	Groundnut	Oil Palm	Banana	Beans	Cocoa	Coffee	Cotton
Yield Loss Recovery	224.6	69.4	36.6	79.5	166.6	176.8	97.9	8.6	343.0	0.0	14.2	19.7	183.0
Catching Up	883.4	308.4	53.6	137.9	979.1	1,517.6	170.4	63.8	1,433.4	0.0	78.6	155.5	950.0

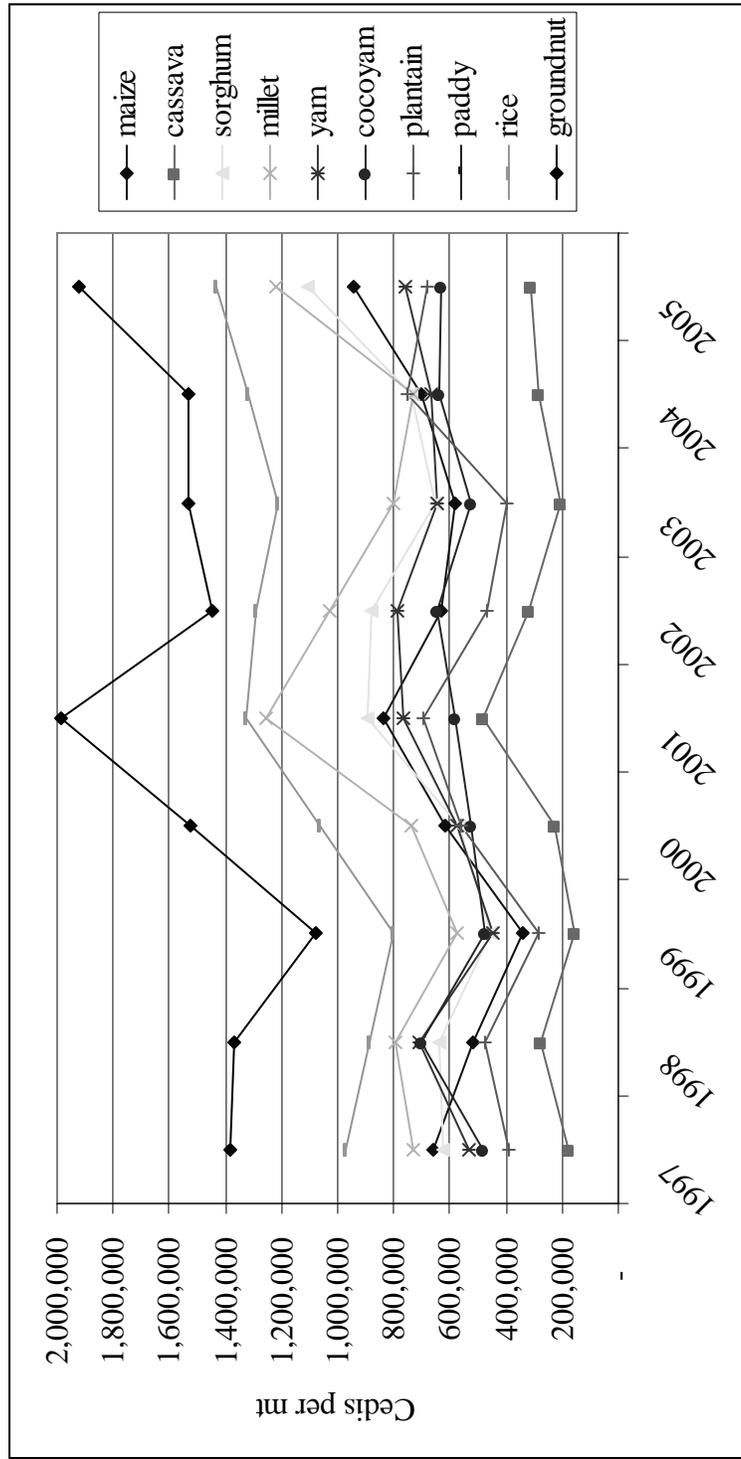
Source: IFPRI (2006), Tables 5.3.1(a), 5.3.1(b), 5.3.4(a) and 5.3.4(b).

APPENDIX 8: THE GLOBAL MARKET FOR ORGANIC COCOA

Region / Country	Date	Organic production (in tonnes)	Organic exports (in tonnes)
<i>Africa (6)</i>		<i>3,000</i>	<i>1,770</i>
Ghana	2005	n.a.	n.a.
Madagascar	2003	1,500	1,500
São Tomé		n.a.	n.a.
Tanzania & Uganda	2005	1,500	270
Togo		n.a.	n.a.
<i>Americas (14)</i>		<i>11,738</i>	<i>8,638</i>
Belize	2004/05	33	33
Bolivia	2003/04	400	400
Brazil	2005/06	1,100	50
Columbia		n.a.	n.a.
Costa Rica	2004/05	300	300
Cuba		n.a.	n.a.
Dominican Republic	2004/05	5,000	5,000
Ecuador		n.a.	n.a.
El Salvador	2005	30	30
Mexico	2005	2,500	600
Nicaragua	2004	98	98
Panama	2005	350	350
Peru	2005	1,850	1,700
Venezuela	2005	77	77
<i>Asia and Oceania (4)</i>		<i>762</i>	<i>762</i>
Fiji	2002	50	50
India	2005	12	12
Sri Lanka	2005	200	200
Vanuatu	2002	500	500
<i>Total identified</i>		<i>15,500</i>	<i>11,170</i>

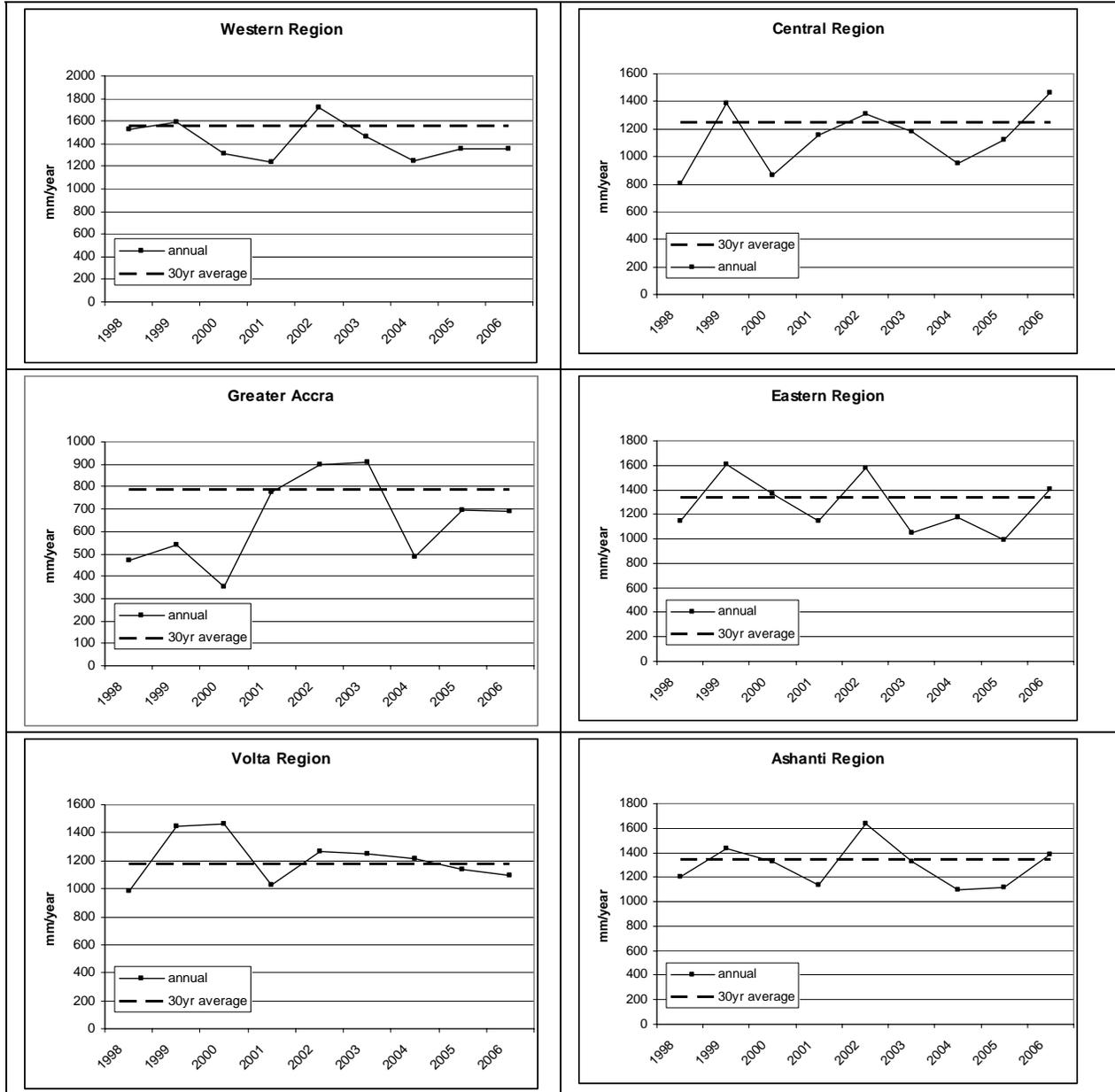
Source: ICCO (2006b).

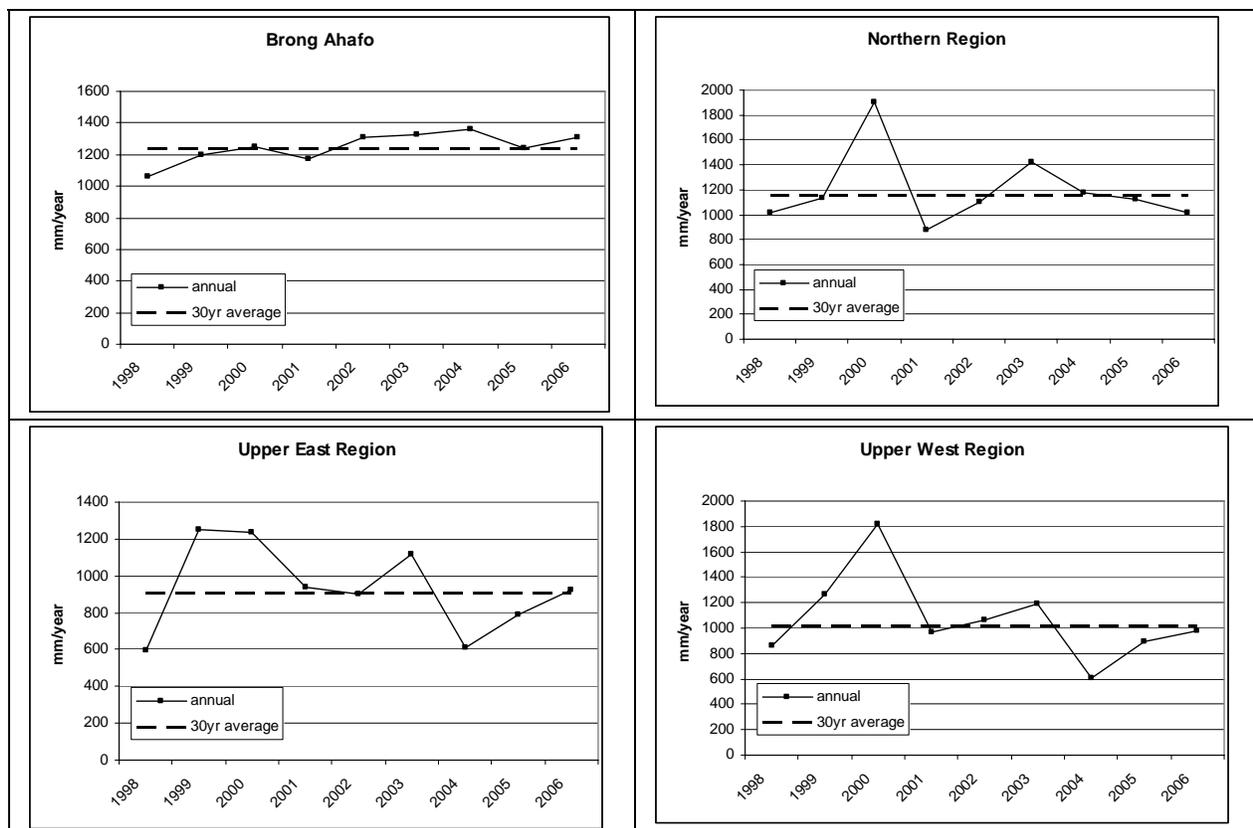
APPENDIX 9: WHOLESALE PRICES OF FOOD STAPLES 1997 – 2005 (CONSTANT 1997 CEDIS)



Source: MoFA SRID.

APPENDIX 10: RAINFALL PATTERNS BY REGION 1998 – 2006





Source: MoFA.

APPENDIX 11: IRRIGATION SCHEMES, RANKED BY SIZE OF DEVELOPED AREA

Name	Region	Potential Area (ha)	Developed Area (ha)	Year Built	Number of Farmers
Tono	Upper East	3,860	2,490	1975-85	2,850
Kpong	Greater Accra	3,208	2,200	1997	1,349
Afife	Volta	880	880	1978	650
Vea	Upper East	1,197	850	1965-80	2,000
Bontanga	Northern	450	450	1980-82	600
Weija	Greater Accra	220	220	1982	115
Dawhenya	Greater Accra	200	150	1959 & 1991	200
Ashaiman	Greater Accra	148	130	1968	120
Amate	Eastern	203	101	1976-80	63
Anum Valley	Ashanti	140	100	1992	65
Okyereko	Central	111	81	1997	68
Akumdan	Ashanti	65	65	1974-76	101
Tanoso	Brong Ahafo	115	64	1975-84	188
Aveyime	Volta	150	63	1960s	60
Subinja	Brong Ahafo	121	60	1973-76	25
Golinga	Northern	100	40	1960s	75
Kpando-Torkor	Volta	356	40	1974	118
Sata	Ashanti	56	34	1992-93	51
Kikam	Western	27	27	1993	26
Dedeso	Eastern	60	25	1978-82	49
Libga	Northern	40	20	1960s-70s	45
Mankessim	Central	256	17	1974-81	89
Totals		11,963	8,107		8,907

Source: Irrigation Development Authority cited in Steedman (2003).

APPENDIX 12: THE VALUE OF PROCESSED COCOA-BASED EXPORTS 2004 – 2006

HS code	Product	2004	2005	2006
1802000000	Cocoa shells, husks, skins and other cocoa waste	4,752,298	2,287,698	708,229
1803100000	Cocoa paste, not defatted	37,664,378	29,311,705	90,354,822
1803200000	Cocoa paste, wholly or partly defatted	12,744,864	5,091,908	5,237,228
1804000000	Cocoa butter, fat and oil	23,871,621	33,468,122	53,058,590
1805001000	Cocoa powder, (no sugar or sweetening matter) in packaging with content <	43,524	28,552	2,000
1805009000	Cocoa powder (no sugar or other sweetening matter) otherwise presented	1,689,023	235,076	205,796
1806100000	Cocoa powder, containing added sugar or other sweetening matter	2,396,912	2,240,703	2,055,218
1806200000	Chocolate, etc, containing cocoa, in blocks, slabs or bars >2kg	96,296	14,876	874
1806310000	Chocolate, etc, containing cocoa, in blocks, slabs or bars, filled	18,984	33,243	6,837
1806320000	Chocolate, etc, containing cocoa in blocks, slabs or bars, not filled	0	41,390	3,943
1806901000	Other confectionery containing cocoa and chocolate	185,228	61,572	82,647
1806909000	Other food preparations containing cocoa and chocolate	116,307	1,214,160	1,228,999
Total		83,579,434	74,029,004	152,945,183

Source: CEPS. Data in nominal US\$.

APPENDIX 13: RECOMMENDED ACTIONS TO IMPROVE THE COCOA VALUE CHAIN

Type	Actors involved →	Farmers	LBCs/ PCs	Cocobod	Other Governmental institutions	Private sector (input providers, banks)	International traders/ manufacturers	NGOs
Product upgrading	quality	++	+	++	0	0	++	0
	niche cocoa (organic/fair trade)	+/-	+/-	0	0	0	+/-	++
Process upgrading	Productivity	++	++	++	+	++	+/-	0
	Volume	++	++	++	+	+	+	0
	Good farm maintenance	++	+	++	+	+	0	0
	Control of diseases	++	+	++	+	++	+	0
	IPM	+/-	0	+/-	+/-	0	0	+
	New varieties (hybrid)	++	+	++	0	0	0	0
	Improvement of seedlings	0	0	++	0	0	0	0
Institutional upgrading	Effective land use	+	0	0	+	0	0	0
	Infrastructure	0	0	0	+	0	0	0
	Formal Farmer cooperation	+/-	+/-	0	+/-	0	+/-	++
	Informal farmer cooperation	++	0	0	0	0	0	0
	Efficient extension services	+	0	+/-	+/-	+	+/-	+
	Access to formal credit facilities	0	0	0	0	+/-	0	0
	Access to informal credit facilities	+/-	+/-	0	0	0	0	0
	Access to information	0	+	+	0	0	0	0
	Traceability	+	++	++	0	0	+	0
	Grinding of cocoa beans in Ghana	0	0	+	0	0	+	0
Functional upgrading	Processing in Ghana: cocoa products	+/-	0	+	0	0	+	0
	Marketing of cocoa products	0	+	++	0	0	0	0
	(inter-) sectoral upgrading	++	0	0	+	+	+	+

+ = involved

++ = very much involved

+/- = little bit involved

0 = not involved

Source: author

Source: Lavens (2005: Table 5.1).

3. INVESTMENT CLIMATE

INTRODUCTION

3.1 **Over the past decade, Ghana's economy has grown quickly.** Between 2000 and 2005, GDP growth averaged 4.9% per year. Moreover, toward the end of the period, growth accelerated, reaching 5.8% in 2004 and 2005. Growth was estimated to reach 6.0% in 2006 (Economist Intelligence Unit 2007).

3.2 **Ghana's growth has been accompanied by significant reductions in poverty.** Volume 1 and 3 of this CEM demonstrates that Millennium Development Goal (MDG) of reducing the poverty rate by half by 2015 is being achieved well ahead of schedule. However, sustaining these accomplishments into the future will require continued robust and broad-based growth. The Ghana Poverty Reduction Strategy II (GPRS II) emphasizes that such growth, in turn, will require broadening the country's economic base and achieving the structural transformation required for expanding and diversifying exports (International Monetary Fund 2006b). The Government of Ghana's National Trade Policy echoes this point. It argues that Ghana can boost economic growth through greater international trade and that increasing trade ultimately will depend upon industrialization and adding value to Ghana's natural resources (Ministry of Trade and industry 2005). So what can the Government of Ghana do to meet these goals?

3.3 **This chapter evaluates the barriers to private sector investment and growth that can prevent diversification and reduce growth by presenting preliminary results from a large-scale survey of enterprises in Ghana (Investment Climate Survey—ICS—survey).** The survey, which covers micro, small, medium-sized and large enterprises in manufacturing and services in urban areas, was conducted in May–July 2007. It provides information on firm performance, firms' perceptions about the investment climate, and objective measures of the obstacles to firm operations and growth. Similar ICA surveys have been conducted in close to 100 countries throughout the world, including nearly 35 in Sub-Saharan Africa. Consequently, Ghana's investment climate can be benchmarked against the investment climates of other countries in SSA and in other regions of the world. Ghana's investment climate survey is also first such internationally comparable survey to date.

3.4 **This chapter discusses the goals and methodology that were employed, presents some preliminary results from the survey, and compares these results to results from previous analyses.** The full results from the survey will be presented in a more comprehensive document, an Investment Climate Assessment (ICA), which will be completed later in 2007. The ICA report will look in more detail at the obstacles facing firms in manufacturing and services and will assess the impact of the investment climate on firm competitiveness in Ghana in the manufacturing sector.

INVESTMENT CLIMATE SURVEY AND ASSESSMENT

3.5 **The World Bank stresses that the investment climate is important in its strategies to promote market-led growth and cut poverty** (Stern, 2002a; Stern, 2002b; Stern, 2002c). Improving living standards and cutting poverty depends on broad-based economic growth. Broad-based growth will take place only when firms improve worker productivity by investing in human and physical capital and technological capacity (defined broadly to include investment in knowledge, equipment, and organizational structure). However, firms will invest only when the investment climate is favorable.

3.6 **The investment climate represents those aspects of the economic environment that affect the decisions of firms, entrepreneurs, and investors to hire and fire workers and to invest in physical and human capital and new technologies.** In its broadest definition, this climate includes fixed factors such as a country's climate, endowment of natural resources, and location. For operational purposes, however, this chapter and the preliminary ICA it presents will focus on factors that are directly affected

by government policies. These include things such as macroeconomic stability, regulation, state of a country's infrastructure, and incentives embodied in institutional arrangements, such as the security of property rights and the rule of law and governance. These policy-related factors affect the expected return to investment and the uncertainty and risk of this investment. Defined in this way, the investment climate affects the returns to and risks associated with different economic activities.

3.7 The goal of this preliminary Investment Climate Assessment (ICA) is to evaluate the investment climate in Ghana in all its operational dimensions and to promote policies to strengthen the private sector. The ICA is based largely on results from a large firm-level survey that collects information on firm performance, cost of doing business, regulatory environment, labor market, financial sector, trade regime, and investment. The analysis links business environment constraints to costs and productivity.

Survey Instrument and Coverage

3.8 The ICA standard Enterprise Survey questionnaire is composed of four major parts:

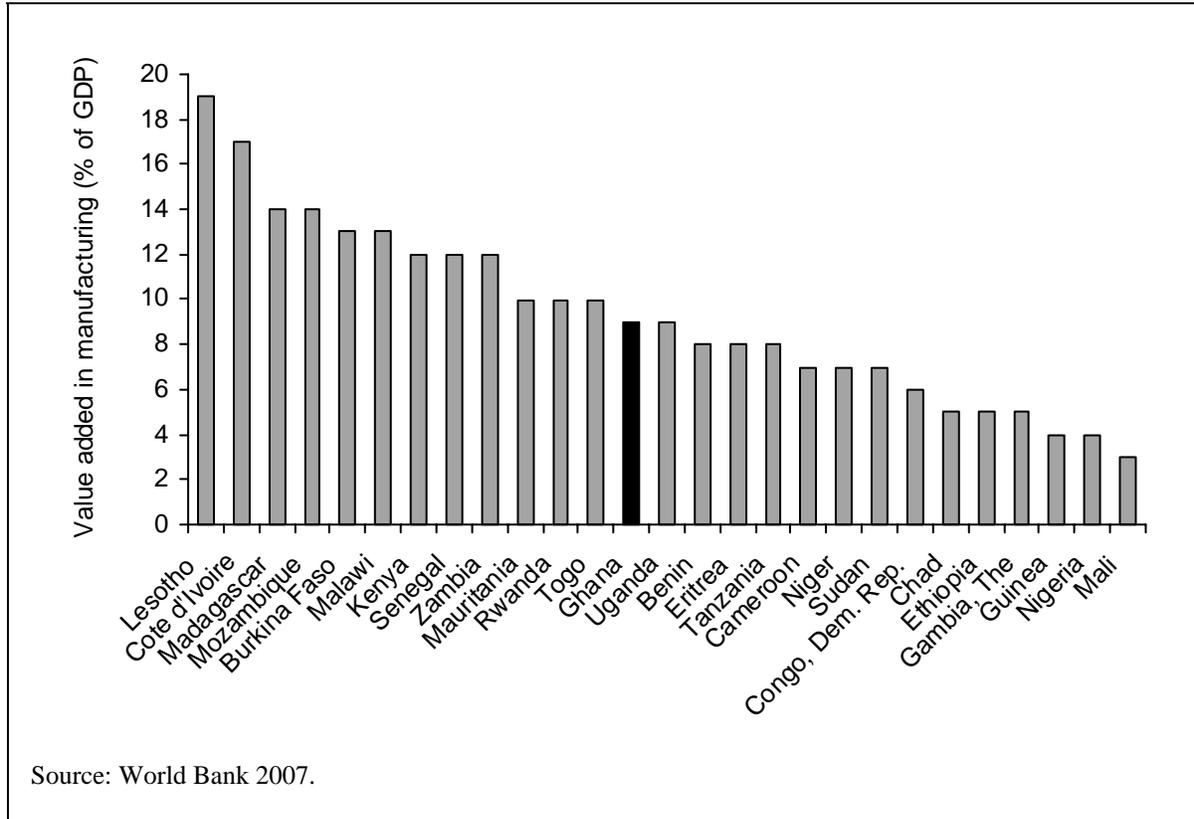
- a. The *first part* is designed for general managers or business owners. It addresses the internal structure of businesses and the investment climate within which they operate, including bureaucratic obstacles and infrastructure constraints.
- b. The *second part* deals with finances, production, and markets. It provides information on business performance that can be mapped to the business characteristics and investment climate obtained in the first part of the questionnaire. The detailed accounting data will enable a comparison of the competitiveness of the industry in Ghana with competitor countries in Africa, Asia, and Latin America, as well as estimate trade policy indicators.
- c. The *third part* of the questionnaire deals with human resources and labor market issues, particularly the effects of government labor regulations on the cost of doing business and the structure, as well as the cost and quality, of the workforce.
- d. The *last part* includes a small questionnaire for a sample of up to 10 workers per business. This data facilitates an understanding of the interaction between firm performance/business climate and poverty/labor market outcomes.

3.9 The standard survey instrument was modified somewhat to tailor it to Ghana without losing international comparability, through consultations with the various stakeholders. The survey covers most of the urban economy, including microenterprises and informal enterprises. Small, medium, and large enterprises were selected from four strata: garments, food and beverages, retail trade, and other manufacturing and services. Weights were calculated so that results from the survey could be extrapolated to the entire urban economy. (The CEM team has also, in partnership with DFID and GSS launched preparations for a follow-up, *rural ICA* the completion of which will extend beyond the completion of the CEM report).

Comparator Countries

3.10 Throughout the report, firm performance, and the investment climate in Ghana will be compared with two groups of countries. Ghana will be compared with *other low-income countries in Sub-Saharan Africa*. Enterprise Surveys have been conducted, or about to be conducted, in approximately 25–30 low-income countries in Sub-Saharan Africa—including several *nearby countries in West Africa*. Approximately 15 of these surveys have been conducted in either 2006 or early 2007. Comparing Ghana either with the entire sample of countries, particularly with the most recently surveyed countries, will give some idea about how Ghana compares relative to the other low-income countries in the region and in the immediate subregion in which Enterprise Surveys have been completed.

Figure 3.1: Few low-income countries in Sub-Saharan Africa have successfully diversified into manufacturing

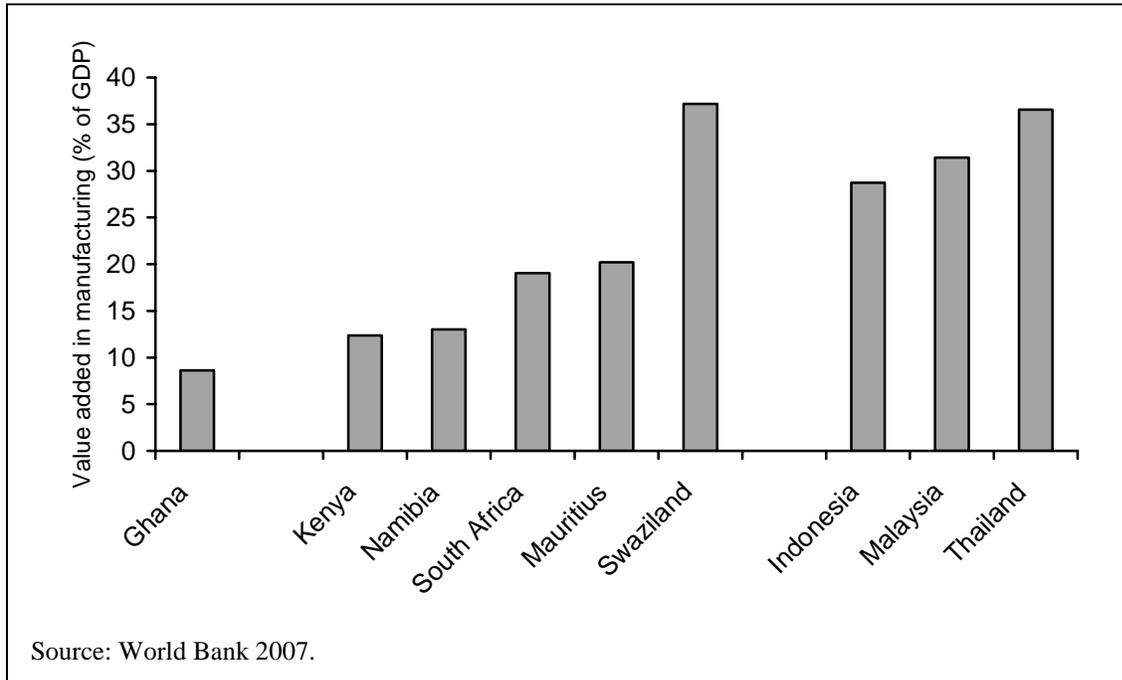


3.11 With a few exceptions, such as Lesotho, few low-income countries in Sub-Saharan have been successful in manufacturing, and even fewer have managed to enter international markets for manufactured goods (Figure 3.1). Currently, Ghana’s strategy documents emphasize export diversification and industrialization. In addition to comparing Ghana with other SSA countries in which Enterprise Surveys have been or will have been completed, we will also compare Ghana’s investment climate with the investment climate in low and middle-income countries in East Asia and SSA that have been more successful in producing and exporting manufactured goods. The countries to be included in addition to the low-income SSA countries are:

- ❖ **Africa:** Kenya, Mauritius, Namibia, South Africa, and Swaziland.
- ❖ **East Asia:** China, Malaysia, and Thailand.

Manufacturing is more important in these economies with respect to its contribution to GDP than it is in Ghana (Figure 3.2). Value-added in manufacturing is equal to approximately 9% of GDP in Ghana, approximately the same level as it has been since 1990. This is slightly lower than in Kenya and Namibia (approximately 12%–13% of GDP), and considerably lower than in the best performing countries in Sub-Saharan Africa (approximately 20%–40% of GDP) and the comparator countries in East Asia (approximately 30%–40%).

Figure 3.2: Manufacturing in Ghana compared with the “manufacturing” of comparator countries



3.12 Because surveys before 2006 covered only the manufacturing sector—and most of the surveys outside Africa were conducted in 2004 or 2005—comparisons with countries outside Africa include only manufacturing firms. When Ghana is compared with the other countries in Africa in which surveys were completed in 2006 or 2007, firms from all sectors are included.⁶⁷

Macroeconomic Performance Compared to the Comparator Countries

3.13 Compared to the comparator manufacturing countries in SSA, growth has been fairly rapid in recent years in Ghana (Table 3.1). *Per capita* growth averages 2.6% per year between 2000 and 2005, faster than in Kenya (0.3%) and Swaziland (0.4%), and close to Mauritius (3.0%) and South Africa (2.9%). Moreover, as noted earlier, growth has been faster in Ghana in the later part of this period than in the earlier part. However, Ghana’s *per capita* growth has been slower than in the fast growing economies in East Asia—especially when compared to China.

⁶⁷ Weights are used to ensure comparability.

Table 3.1: Macroeconomic indicators for Ghana and comparator countries
(Averages, 2000-05)

	Per capita GDP growth	CPI inflation	Private gross fixed capital formation (% of GDP)	Net FDI (% of GDP)
Ghana	2.6	21.2	15.6	1.9
Kenya	0.3	8.2	10.1	0.4
Mauritius	3.0	4.9	16.2	1.5
South Africa	2.9	5.1	14.2	1.7
Swaziland	0.4	9.4	11.5	3.2
Sub-Saharan Africa	1.8	---	---	2.9
Indonesia	3.4	8.4	17.5	-0.9
Thailand	4.0	2.2	19.0	1.8
Malaysia	3.1	1.7	---	2.9
China	8.6	1.2	19.5	3.2

Source: World Bank 2007.

Note: Data are averages for available data between 2000 and 2005.

3.14 **Ghana also performs well in other ways compared to the comparator countries in SSA.** In particular, private gross fixed capital formation has been 1% of GDP higher than in any of the comparators from SSA except Mauritius and net foreign direct investment has been higher than in any of the comparator countries except Swaziland. Private GFCF remain lower than in the East Asian comparator countries, although FDI is higher than in Indonesia and Thailand.

3.15 **One area where Ghana's performance has been less impressive is with respect to inflation.** CPI inflation, which averaged over 20% per year between 2000 and 2005—and year-on-year inflation remained in double digits in early 2006 (Economist Intelligence Unit, 2007)—is more than twice as high as in any of the comparator countries.⁶⁸

3.16 **Per capita income remains lower in Ghana than in most of the comparator countries that where manufacturing is more important than in Ghana except for Kenya.** As noted above, however, these are not the only comparator countries. Ghana also will be compared to other low-income countries in SSA where enterprise surveys have been completed in 2006 and 2007 throughout the report.

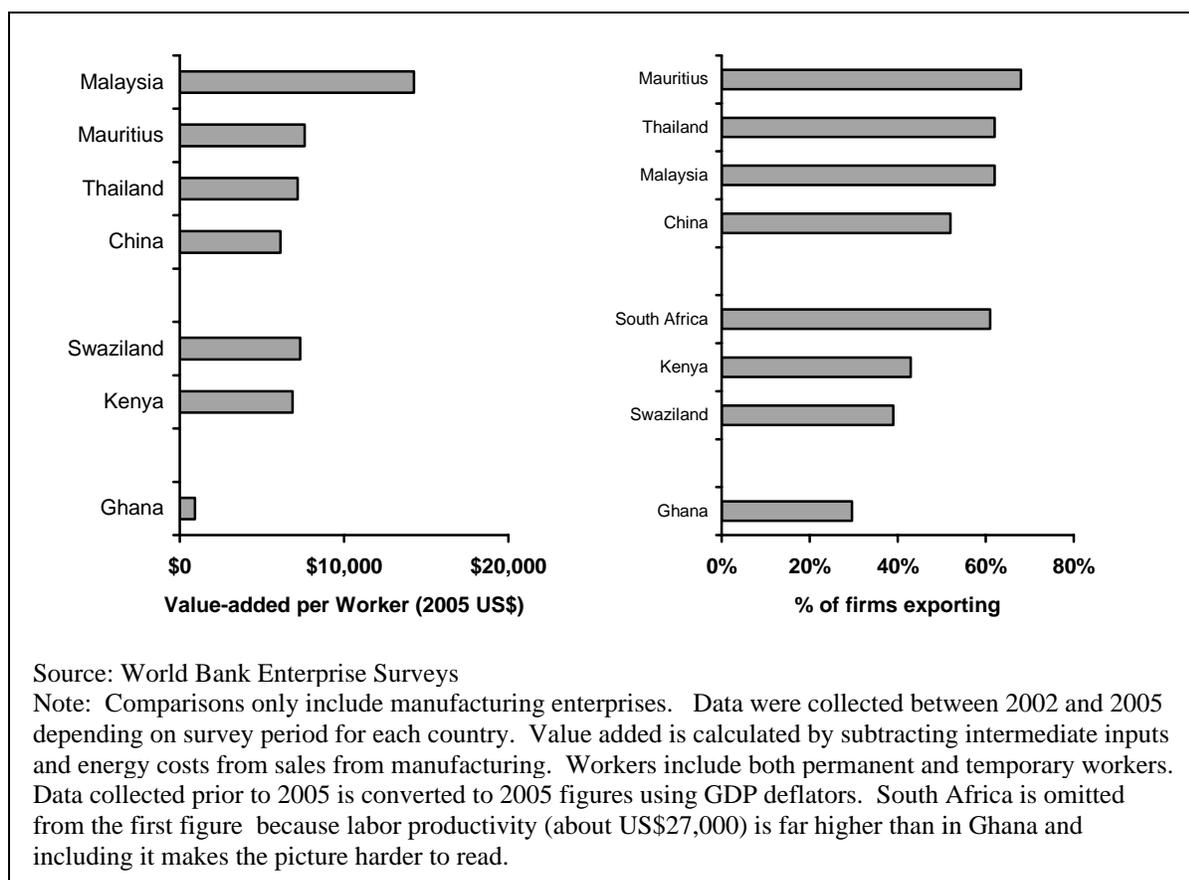
ENTERPRISE PERFORMANCE

3.17 **The investment climate survey collects information on various measures of firm performance.** In addition to collecting enough information to calculate standard measures of firm performance such as labor productivity and capital intensity, information is also collected on export performance, return on assets and sales and the structure of costs. To ensure that the results are comparable across countries, and because the standard productivity methodology is only appropriate for the manufacturing sector—results only cover firms in that sector.

⁶⁸ International Monetary Fund (2006a) notes that achieving single digit inflation is one of the primary goals of the Bank of Ghana.

3.18 **Firms in Ghana are far less productive than firms in the comparator countries** (see Figure 3.3). For example, the median firm produces only about US\$1,000 of value-added per worker. Firms in China, Thailand, Kenya, and Swaziland produce between six and seven times as much as per worker, firms in Malaysia produce about 14 times as much and firms in South Africa over twenty-five times as much.

Figure 3.3: Labor productivity is relatively low in Ghana



3.19 **One reason why firms in Ghana are less productive is that they are far less capital intensive**—they have less machinery and equipment per worker than firms in the comparator countries. The median firm has about US\$400 of machinery and equipment per worker. In comparison, firms in Swaziland have about US\$2,000 of machinery and equipment per worker, firms in Kenya have close to US\$7,000 per worker, and firms in South Africa have close to US\$13,000 per worker. Firms that are more capital intensive will tend to produce more output per worker than other firms. Another factor that might affect productivity is that firms in Ghana are relatively small. Labor productivity tends to be lower in small firms—although small firms also tend to be less capital and skills intensive. The median manufacturing SMLE has only about 10 employees in Ghana. By comparison, the median firm in Swaziland had about 60 employees and the median firm in Kenya had about 50 employees. The small size of firms has been noted in other studies—for example, it has been noted that there has been a dramatic shift in Ghana over the past decade with small, and potentially informal, firms becoming increasingly important (Teal and others, 2006).

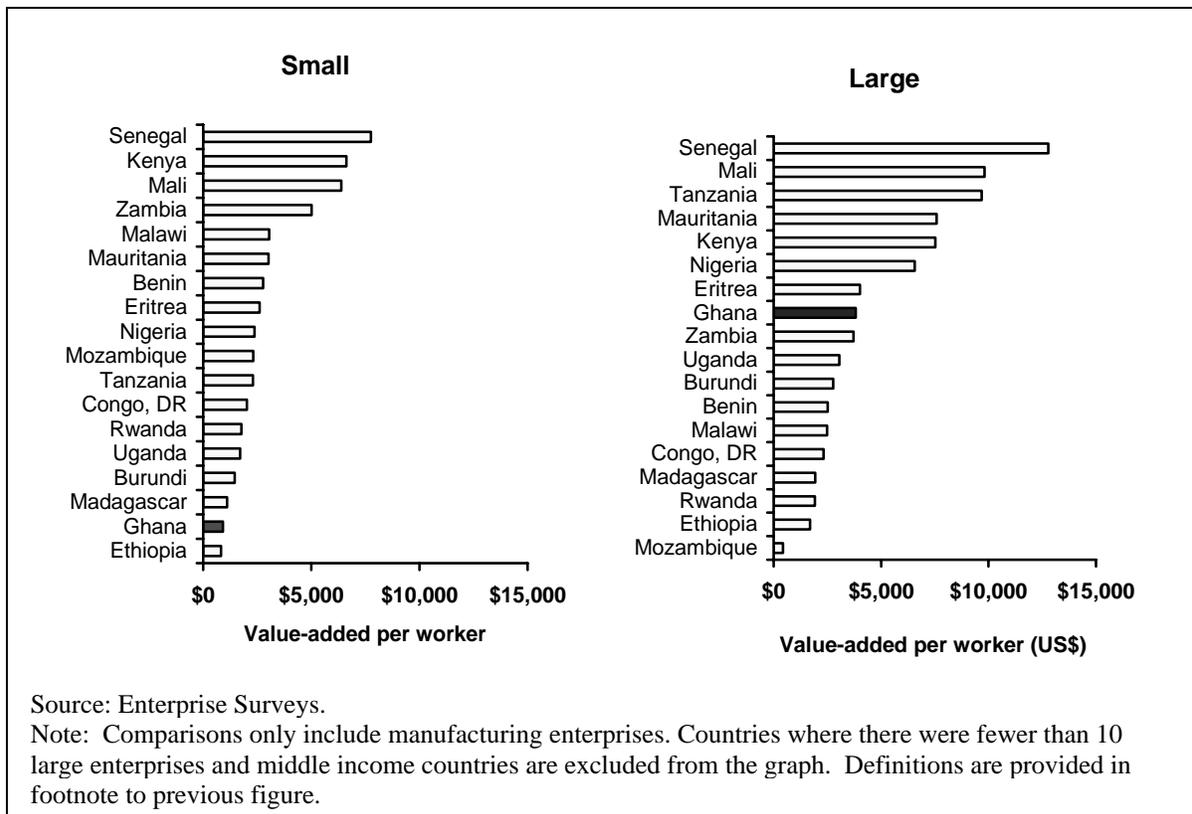
3.20 **Ghana also compares unfavorably with the comparator countries with respect to exporting.** Firms in Ghana were less likely to export than in any of the comparator countries. Whereas less than one-

quarter of manufacturing SMLEs from Ghana export, more than half export in most of the comparator countries. This suggests that low wages and low capital use do not entirely compensate for low productivity.

3.21 Labor productivity is also low compared to other countries in Sub-Saharan Africa. Although value added per worker for the median manufacturing SMLE is also close to US\$1000 in several other countries in Sub-Saharan Africa where Enterprise Surveys have been completed such as Zanzibar, Ethiopia, Gambia, Guinea-Conakry, Madagascar and Mozambique, labor productivity is higher in most low income countries. For example, the median firms produce close to US\$2000 per worker in Uganda and close US\$3000 per worker in Tanzania. Capital intensity is also relatively low in Ghana. The median firm has less capital than in any of the 33 other countries in Sub-Saharan Africa where Enterprise Surveys have been completed except for Guinea-Conakry and Zanzibar.

3.22 The gap in labor productivity between Ghana and other low-income countries in Sub-Saharan Africa is particularly large for small enterprises (see Figure 3.4). The median *large* enterprise in Ghana is *more* productive than the median large enterprise in most low-income countries in Sub-Saharan Africa where Enterprise Surveys have been completed.⁶⁹ In contrast, the median *small* enterprise is *less* productive than in any of the other low-income countries where surveys have been completed except for Ethiopia. Therefore, Ghana features a sharp productivity divide between large and small enterprises.

Figure 3.4: Labor productivity is particularly low among small enterprises in Ghana



⁶⁹ It is also lower than in most of the middle-income countries in the region where Enterprise Surveys have been completed such as South Africa, Swaziland, Namibia, Botswana, and Cape Verde.

3.23 **There is also a large gap between large and small enterprises in Ghana with respect to capital intensity.** The median large enterprise has over US\$5000 of machinery and equipment per worker, compared to less than US\$500 for the median small enterprise. As with labor productivity, the median large enterprise ranks somewhere in the middle of the group of low-income countries with respect to capital intensity, while the median small enterprise is less capital intensive than in any of the other low-income countries except for Guinea-Conakry.

3.24 **In summary, labor productivity is relatively low in Ghana, whether it is compared to labor productivity in the successful manufacturing countries or to labor productivity in other low-income countries in Sub-Saharan Africa.** This is partly because firms are small and partly because they are very labor intensive. Labor productivity appears to be particularly low among small firms—small firms from Ghana are less productive and less capital intensive than small firms even in other low income countries in Sub-Saharan Africa, while large firms are relatively productive and relatively capital intensive.

PERCEPTIONS ABOUT INVESTMENT CLIMATE

3.25 **In addition to collecting information on firm productivity, the Enterprise Survey also collects information on the investment climate**—including on topics such as competition from the informal sector, crime, taxation, worker education and skills, corruption, regulation, and infrastructure. Two types of information are collected: (i) *subjective measures* of what managers see as the major obstacles that their firm faces; and (ii) *objective indicators* such as production lost due to power outages, whether the firm has a loan or overdraft facility, and amount of time managers spend dealing with government regulations. The report uses both types of data—and supplementary information from other sources—to assess constraints to enterprise operations and growth in Ghana and to compare constraints in Ghana with constraints in the comparator countries.

Perceptions about Constraints to Enterprise Operations and Growth

3.26 **As a starting point for the analysis, this section looks at the perceptions of managers about the constraints that they face.** Enterprise managers probably know more about the immediate problems facing their businesses than government officials, academic researchers, or other outside experts. It therefore makes sense to take their concerns about the investment climate seriously.

3.27 **Although manager perceptions are a useful starting point, they suffer from several problems.**

- **First**, it is difficult to aggregate perceptions across firms. Although constraints affect different firms to different degrees, perception-based data cannot be aggregated as easily as objective data (for example, costs measured in local currency). This makes it difficult to order obstacles. For example it is not clear whether an issue that one firm considers a very serious problem and another firm considers a minor problem, is more or less of a problem in the aggregate than one that both consider a moderately serious problem. Because of these concerns, in addition to using objective data in later sections of the paper, this section looks at two measures of perceptions; the share of firms that say whether an issue is a serious problem and the share of enterprises that say it is the biggest obstacle that they face. This makes it possible to check that the results based upon the perception-based indices are robust to these different questions.
- **Second**, although managers may be aware of a problem, they might not be aware of the underlying causes. For example, managers might know that it is difficult get bank loans to finance new investment, but might not know the underlying reasons for this (for example, lack of competition in the banking sector, government debt issues crowding out private investment, or problems with land

registration that prevent firms from using land as collateral). As a result, additional information is needed to assess how to reduce any given constraint.

- **Third**, enterprise managers' interests might not always be consistent with society's interests. Most managers would like subsidized credit or to have prices set below costs for power or water if they believed that the cost of providing these services would be borne by someone else. Similarly, most managers would be happy to face less competition even if the cost to society outweighed the benefits to their firm. It is important, therefore, to keep the costs of interventions in mind when adopting programs to reduce constraints.
- **Fourth**, the perceptions of managers of existing enterprises might not reflect all obstacles to private sector investment and growth. Managers of existing enterprises that have already completed registration procedures might not be concerned about entry costs even if they remain high. Similarly, they might rate some issues as lesser problems because they have structured their businesses in ways to minimize those costs. For example, if transportation costs are especially high in some areas, existing firms might only be located close to transportation facilities.
- **Fifth**, if investment climate constraints are particularly binding, then there might be very few firms that rely heavily upon that area of the investment climate.⁷⁰ For example, if the ports and custom facilities are particularly poor, very few firms might operate in export-oriented industries. Any of these factors could affect the ranking of constraints.
- **Finally**, although recent work suggests that perception-based measures line up reasonably well with objective macroeconomic indicators, it is difficult to compare perceptions across countries.⁷¹ That is, cultural differences or persistent differences in expectations about how the investment climate should look might affect perceptions. In addition, expectations about freedom of speech might affect whether managers are willing to complain to outside interviewers about the investment climate more than it affects their willingness to answer objective questions.⁷²

3.28 Because of these concerns, although this report uses the perception-based data as a starting point for the analysis, this information is supplemented with objective measures of the investment climate taken from the Enterprise Survey and other sources when appropriate. In addition, although cross-country comparisons of perception-based data (for example, comparing the number of firms that complain about an issue between countries) can provide some context to results using objective data, the later sections supplement this with objective data when other information is available. The additional objective data allow us to benchmark the investment climate in Ghana against the investment climates in other countries.

Main perceived constraints

3.29 The Enterprise Survey asks firm managers to say how great an obstacle each of 17 areas of the investment climate are to the current operations of their business. They respond by rating each on a five-point scale between 'no obstacle' and a 'very severe obstacle'. Figure 3.5 shows the % of each type of firm that rated each area as a 'major' or 'very severe obstacle'.

⁷⁰ Hausmann and Velasco (2005) illustrate this point with an analogy to camel and hippos. They note that the few animals that you find in the Sahara will be camels, which have adapted to life in the desert, rather than hippos, which depend heavily upon water. Asking the camels about problems associated with life in the desert might not adequately represent the views of the missing hippos.

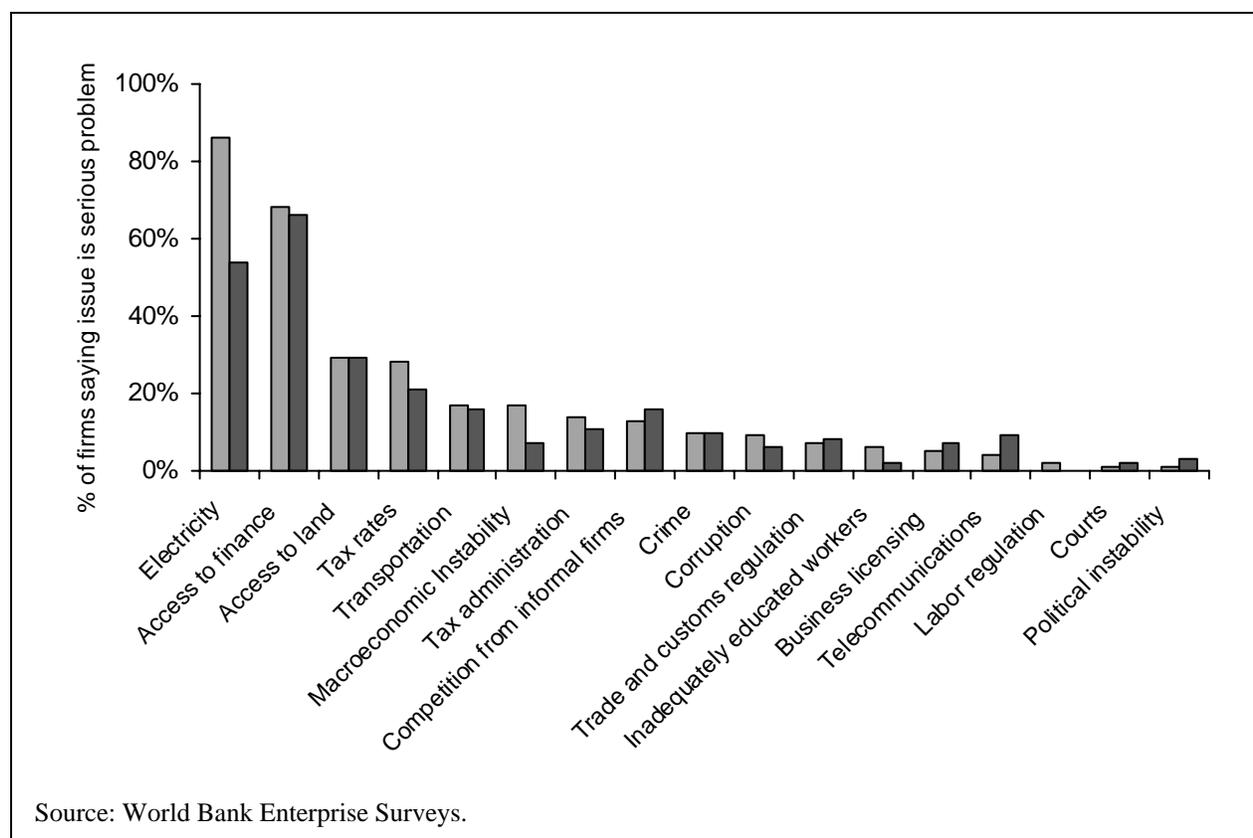
⁷¹ See, for example, Gelb et al (2006) for work using data from Africa or Hellman and others (1999) for work using data from Eastern Europe and Central Asia.

⁷² Clarke et al (2006) show that firms appear to complain more about access to finance in countries that are more free politically than in other countries after controlling for other country and firm characteristics.

3.30 **Two issues stand out as particular concerns for small, medium and large enterprise (SMLE) and microenterprise managers—electricity and access to finance.** Close to *nine out of ten SMLE managers and over half of the microenterprise managers* rated electricity as a serious problem (i.e., a major or very constraint) and about seven out of ten SMLE and microenterprise managers rated access to finance as a serious problem.

3.31 **Far fewer enterprise managers were concerned about the other 15 constraints.** Approximately three out of ten SMLE managers rated access to land and tax rates as serious constraints—the next most common concerns. Transportation, macroeconomic instability, and tax administration were rated as a serious constraint by only approximately three out of every twenty SMLE managers, suggesting only moderate levels of concern. Other areas of the investment climate were rated as a serious concerns by less than one in ten managers and some, such as labor regulation, courts, and political instability, were rated as serious problems by almost no SMLE managers.

Figure 3.5: SMLEs and microenterprises perceive electricity and access to finance as main constraints



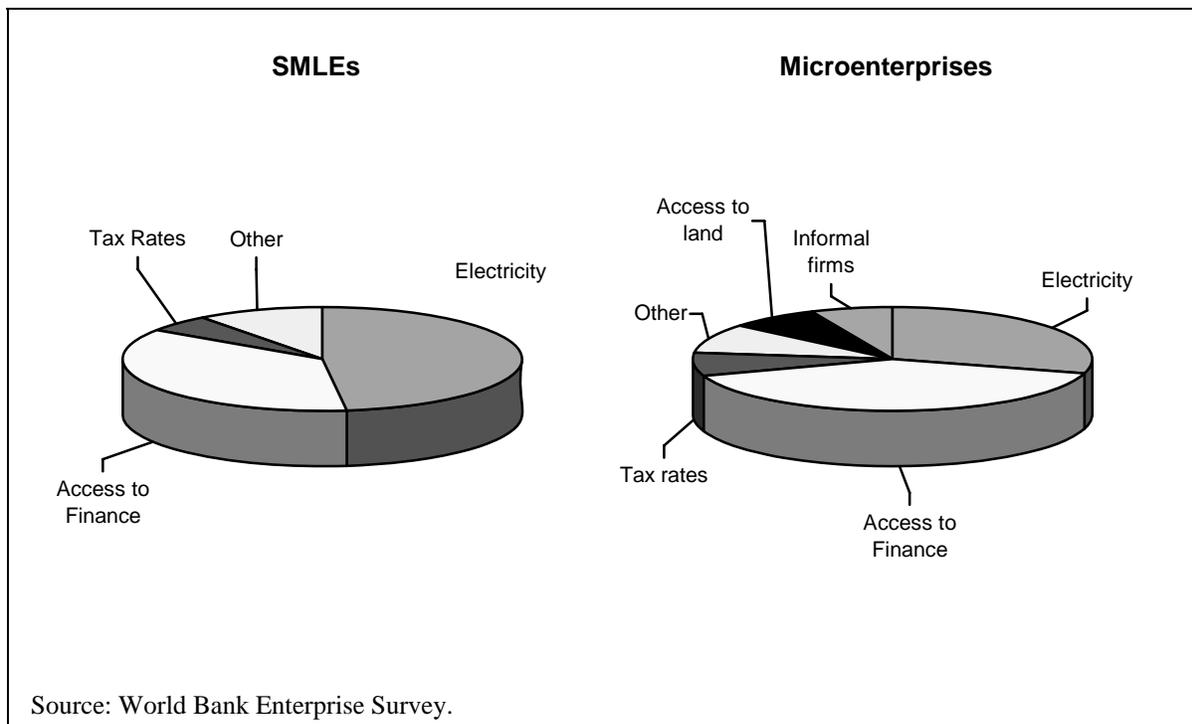
3.32 **The picture is similar for microenterprises.** Approximately three out of every ten microenterprise managers rated access to land as a serious obstacle, approximately two out of ten said tax rates were a serious problem, and approximately three in twenty said transportation and competition from informal firms were serious concerns. Other areas of the investment climate were rated as serious problems by about one in ten microenterprise managers or fewer.

3.33 **Although the concerns of microenterprise and SMLE managers were broadly similar—access to finance and electricity rated as the largest concerns and very few firms of either type rated labor regulation, courts, or political instability as serious concerns—there were some differences.**

Although electricity ranked in the top two constraints for microenterprise and SMLEs managers, microenterprises were less likely to say it was a serious problem than SMLE managers (54% compared to 80%). Microenterprises were also less concerned about tax rates, macroeconomic instability, and inadequately educated workers—although the last issue was rated as a concern by very few of either type of manager.⁷³

3.34 **Although as noted, in theory, results can look very different when firms are asked about the biggest constraint rather than being asked how great an obstacle a given area is, this is not the case in Ghana.** About 85% of SMLE managers and about 70% of microenterprise managers said that either electricity or access to finance was a serious concern—far more than any other of the possible areas (Figure 3.6). Although one in twenty SMLE managers rated tax rates as a serious problem and about one in twenty microenterprise manager said tax rates, access to land, and competition from informal firms were serious obstacles. No other constraint was rated as a serious problem than more than one in twenty managers.

Figure 3.6: Managers responses were similar for SMLEs and microenterprises



Differences with perceptions from earlier surveys

3.35 **Several previous surveys of firms in Ghana have asked firms about their perceptions about different aspects of the investment climate.** Different surveys have approached this in different ways. Some have covered both manufacturing and services while others have focused on only manufacturing. Some have asked firms what the greatest constraint that they face while others have asked firms to rate how great the constraint is on differing scales (for example, the investment climate survey asks firms to rate constraints on a five-point scale ranging from “no constraint” to a “very severe constraint” on the firm’s current operations). Furthermore, the constraints that each survey asks about usually are different.

⁷³ These differences were statistically significant at a 10% level of higher.

Despite these differences, there are some similarities in responses of the survey.⁷⁴ Results from these earlier surveys are discussed in detail in the recent investment climate assessment (Regional Program on Enterprise Development 2007).

3.36 **Several patterns emerge from *earlier* surveys.**

- **First**, in contrast to results from the 2007 ICA Enterprise Survey, macroeconomic instability/inflation in the past was seen as one of the largest problems in most of the earlier surveys.
- **Second**, as in the 2007 Enterprise Survey, access to credit has been a consistent concern, usually ranking first or second (usually behind macroeconomic instability).
- **Third**, although infrastructure is often seen as a moderate problem, it has typically not ranked among the very top concerns. In this respect, the extremely high number of firms ranking power as a serious problem is *a new development*.
- **Finally**, most aspects of regulation—with the exception of taxation—have not typically been among the top concerns. The results from the 2007 Enterprise Survey are broadly consistent with this.

ASPECTS OF THE INVESTMENT CLIMATE

3.37 **As noted earlier, in addition to asking firm managers about what they perceive to be the greatest investment climate-related constraints, firm managers are also asked objective questions about the investment climate.** For example, they are asked about power outages, cost of power, and whether they have a generator and whether they have a bank loan or overdraft facility and, if not, why not. This section looks at the *objective indicators* focusing on the areas that firms were most likely to say were major constraints. A complete analysis of all areas will be available in the full Investment Climate Assessment for Ghana (Regional Program on Enterprise Development 2007).

Electricity

3.38 **The country's electricity crisis is clearly reflected in this ICA survey.** Although infrastructure did not typically rank among the main concerns of firms in the earlier survey, as discussed Chapter 1 of this Volume 2 of the Ghana CEM, the country suffers from a serious imbalance between supply and demand, which has brought the energy sector into crisis and has resulted in severe load-shedding problems. Increased demand, low water inflows into the hydropower reservoir, decommissioning a diesel plant, and unreliable power supply from Cote d'Ivoire have caused a serious electricity supply deficit.

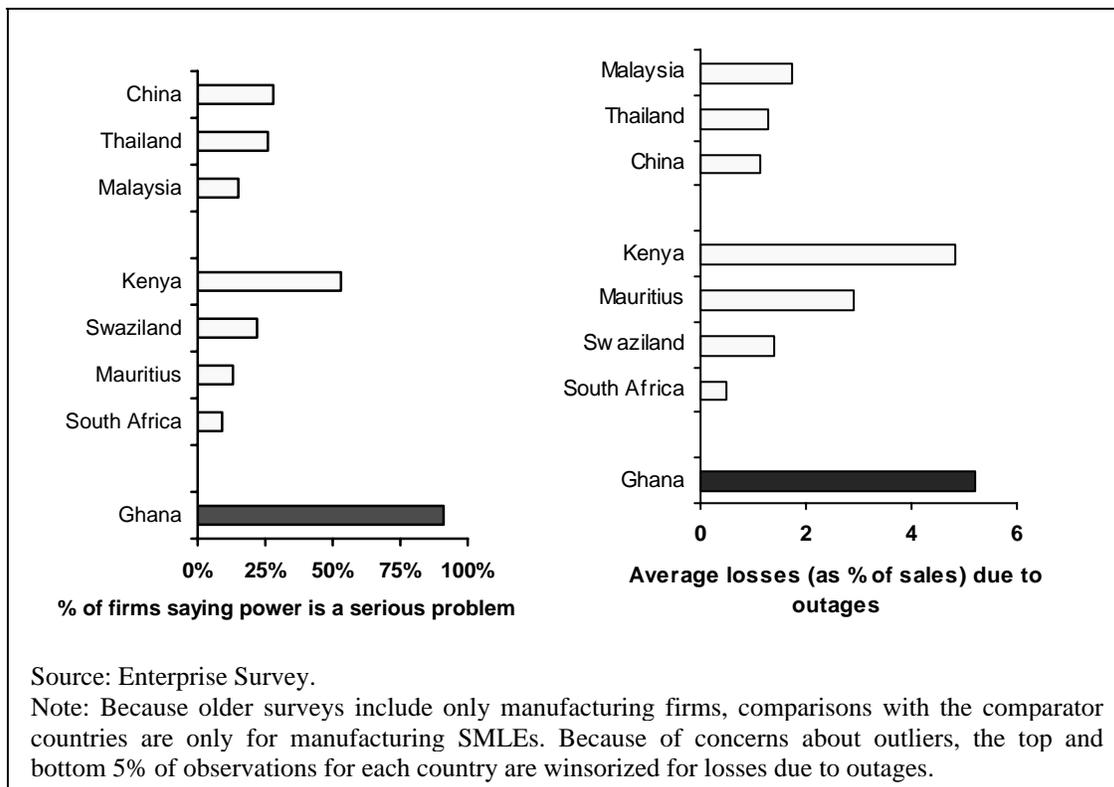
3.39 **The electricity supply shortfall has had a serious impact on firms in Ghana.** As discussed in the previous section, there is a strong consensus that electricity is a serious problem, with firms of all sizes and sectors claiming that it is a serious obstacle to their operations and growth. Close to 9 of 10 SMLEs, and more than 9 of 10 manufacturing SMLEs, said that insufficient electricity was a serious obstacle. Close to half said it was the *biggest* problem that they faced. Although microenterprise managers were less likely to say it was a serious obstacle, they were more likely to say it was a serious problem than any area except access to finance.

⁷⁴ The surveys include a 1996 survey conducted for the *World Development Report 1997* (World Bank 1997), the World Business Environment Survey (WBES), which was conducted in by the World Bank in 1999–2000, and several surveys conducted by Oxford University and the World Bank. See Brunetti and others (1997a; 1997b) for a description of the survey and the main results from the WDR survey; Batra and others (2002) and Hellman and others (1999) for a discussion of the WBES survey, and Teal and others (2006) for a discussion of the GMES/RPED surveys.

3.40 **This percentages were far higher than in any comparator country with larger manufacturing sectors** (Figure 3.5) Aside from Kenya, in which approximately 50% of manufacturing SMLEs said that electricity was a serious problem, fewer than one-third of manufacturing SMLEs in the comparator countries said that power was a problem. For example, approximately only 10% of manufacturing SMLEs in South Africa, 15% in Malaysia, and 30% of manufacturing SMLEs in China said the same. As noted earlier, because comparable data are available for manufacturing firms in most of the comparator countries outside Africa, comparisons with the comparator countries are for manufacturing SMLEs only.

3.41 **The objective indicators tell a similar story: manufacturing SMLEs in Ghana face more power outages and have higher losses due to outages than in any of the other comparator countries** (Figure 3.7). On average, manufacturing SMLEs in Ghana faced approximately 10 power outages per month. In comparison, manufacturing SMLEs in Kenya faced approximately 5 outages per month. Manufacturing SMLEs in the other comparator countries faced fewer than 2 outages per month.

Figure 3.7: SMLE firms in Ghana report much higher losses due to outages than in more successful manufacturers in Africa and Asia



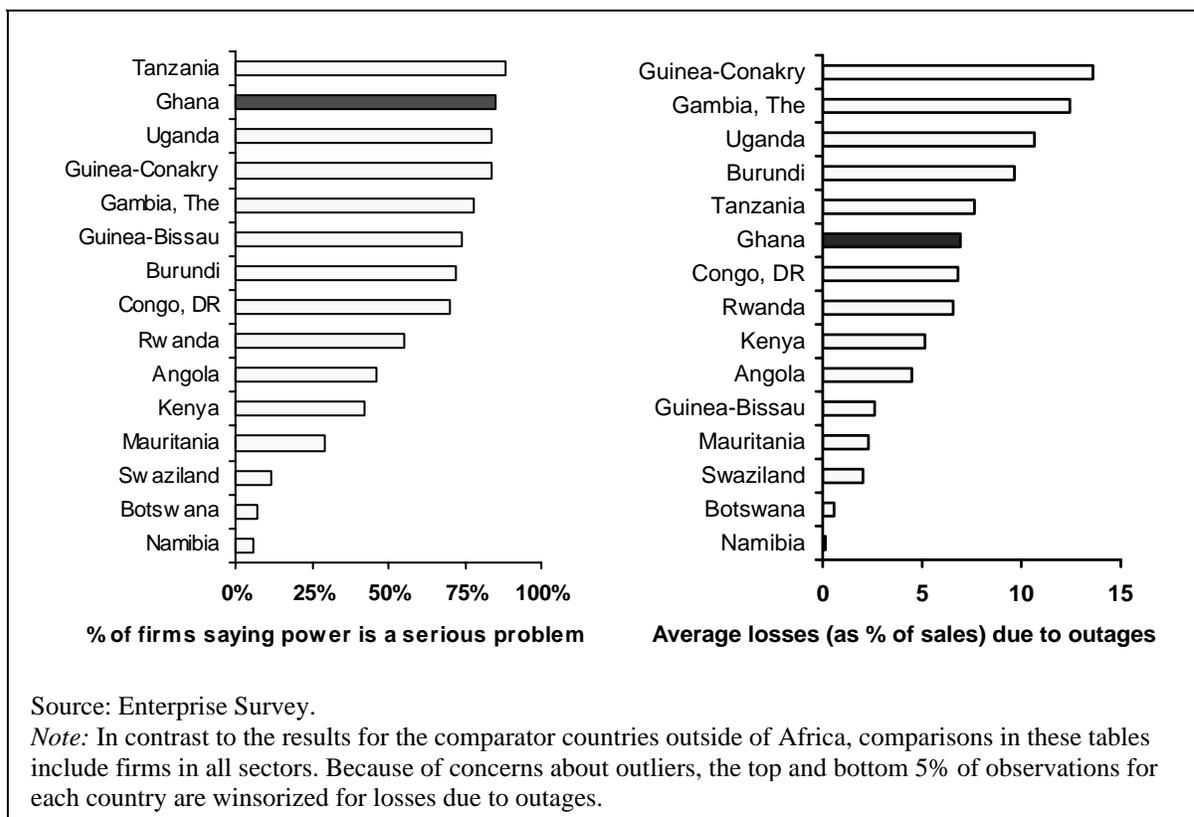
3.42 **Losses from outages are similarly high in Ghana: approximately 5% of sales in 2006.** This figure is slightly higher than in Kenya, but more than twice as high as in any of the other comparator countries. This is a fairly significant amount. For example, in comparison, labor costs are equal to only approximately 28% of sales for manufacturing SMLEs in the Kenya sample. Similarly, according to the 2007 *Doing Business* report, the total tax rate—which includes corporate taxes, labor taxes, and other miscellaneous taxes but excludes value-added taxes—is approximately 32% in Ghana in January 2006 (World Bank 2006). Given that profits are set equal to approximately 10% of sales for the representative

firm used to calculate the total tax rate in the *Doing Business* report, this suggests that Ghana's taxes are equal to approximately 3% of sales for the representative firm.⁷⁵

3.43 **It is interesting that losses due to outages in Ghana are closer to the comparator countries than number of outages per month (Figure 3.8).** For example, although manufacturing SMLEs in Ghana reported approximately 5 times as many outages as firms in Swaziland and twice as many outages as firms in Kenya, average losses were only slightly higher than in Kenya and approximately 2.5 times as high as in Swaziland.

3.44 **One likely reason for the difference is that firms in Ghana are far less capital intensive than firms in Kenya, Swaziland, or the other comparator countries** (see previous section). Firms that are less capital intensive might be less sensitive to power outages than other firms. It does not seem to be that firms in Ghana are able to generate their own power during outages. Even though power outages are more common in Ghana than in the comparator countries, approximately only 20% of manufacturing SMLEs in Ghana had generators compared to approximately 40% in Swaziland and 60% in Kenya.

Figure 3.8: All firms in Ghana report much higher losses due to outages than in the more successful manufacturers in Africa



3.45 **Although SMLEs in retail trade, manufacturing, and other services in Ghana were more likely to say that power was a problem than in most of the other countries in SSA where surveys were completed in 2006 or 2007, Ghana compares more favorably with these countries than with other the comparator countries.** Firms in Tanzania, Uganda, and Guinea-Conakry were nearly as likely

⁷⁵ This is broadly consistent with results from the Enterprise Survey, which suggest that pre-tax return on sales is close to equal to 10% of sales for the median firm in the enterprise survey. Note that firms in the Enterprise Survey are not asked about taxes.

to say that power was a problem as firms in Ghana. Firms in the Gambia, Guinea-Bissau, Burundi, Rwanda, and the Democratic Republic of Congo were almost as likely to say that power was a serious problem. Firms in the middle-income countries of Southern Africa, Botswana, Namibia, and Swaziland, were far less likely to say that power was a problem than in any of the other countries in the region in which Enterprise Surveys have been completed recently.

3.46 Ghana compares more favorably when looking at the objective indicators. Although losses due to outages were higher on average in Ghana than in most of the countries in SSA, they were lower than in several of the countries. For example, although firms in Ghana were slightly more *concerned* about power than in Guinea or Uganda, average *losses* were slightly lower.

3.47 **It is important to note that although the empirical evidence suggests that Ghana's power sector does not perform exceptionally poorly when compared to the power sectors of other countries in SSA, this evidence partly reflects the poor performance of power sectors throughout the region—this benchmark is low** (*The Economist* 2007; Wines 2007). A recent newspaper story noted that a combination of underinvestment, drought, theft, and poor maintenance means that *over half of the countries in SSA face a power crisis* (Wines 2007).

Access to Finance

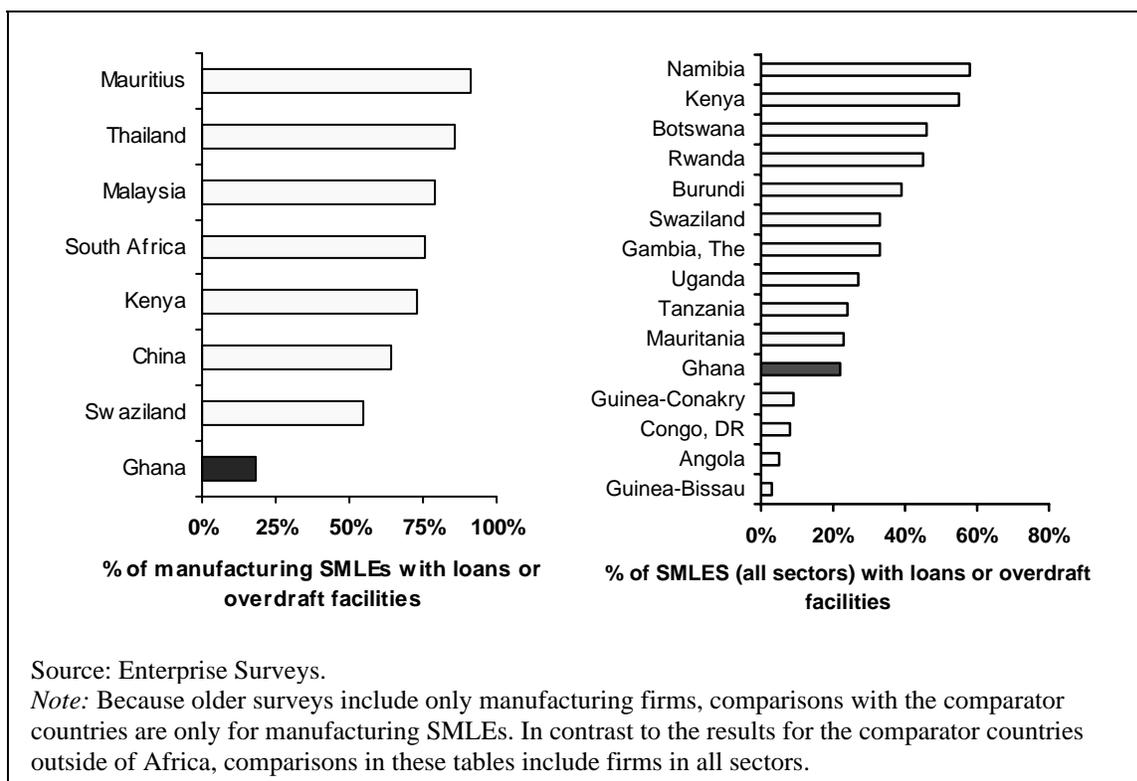
3.48 **Except for electricity, firms in Ghana were more likely to say that access to finance was a more serious problem in the Enterprise Survey completed in 2007 than any other area of the investment climate.** Approximately 65% of microenterprises and approximately 70% of SMLEs said access to finance was a serious problem.

3.49 **Unlike electricity/infrastructure, access to finance was also a concern in earlier surveys.** It also came out as a serious concern of firms in all the surveys conducted in the late 1990s and early 2000s. As noted, more than 40% of firms in the sample rated access to finance as 1 of the 3 biggest problems that they faced in 1996, 1998, and 2002—although the percentage did decline between 1998 and 2002. Access to finance also ranked as the second greatest constraint in the 1999–2000 World Business Environment Survey (WBES) and 1996 World Development Report (WDR) survey.

3.50 **Vis-a-vis the comparator countries, access to credit is relatively low in Ghana.** In the mostly middle-income comparator countries, more than half of the firms have an overdraft, a loan, or both. In Ghana, fewer than 1 in 5 has one. Ghana also compares unfavorably with other countries in SSA in this respect. Although SMLEs in Ghana were more likely to have loans or overdrafts than in the worst performing countries such as the Democratic Republic of Congo or Guinea, Ghana lags behind most other countries.

3.51 **Lack of access to finance does not appear to be a recent phenomena in Ghana.** Access to credit appears to have been lower there than in other countries in SSA in the early 2000s. Teal and others (2006) show that firms in the 2002 Ghana Manufacturing Enterprise Survey (GMES) for Ghana used less bank financing than firms included in Enterprise Surveys in 6 other low- and middle-income countries in SSA between 2002 and 2005.

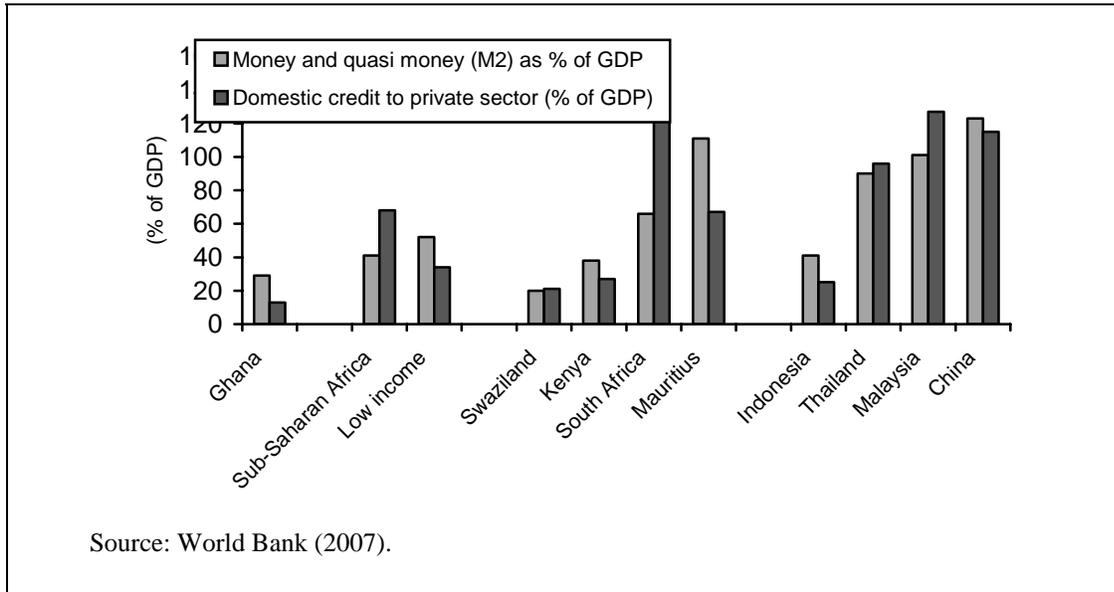
Figure 3.9: Vis-à-vis the comparator countries, access to credit is comparatively low in Ghana



3.52 The evidence from the Enterprise Survey also is broadly consistent with the macroeconomic evidence. Although access to finance, similarly to taxation, often ranks among the top obstacles in investment climate surveys, the financial sector does appear to be relatively underdeveloped in Ghana even relative to other low-income countries and other countries in SSA (Figure 3.10). The ratio of money to quasi-money (M2) to GDP is approximately 30% in Ghana, compared to approximately 40% in SSA and approximately 50% in low-income countries overall. Similarly, the ratio of credit to the private sector to GDP is lower in Ghana (13%) than the average for low-income countries (52%) or countries in SSA (68%).

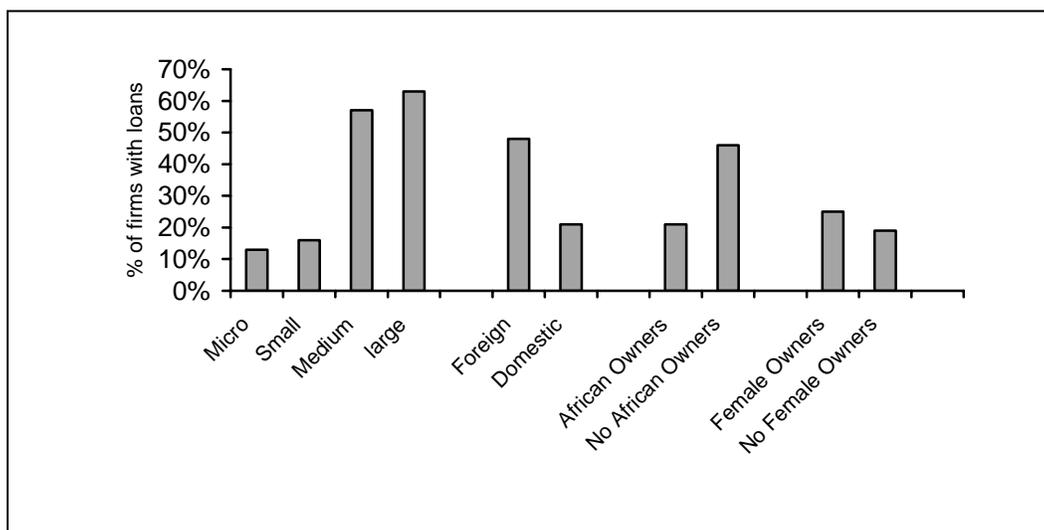
3.53 It is therefore not surprising that the financial sector also is less developed than the financial sectors of the mostly middle-income comparator countries. The ratio of M2 to GDP is lower in Ghana than in any of the comparator countries except Swaziland and the ratio of credit to the private sector is lower than in any of the countries. The gap between Ghana and the best performing comparator countries with respect to credit to the private sector is especially large. For example, credit to the private sector is over ten times higher in South Africa and is twice as high in Kenya, another low income economy.

Figure 3.10: Financial sector is less well developed in Ghana than it is elsewhere in Sub-Saharan Africa or in most comparator countries



3.54 **Access to credit is not uniform across different types of firms: bigger is better.** Large foreign-owned firms are considerably more likely to have loans than small, domestic firms (Figure 3.11). Only approximately 10% of microenterprises and 15% of small enterprises have any kind of credit product, compared to over fifty percent of medium and large firms. This is broadly consistent with the perception data. Smaller firms were more likely to say that access to credit was a serious constraint than large firms (70% compared to 50%), a difference that remain statistically significant after controlling for other factors. Similarly, foreign-owned firms were less likely to say that access to credit was a serious constraint than domestic firms (one-third compared to two-thirds of SMLEs). However, after controlling for firm size, this difference was not statistically significant.

Figure 3.11: Access to credit is especially tight for microenterprises and other small enterprises

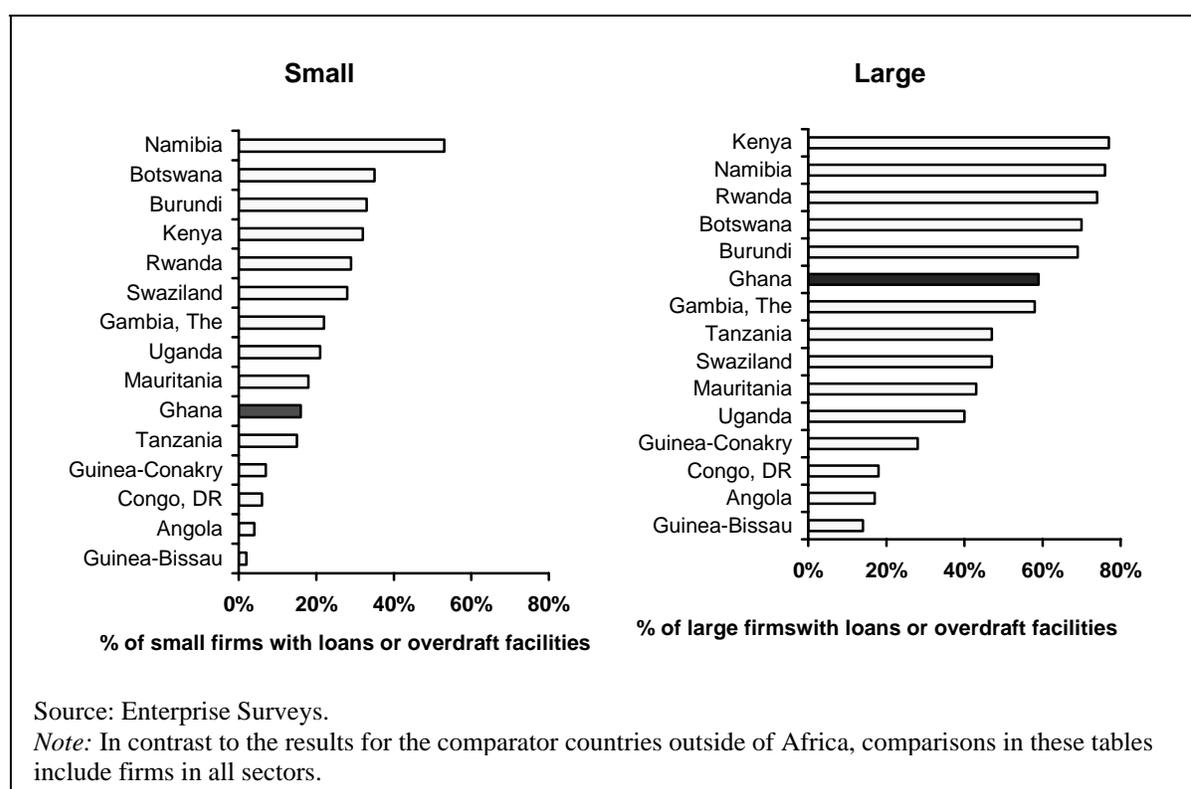


Source: Enterprise Surveys.

3.55 African-owned firms were more likely to say that access to credit was a serious constraint than were firms with no African-owners. After controlling for other factors that might affect access to credit (for example, size, foreign ownership), African-owned firms were approximately 50 percentage points more likely to say that access to credit was a serious constraint. Similarly, African-owned firms were less likely to have bank loans than other firms, although the difference does not appear to be statistically significant after controlling for other factors that might affect access to credit. Differences between female-owned and male-owned firms in both perceptions about finance and access to finance appear to be small and statistically insignificant.

3.56 **Large firms are more likely than small firms to have loans in all of the countries in SSA in which Enterprise Surveys have been completed in 2006 or 2007.** Therefore, in this respect, it might not be surprising that the same is true in Ghana (Figure 3.12). However, the *gap* between large and small firms does appear to be particularly large in Ghana. Whereas large firms are more likely to have loans in Ghana than in two-thirds of the other countries in SSA, small firms are less likely.

Figure 3.12: Larger firms have better access to credit in Ghana than large firms in many countries in Sub-Saharan Africa



3.57 **As of 2006, there were 18 registered banks in Ghana** (Economist Intelligence Unit 2006). Although this might suggest that the sector is relatively competitive, it is important to note that a few of these banks dominate the sector. Most notably, in 2003 the partly state-owned Ghana Commercial Bank had approximately 131 of the 326 bank branches in 2006 (Economist Intelligence Unit 2006) and accounted for approximately 25% of sector assets (Buchs and Mathisen 2005).

3.58 **Interest rates remain relatively high in Ghana.** The discount rate declined from approximately 27% in 2001 to 14.5% in the third quarter of 2006 (Economist Intelligence Unit 2007). Although the lending rate declined significantly from over 40% in 2002 to approximately 25% in mid-2006, it remains

high (Bank of Ghana 2006). Moreover, the spread between lending and deposit rates also appears relatively high. In mid-2006, the 3-month deposit rate was approximately 10%.

3.59 **There appear to be several plausible reasons for high interest rates.** First, as noted previously, although inflation was lower in 2006 than over much of the previous decade, inflation relatively remains high. As a result, real interest rates still appear to be quite high. Second, a recent IMF study concluded that the persistent financing needs of the government appeared to crowd out private investment because banks rely heavily on government securities (Buchs and Mathisen 2005). Finally, a Bank of Ghana study concluded that overhead costs at 7% of total asset value were higher than in many other countries in SSA (Economist Intelligence Unit 2006).

Taxes

3.60 **Approximately 3 of 10 SMLEs, and fewer microenterprises, in Ghana rated tax rates as a serious problem.** Taxes rated higher than all but three other constraints: power, access to finance, and access to land. In previous surveys, firms in Ghana often ranked taxes among their largest constraints, but below access to finance and, prior to 2002, also below macroeconomic instability.

3.61 **Although these ratings suggest that taxes might be a serious concern, it is important to note that tax rates typically rank among enterprises' greatest concerns in investment climate surveys in many countries.** According to the *2005 World Development Report*, enterprise managers ranked tax rates among the top 5 obstacles in over 4 of 5 low-income countries in which Investment Climate Surveys had been completed (World Bank 2004).⁷⁶

3.62 **In 2006, taxes in Ghana did not appear to be out of line with tax rates in the comparator countries** (Table 3.2). The top corporate tax rate in Ghana was 28% at the beginning of 2006 and the base rate for the value-added tax (VAT) was 15%. This rate was not as low as in the countries with the lowest taxes—for example, the top corporate tax rate for manufacturers is only approximately 15% in Mauritius and the base rate for the VAT is only approximately 7% in Thailand. Nevertheless, compared to most of the comparator countries, statutory rates are relatively low in Ghana.

Table 3.2: Tax rates in Ghana and comparator countries

	VAT	Corporate tax rate	Total tax rate (% of profit)
Ghana	15	28	32.3
Mauritius	15	15	24.8
Namibia	15	35	25.6
Malaysia	---	28	35.2
Indonesia	10	30	37.2
South Africa	14	29	38.3
Swaziland	---	30	39.5
Thailand	7	30	40.2
Kenya	16	30	74.2
China	17	33	77.1

Source: *Doing Business* indicators (World Bank 2006).

⁷⁶ Kaufmann and others (2005) show that statutory tax rates are correlated with perceptions about taxes in a cross-country study. The correlation, however, is more strongly significant in the regressions for developed economies. For developing economies, firms are more concerned about taxes in countries with higher corporate tax rate, but the coefficient is not statistically significant at conventional significance levels. In contrast, World Bank (2003) finds no correlation between statutory tax rates and perceptions about taxes.

3.63 **Statutory rates do not tell the entire story.** One reason for this is that there is often a divergence between statutory rates and actual effective tax rates due to factors such as depreciation allowances, carryover rules for losses, and investment incentives. A second reason is that firms are affected by a very large number of taxes and fees in addition to the corporate income tax. The *Doing Business* report calculates a broader measure of the total amount of taxes that a hypothetical firm would pay in each country (World Bank 2006). Although the measure is not perfect—since firms will adopt different strategies in different countries to minimize their tax burden—it gives more general results with respect to the total burden of taxation in the countries. Based on this broader measure of taxes, taxes remain low in Ghana. Whereas the representative firm would pay only approximately 32% of profits in taxes in Ghana, it would pay close to 40% in several of the comparator countries such as South Africa and Swaziland; and in excess of 70% in Kenya and China. Tax rates were lower in only two of the comparator countries—Mauritius and Namibia.

3.64 **It is important to note that tax rates have come down in Ghana since the earlier surveys on firm perceptions were completed.** For example, in 1998 the top corporate tax rate was approximately 35%. Moreover, the *Doing Business* report that total tax rate had been reduced further, reaching only 28% by January 2006. If tax rates have fallen over a longer period, perceptions about tax rates might have changed since the earlier surveys were conducted.

Macroeconomic Instability

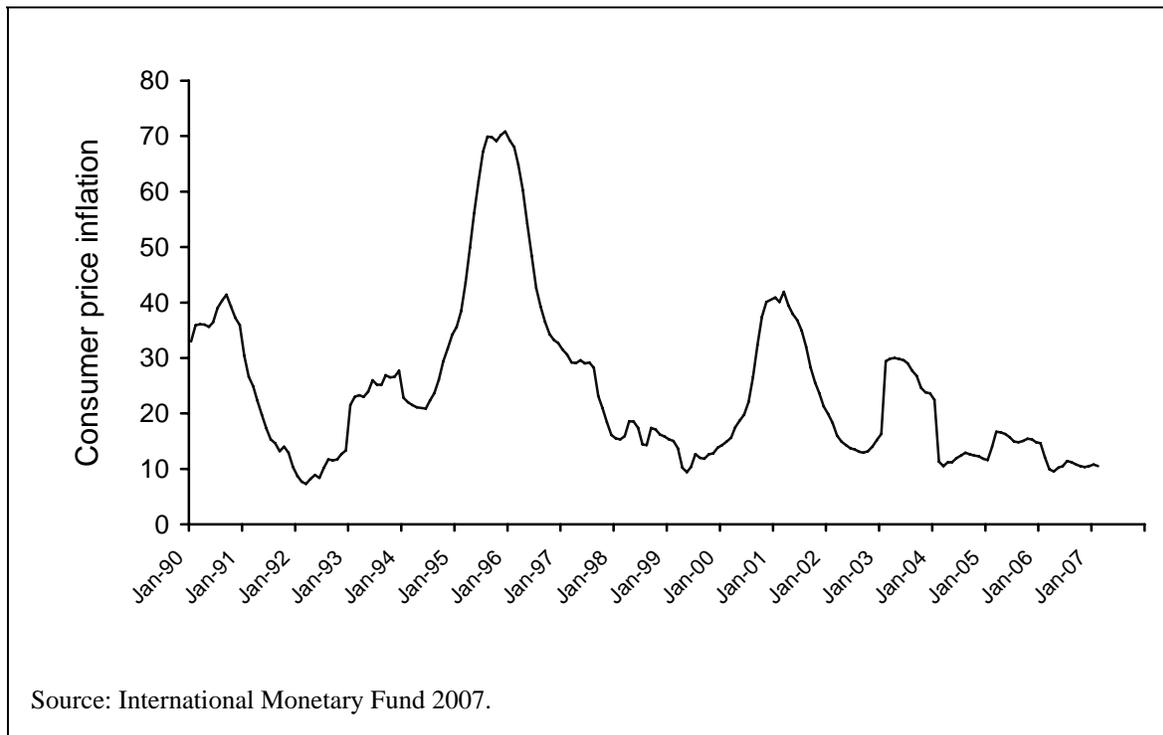
3.65 **In both the 1999–2000 WBES and the 1996 WDR surveys, firms were more likely to say that inflation, more than any other area of the investment climate, was a serious obstacle to their operations and growth.**⁷⁷ Although inflation did not figure so prominently among the complaints of firms in the RPED/GMES surveys, it ranked among the top 4 concerns in all 3 years.⁷⁸ This appears consistent with the macroeconomic evidence: inflation was higher between 2000 and 2005 in Ghana than in any of the comparator countries (Figure 3.14).

3.66 **In the present ICA Enterprise Survey, concern about macroeconomic instability was far more muted.** Fewer than 1 in 5 SMLEs said that macroeconomic instability was a serious problem. This was far fewer firms than the number that complained about electricity, access to finance, access to land, or even tax rates. The lower level of concern about macroeconomic instability might not be surprising given that inflation has declined since the earlier surveys were conducted (Figure 3.13). For example, inflation reached close to 70% in early 1996 and remained above 20% until late 1997. Inflation peaked again in late 2001, reaching over 40%. In contrast, it has remained between approximately 9% and 17% since late 2004.

⁷⁷ See World Bank (1997) for the *World Development Report 1997* data; Brunetti and others (1997a; 1997b) for a description of the survey and the main results. The World Business Environment Survey is described in greater detail in Batra and others (2002) and Hellman and others (1999).

⁷⁸ See Teal and others 2006.

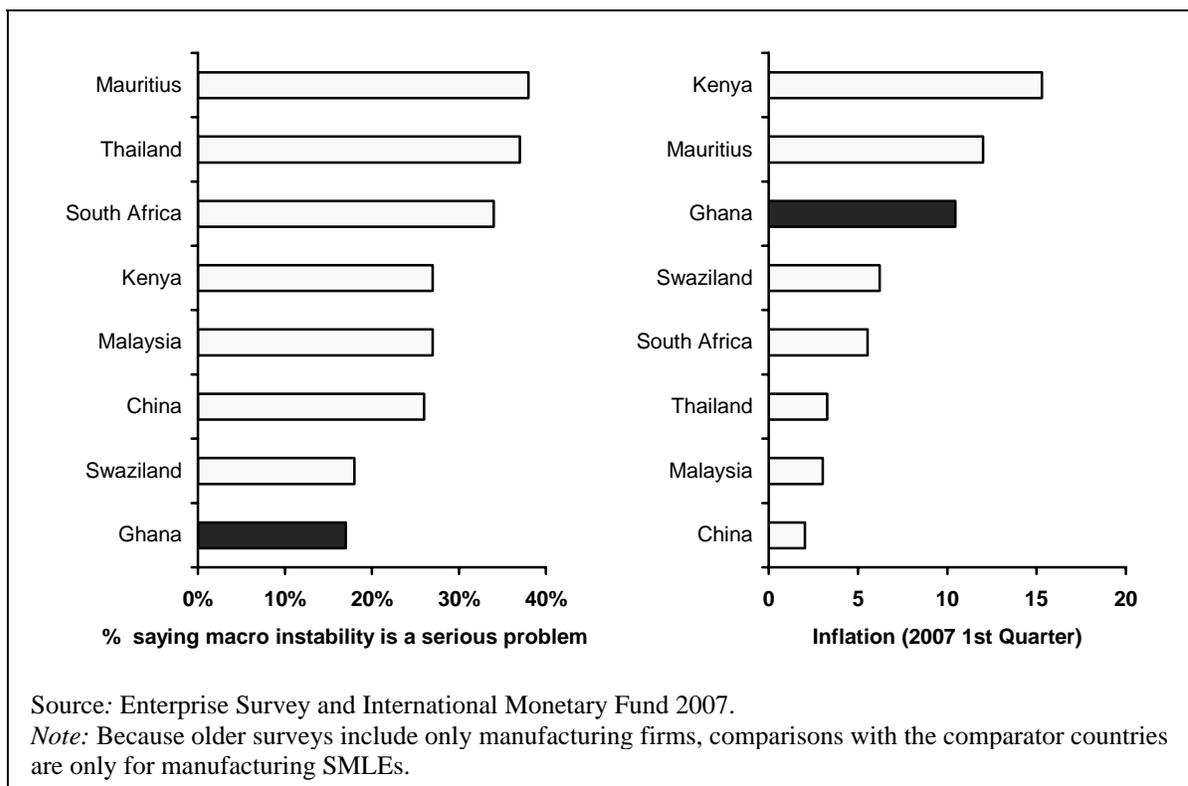
Figure 3.13: Although inflation remains high in Ghana, on average it has been lower since 2005 than over much of the previous decade



3.67 Manufacturing SMLEs in Ghana were less likely to say that macroeconomic instability was a problem than in any of the comparator countries. Fewer than 1 in 5 manufacturing SMLEs said that macroeconomic instability was a problem in Ghana, compared to between 1 and 2 in 5 manufacturing SMLEs in most of the comparator countries. Inflation, however, has been higher since 2002 in Ghana than in any of the comparator countries and remained higher at the end of 2006 than in most of the comparators.

3.68 **As discussed earlier, it is generally difficult to make comparisons about perceptions across countries.** One reason that perceptions can differ among countries is that firm managers in different countries might have different views about what is acceptable. In Ghana, where inflation has typically been quite high—often reaching 20% or higher, the relatively modest inflation rate, which has remained between 10% and 20% since 2004 might seem good. In other countries, a similar rate might seem less acceptable. Consistent with this, foreign-owned firms in Ghana, which might anchor their expectations to the levels they are used to in their home countries, were far more likely to say that macroeconomic instability is a problem (close to 30% of foreign-owned enterprises compared to approximately 15% of domestic enterprises).

Figure 3.14: Although concern about macroeconomic instability is low, inflation remains higher in Ghana than in most of the comparator countries



3.69 **A second factor might be the energy crisis in Ghana.** It is plausible that firms are so concerned about the problems in the power sector that they are less inclined to see the relatively modest inflation as a serious problem.

3.70 **A final factor that might affect perceptions is that although inflation is an important component of macroeconomic instability, it is not the only component.** High interest rates, exchange rate instability, and other aspects of macroeconomic instability might also affect perceptions. In South Africa, for example, the major concern appeared to be that the Rand has been highly unstable in recent years (Clarke and others 2007; Clarke and others forthcoming).

3.71 **In summary, although Ghana’s macroeconomic performance has improved in recent years and firms appear to have become less concerned about it, this improvement should not be taken for granted.** Inflation remains higher in Ghana than in most of the comparator countries and even relatively moderate inflation can become a problem, especially if it accelerates or affects interest rates and access to finance.

CONCLUSIONS

3.72 **This chapter presents preliminary results from an investment climate firm survey that was conducted in Ghana in May through July 2007.** The survey covered firm performance and productivity, manager’s perceptions about the main obstacles to doing business in Ghana, and objective indicators of the investment climate. Because similar surveys have been completed in the last few years in many countries throughout the world, Ghana’ investment climate can be benchmarked against the investment climates of successful manufacturers in Sub-Saharan Africa and East Asia. Results from the survey will be discussed in greater detail in the forthcoming *Investment Climate Assessment*.

3.73 **Productivity appears to be relatively low in Ghana.** The median firm in Ghana produces far less output per worker than firms in more successful manufacturing economies elsewhere in Sub-Saharan Africa or in East Asia. Productivity is also lower than in many countries in Sub-Saharan Africa, particularly among small enterprises. This appears to reflect the modest size of many firms, low levels of skills and technology, and low capital intensity. The precise reasons for low productivity will be explored in more detail in the forthcoming *Investment Climate Assessment*.

3.74 **In addition to asking about firm performance, the survey also asks about obstacles that firm's face.** There was wide agreement across different types of firms about the main obstacles to firm operations and growth. Firms of all sizes and in all sectors were more likely to say that two areas of the investment climate—electricity and access to finance—were the biggest problems.

3.75 **Perhaps not surprisingly, the most pressing immediate problem is power.** Close to 90 percent of SMLEs—and slightly more manufacturing SMLEs—reported that power was a serious problem. Objective evidence from the survey also suggests that the reliability of the power sector imposes a significant burden on enterprises in Ghana. Firms in Ghana reported more frequent outages and greater losses due to outages than firms in any of the comparator countries that have been successful in encouraging manufacturing. Ghana compares more favorably with other low income countries in Sub-Saharan Africa—many of whom also have significant problems in their respective power sectors. But, few of these countries have been very successful in diversifying their economies into export-oriented manufacturing either.

3.76 **Both microenterprises and SMLEs also reported that they saw access to finance as a significant problem.** Although this is not surprising—access to finance is often a problem in low income countries, Ghana compares relatively unfavorably to both the comparator countries and to other low-income countries with respect to objective indicators concerning access to finance. Firms in Ghana were less likely to have loans than in any of the comparator countries or even than in other low-income economies in Africa.

3.77 **Access to finance appears to be an especially significant problem for small firms.** Small, domestic firms were generally both more concerned about access to finance and were less likely to have loans or overdraft facilities than large, foreign-owned firms were. Given that small firms also appear to be particularly labor intensive (i.e., they use less machinery and equipment than similar firms elsewhere in Africa or the comparator countries), this might be a concern.

3.78 **Preliminary evidence from the survey suggests that other areas of the investment climate are more favorable.** Reflecting improvements in inflation since the mid 1990s, firm managers were far less likely to report that macroeconomic instability was a serious problem than in previous surveys. Firms were also far less likely to say that other aspects of the investment climate, such as worker education and skills, regulation, the courts and even corruption were serious obstacles than electricity or access to finance were.

3.79 **The low level of firms' concern about some issues—such as worker skills—might reflect the low capital intensity and productivity observed among firms in Ghana—not that skills are not a problem for the country overall (see Chapter 2 on labor and skills in Volume 3 of this CEM).** If firms are mostly in low productivity activities, they are less likely to demand skilled workers. These issues will also be discussed in greater detail in the Investment Climate Assessment for Ghana, which will be completed later in 2007.

REFERENCES

- Bank of Ghana, 2006. "Quarterly Economic Bulletin, April-June 2006." Bank of Ghana: Accra, Ghana.
- Batra, Geeta, Daniel Kaufmann, and Andrew H. W. Stone, 2002. *Investment Climate Around the World: Voices of the Firms from the World Business Environment Survey*. Washington, D.C.: The World Bank.
- Brunetti, Aymo, Gregory Kisunko, and Beatrice Weder, 1997a. "How Businesses See Government." IFC Discussion Paper 33. International Finance Company.
- , 1997b. "Institutional Obstacles for Doing Business: Data Description and Methodology of a Worldwide Private Sector Survey." Policy Research Working Paper 1759. The World Bank, Washington DC.
- Buchs, Thierry, and Johan Mathisen, 2005. "Competition and Efficiency in Banking: Behavioral Evidence from Ghana." IMF Working Paper 05/17. International Monetary Fund, Washington DC.
- Clarke, George R. G., Robert Cull, and Maria Soledad Martinez Peria, 2006. "Foreign Bank Participation and Access to Credit across Firms in Developing Countries." *Journal of Comparative Economics* 34(4):774–796.
- Clarke, George R. G., James Habyarimana, Michael Ingram, David Kaplan, and Vijaya Ramachandran, 2007. *An Assessment of the Investment Climate in South Africa*. Washington DC: The World Bank.
- Clarke, George R. G., James Habyarimana, David Kaplan, and Vijaya Ramachandran. Forthcoming. "Why Isn't South Africa Growing Faster? Microeconomic Evidence from a Firm Survey." *Journal of International Development*.
- Economist Intelligence Unit, 2006. "Ghana: Country Profile 2006." Economist Intelligence Unit: London UK.
- , 2007. "Ghana: Country Report, February 2007." Economist Intelligence Unit: London, UK.
- Gelb, Alan, Vijaya Ramachandran, Manju Kedia Shah, and Ginger Turner, 2006. "What Matters to African Firms? The Relevance of Perceptions Data." The World Bank: Washington DC. Processed.
- Hausmann, Ricardo, and Andres Velasco, 2005. "Slow Growth in Latin America: Common Outcomes, Common Causes?" Kennedy School of Government: Boston MA. Processed.
- Hellman, Joel, Geraint Jones, Daniel Kaufmann, and Mark Schankerman, 1999. "Measuring Governance and State Capture: The Role of Bureaucrats and Firms in Shaping the Business Environment." EBRD Working Paper 51. London, UK.
- International Monetary Fund, 2006a. "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 Criteria--Staff Report." International Monetary Fund: Washington DC.
- 2006b. "Ghana: Joint Staff Advisory Note of the Poverty Reduction Strategy Paper and Annual Progress Report on Implementation of the Poverty Reduction Strategy Paper." International Monetary Fund: Washington DC.
- 2007. *International Finance Statistics*. Washington DC: International Monetary Fund.
- Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi, 2005. "Measuring Governance Using Cross-Country Perceptions Data." The World Bank: Washington DC. Processed.
- Ministry of Trade and industry, 2005. "National Trade Policy." Government of Ghana: Accra, Ghana.
- Regional Program on Enterprise Development, Africa Private Sector Group, 2007. "An Assessment of the Investment Climate in Ghana." The World Bank: Washington DC.
- Stern, Nicholas, 2002a. *A Strategy for Development*. Washington DC: The World Bank.
- 2002b. "Development as a Process of Change." The World Bank: Washington DC. Processed.
- 2002c. "The Investment Climate, Governance, and Inclusion in Bangladesh." The World Bank: Washington DC. Processed.
- Teal, Francis, James Habyarimana, Pape Thiam, and Ginger Turner, 2006. "Ghana: An Analysis of Firm Productivity." Regional Program on Enterprise Development, The World Bank: Washington DC.
- The Economist, 2007. "The Dark Continent." *The Economist*, August 16.
- Wines, Michael, 2007. "Toiling in the Dark: Africa's Power Crisis." *International Herald Tribune*, July 28.
- The World Bank, 1997. *World Development Report 1997: The State in a Changing World*. New York: Oxford University Press.
- 2003. *Doing Business in 2004*. Washington DC: The World Bank.
- 2004. *World Development Report 2005: A Better Investment Climate For Everyone*. Washington DC: The World Bank.
- 2006. *Doing Business 2007: How To Reform*. Washington DC: The World Bank.
- 2007. *World Development Indicators*. Washington, D.C.: The World Bank.

4. SCALING-UP AID FOR GHANA: MAINTAINING COMPETITIVENESS, AVOIDING THE DUTCH DISEASE, AND ACCELERATING GROWTH

SUMMARY

4.1 Since 2000, Ghana has seen already high levels of aid being scaled up even more to support the country's Poverty Reduction Strategy (GPRS I: 2003-2005) to achieve middle-income status by 2015 and to fulfill the Millennium Development Goals (MDGs). This has led to a macroeconomic challenge for Ghana to avoid major real exchange rate (RER) overvaluation spells while absorbing and spending large amounts of aid, defined as overseas development assistance (ODA).⁷⁹

4.2 In this context, this chapter has, *first*, addressed the main features of aid for the case of Ghana in terms of size of flows and their macroeconomic management and has found that Ghana's aid management strategy has gone from one of "not absorb, not spend" to an "absorb and spend" in line with its development priorities and its recent macroeconomic stabilization.

4.3 *Second*, the chapter has provided evidence that Ghana's real effective exchange rate (REER) has been fairly aligned for most of its post-reform period (1983 on), but that signs of some mild overvaluation may have cropped up in the past two years.

4.4 *Third*, the chapter finds that the direct impact of aid on the long-term behavior of the RER has not been substantial so far. However, there is need to also account for aid's indirect influence on the RER through its effect on fiscal policy and its multiple influences on the short-run through the error-correction channel.

4.5 *Fourth*, importantly, we have provided econometric evidence that *aid (including in Ghana) has a positive impact on growth although with diminishing returns. In contrast, RER overvaluation is found to lower growth and to undermine aid effectiveness.* However, financial development is found to counter some of the detrimental effects of overvaluations.

4.6 *Fifth*, we have provided econometric evidence on generally detrimental effect of RER overvaluation on export diversification and the sophistication of exports.

4.7 *Finally*, we conclude by providing a tentative set of policy recommendations that could help Ghana maintain and improve its external competitiveness in an environment of scaled up aid. First-best measures can directly reduce the distortions in the economy created by the resource boom, and they pertain primarily to the area of fiscal policy. Second-best measures—such as financial guarantees contingent on the RER, which are tentatively proposed here—are justified by the fact that distortions are often hard to remove, especially in the short run, and that measured interventions may be needed to level the playing field for the tradable sector. Last, we lay out the policy levers that would be available to Ghana by reviewing the most recent debate on RER-led strategies for growth and export diversification.

INTRODUCTION

4.8 **Propelled by a reasonably successful first national Poverty Reduction Strategy (GPRS I: 2003–2005), Ghana has embarked on an ambitious successor strategy (GPRS-II: 2005–2009), which**

⁷⁹ ODA is defined as net disbursements of loans and grants made on concessional terms by official agencies to promote economic development and welfare in recipient economies. Loans with a grant element of more than 25% are included in ODA. ODA also includes technical cooperation and humanitarian assistance. The main source for ODA is the World Development Indicators which are complemented with data from Ghana Joint Assistance Strategy: G-JAS (2007) for 2005-07 by splicing them with the benchmark series.

aims to achieve middle-income status by 2015 and to fulfill the MDGs. During the period 2000-2005, during part of which GPRS-I was in effect, Ghana transitioned from hyper-inflation to greater stability, and the economy appeared to be on course to sustained export-led growth. Inflation was drastically reduced from 40 to 14%, and real GDP growth steadily rose from 3.7 to 5.9%, led by strong performance of cocoa and gold exports. Moreover, the growth was associated with increased expenditure on pro-poor programs and some progress on the poverty front. In terms of the quality of the underlying political and economic institutions for sustained and widely shared growth, Ghana is among the most favored in SSA, distinguishing itself for being one of the few West African countries that has managed to avoid violent conflicts and civil wars and has enjoyed stable democratic transitions⁸⁰.

4.9 In terms of economic governance, Ghana's international ranking is the best among low-income African countries.⁸¹ Perhaps the most relevant indicator of the strengthening institutional environment in Ghana is the increasing rate of repatriation of human and financial capital from the large Ghanaian diaspora. For example, unrequited private transfers rose from about US\$800 million in 2003 to more than US\$2 billion in 2006 (Ghana Joint Assistance Strategy: G-JAS, 2007). It can also be argued that the recent initiatives by Ghana's key donors constitute another vote of confidence on the country's development policy. Ghana has also been the beneficiary of substantial debt relief and scaling up of aid from already high levels. As a result, the country's stock of debt was reduced from US\$6.4 b to US\$1.5 b in 2004, while aid flows increased from about US\$1 billion in 2003 to more than US\$1.5 billion in 2006⁸². Perhaps more importantly, donors have signaled their strong commitment to better coordinate their aid operations and procedures and make their aid delivery mechanisms more responsive to the requirements of the GPRS-II (G-JAS, 2007).

4.10 As the GPRS II correctly articulates, a pro-poverty and widely shared growth has to be led by agriculture but cannot be sustained by continued reliance on traditional commodity exports alone. Therefore, economic diversification is a centerpiece of this strategy. In particular, the agricultural sector would be diversified toward new and non-traditional raw and processed agricultural exports and, over time, is envisaged to be less dominated by cocoa. Outside agriculture, the strategy identifies other potential comparative advantage sectors, such as tourism; information and communication technologies; and labor-intensive light industries—based on textiles and garments as well as processed minerals. This pillar of the strategy requires a strong investment climate and a highly competitive private sector. In turn, this would depend on large expenditure outlays in the social sector. Human development as a second pillar of the strategy is of course important in its own right, but it also is critical for improved labor productivity and for diversifying into more knowledge and transaction-intensive private sector activities, such as horticulture and floriculture. And, human development programs, infrastructure and other public goods will be mainly financed by aid. Therefore, good economic governance, civic responsibility and donors' responsiveness will be critical for the effectiveness of aid and other public resources. This constitutes the third pillar of the strategy.

4.11 However, and despite the apparently favorable initial conditions, achieving the goals of the GPRS II (and GPRS III) would pose challenges for Ghana's policy. One such challenge at the macroeconomic level is avoiding major real exchange rate (RER) overvaluation spells while absorbing and spending large aid flows as part of the scaling up called for by the strategy. This paper addresses this

⁸⁰ Recent research suggests that sustaining growth-promoting policies would require robust political institutions for promoting grand bargains among social groups, possibly in a context of a national development strategy or a social contract. The role of such institutions is particularly important in socially or economically fractionalized societies that also are subject to frequent external shocks (Rodrik, 1998).

⁸¹ According to the Transparency International index (CPI) for 2006, Ghana was rated number 70 out of 137 countries, which puts it in the broad category of Brazil, China, India and Mexico (quoted from Ghana Joint Assistance Strategy: G-JAS 2007).

⁸² Ghana reached the HIPC completion point in July 2004, which paved the way for the country to benefit from the Multilateral Debt Relief Initiative (MDRI), leading to the subsequent, substantial debt reduction.

major issue by asking the following questions: what are the main aid features in the case of Ghana in terms of size of flows, quality, and macroeconomic management? How seriously misaligned has Ghana's RER been since the onset of economic reforms in the mid 1980s? How much of Ghana's RER overvaluation is explained by large aid flows? What impact does RER misalignment, especially extreme real exchange rate overvaluation, have on export diversification, growth, and aid effectiveness? And, finally, can Ghana fully or substantially absorb and spend scaled up aid without risking protracted spells of RER overvaluations?

4.12 As an economy-wide relative price influencing inter- and intra-temporal expenditure and resource allocation decisions, the real exchange rate has a potentially important influence on export growth, export diversification, and economic growth⁸³. In particular, protracted RER overvaluation tends to be associated with lower economic growth.⁸⁴ And, given that overall economic activities might be partially boosted by an overvaluation-driven growth in the non-tradable sector, the impact may be particularly harmful to export growth and economic diversification,⁸⁵ especially if export production is characterized by learning-by-doing externalities and capital market imperfections as in the cases of non-traditional and, especially, manufacturing exports.⁸⁶ In addition, the level of the real exchange rate affects competitiveness directly, through the return to investing in traded-goods industries, and indirectly, by influencing exploitation of comparative advantage.⁸⁷ Although it may not be of immediate concern to low-income post-conflict countries, recent literature also finds that persistent RER overvaluation is a powerful predictor of currency crises⁸⁸.

4.13 In turn, aid is a key determinant of the RER through its influence on domestic spending and saving decisions. The more aid is spent, the larger is spending on non-traded goods and services; also the larger is the share of aid that is saved to build up net domestic-currency public-sector assets, the larger is the ensuing RER appreciation, with potential negative effects on output and employment—the so-called Dutch Disease. In this context, excessive aid dependence could have a detrimental impact on non-traditional exports and thus undermine an effective source of dynamic growth.

4.14 Since the mid-1980s, Ghana's aid inflows have been high, averaging 9% of GDP for 15 years (1984-99). For the last 7 years, it has been scaled up to 13%. Except for Mozambique, which received unusually high aid ratios, this pattern is comparable to other leading African aid-recipient countries, such as Ethiopia and Uganda. Moreover, aid flows have become more stable in the latter periods (Table 4.1).⁸⁹ However, despite the scaling up of aid, Ghana was able to maintain a fairly depreciated RER with no evidence of a Dutch Disease (Figure 4.1). This could be due to the countervailing influences of other RER fundamentals, such as increased trade openness or worsening TOT. However, a more plausible explanation could be that aid was only partially absorbed and/or spent. Recent experiences of high aid-dependent African countries, including Ghana, appears to suggest that their macroeconomic management of aid was driven by concern over major RER overvaluation as well as

⁸³ The real exchange rate concept adopted here reflects the economy-wide relative price of non-traded to traded goods, proxied by real effective real exchange measures. A rise (decline) in the latter means an RER appreciation (depreciation). The RER is judged to be misaligned when it diverges from its equilibrium level (ERER), where the latter is derived from a behavioral model that accounts for equilibrium in the non-traded goods markets as well as the inter-temporal implications of current account sustainability. The misaligned RER is characterized as overvalued (undervalued) when the actual RER is larger (smaller) than its corresponding equilibrium level.

⁸⁴ See, for example, Edwards (1989), Cottari and others, (1990), Ghura and Grennes (1993), Razin and Collins (1997), Easterly and Levine (1997), and Aguirre and Calderón (2005).

⁸⁵ See, for example, Nabli and Veganzones-Varoudakis (2002) and Elbadawi (2002).

⁸⁶ See, for example, van Wijnbergen (1984).

⁸⁷ This problem has been extensively documented in the case of Africa by, among others, Elbadawi (2002), Mengistae and Pattillo (2004), and Dufrenot and Yehoue (2005).

⁸⁸ See, for example, Kaminsky and others, (1998) and Merrill Lynch (1998).

⁸⁹ The distance between the max and min annual aid/GDP ratios fell from 10 percentage points of GDP in 1984-91 to only 4 in 2000-07 (table 1).

the need to consolidate macroeconomic stabilization. As such, these countries appear to have chosen not to fully absorb aid.

4.15 However, maintaining external competitiveness through appropriate RER adjustment is but one objective in a context of a larger strategy based on scaled up aid. Hence, aid must be absorbed and spent for Ghana to fulfill the MDGs and other laudable objectives, including achieving middle-income status by 2015. The challenge, therefore, will be to design an appropriate strategy for avoiding large and extended overvaluation spells associated with fully or substantially absorbed and spent scaled-up aid. However, if appropriately spent, including by enhancing the long-term productivity of the economy, aid can be compatible with *equilibrium* appreciation of the real exchange rate.

4.16 Therefore, in principle, long-term stable aid flows need *not* be incompatible with a prudent, real exchange rate-led economic diversification strategy. However, this will depend on how aid is managed and, even then, some short- to medium-run tradeoff may be difficult to avoid. This raises two issues. The first—which is not the main focus of this paper—is that donors also have to do their part for such large aid flows to be effective in promoting long-term productivity consistent with a more appreciated RER in the longer run. In particular, the quality of aid must be high enough to ensure that effective absorptive capacity keeps pace with aid scaling up. Available evidence suggests that while donors appear to have done well in terms of providing broad-based support across sectors (Figure 4.2), donor fragmentation may be a problem (Figure 4.3). Therefore, donors’ commitment to improved coordination and better harmonization of aid delivery mechanisms is critical for the success of GPRS II⁹⁰. Second, the RER component of the export diversification strategy, to be motivated in the final section of this paper, must address medium-term adjustment issues and the type of policy levers available to policy makers for influencing the inherently endogenous RER.

4.17 Section 2 uses the two key concepts of aid “absorption” and “spending” to analyze the macroeconomic management of aid in Ghana and further develop the issues related to the failure of the Dutch Disease to materialize despite the scaling up of aid. Section 3 reports estimation results for the RER, based on a world sample of 83 countries and annual 1980-2004 data, focusing on the role of aid on the long-term behavior of the RER. This allows us to subsequently derive measures of RER misalignment for different spells and to trace the influence of large aid flows on RER overvaluation since the mid-1980s. Section 4 reports estimation results for growth, based on a world sample of 78 countries and 5-year data spanning 1970 to 2004. The growth specification allows testing for the influence of foreign aid and RER misalignment on growth, controlling for standard growth determinants and allowing for key interactions between aid, RER misalignment, and financial development. Section 5 also assesses the impact of RER misalignment on manufacturing exports as a share of merchandise exports, export diversification (as measured by a Herfindahl-Hirschman index), as well as on Hausmann and others, (2006) measure of the knowledge-intensity of exports for a panel dataset of over 50 developing countries spanning the period 1993-2004. Section 5 contains a summary of the main results and discusses elements of an RER-led growth and export diversification strategy for Ghana in an era of scaled up aid.

MACROECONOMIC MANAGEMENT OF AID FLOWS

4.18 The real exchange rate adjustment to the long-term trends in economic fundamentals, and the speed to which it can return to its “notional” equilibrium level is the main determinant of a

⁹⁰ More recently (February 2007), all of Ghana’s major donors issued a report (Ghana Joint Assistance Strategy: G-JAS) in which they commit themselves to, “higher quality dialogue between development partners (DP) and the government; improved aid delivery through a better division of labor and a solid process for deciding who does what; greater harmonization in the way development assistance is delivered; increased reliance on programme based modalities and coordinated technical assistance programmes that support government priorities; improved predictability in resource flows and reduced transactions costs for government; and better alignment of DP country strategies and resource allocations with GPRS II goals and priorities.” (p. 2).

developing country's external competitiveness. Especially for low income countries, where there is limited opportunity for significant TFP increases in the short run, the real exchange rate is the only available option for an export-oriented development strategy. To overcome the initially limited capability for exporting manufactures and to sufficiently stimulate new investment in export-oriented production, the real exchange rate (RER) may have to depreciate quite considerably, overshooting its eventual equilibrium value. And, for the remainder of the export-promotion strategy phase before the economy is sufficiently modernized and has achieved very high TFP levels, the RER should be kept close to equilibrium and high overvaluation⁹¹ should be avoided—that is real exchange rates should be compatible with internal balance and sustainable external accounts⁹².

4.19 **Subscribing to the view discussed above on the centrality of the real exchange rate for export growth, export diversification, and, hence, overall economic growth, we analyze the determinants of RER adjustment in Ghana, especially the role of aid.** Increased aid flows can lead to increased current account deficits through either an increase in imports or a decline in the domestic resources devoted to exports. In addition, higher aid flows can bring about the widening of the fiscal deficit. To the extent that the aid flows are not sustained in the medium to longer runs, full absorption and spending of aid might be associated with disequilibrium RER overvaluation, the so-called Dutch Disease. In this context, excessive aid dependence could have a detrimental impact on non-traditional exports and can thus undermine the most effective source of dynamic growth, exports⁹³.

4.20 **Ghana has received significant amounts of aid since the beginning of the reform period in 1983** although these ratios have been similar in other countries of SSA. Nevertheless, in the most recent years Ghana has been the recipient of debt relief, and its aid to GDP ratio has surpassed the median values for SSA countries. This feature has also been true for Ethiopia, Mozambique, and Uganda (Table 1). Since 2000, Ghana has experienced two aid surges with shares rising from 8% in 1999 to an average of 12% for the period 2000-03, 14% for the years thereafter with a peak of 15% in 2004. However, the reality is that the high aid flows did not lead to RER appreciation until 2005 and only since 2006 do we see some mild overvaluation cropping up.

4.21 **Thus, in general, the Dutch Disease did not materialize in Ghana.** The RER experienced a major correction (RER depreciation) after 1983 and continued to depreciate until 1994. It appreciated by an average of 7.5% between 1995 and 1999 and depreciated drastically by 44% between 1999 and 2000. Since then the RER has been stable with some visible signs of appreciation becoming evident in the recent three years. The overall failure of the RER to appreciate despite the aid surge since 2000 may be explained by the effect of other fundamentals, most notably the TOT, which have deteriorated due to petroleum prices increasing at a faster pace than gold or cocoa since 2000. Other high aid dependent countries like Ethiopia, Mozambique, Tanzania and Uganda, also experienced RER depreciation in the aftermath of aid surges in 2001. However, there was evidence of leveling off and mild appreciation in 2004-2005.

4.22 **To the extent that TOT (or other fundamentals) exerted stronger and opposite effects on the RER than aid, the RER could still depreciate despite the surge in aid flows.** However, the more likely reason for the RER depreciation in Ghana (as well as for the other three countries) during the aid surges could be that not all the aid was absorbed and/or spent. Though average TOT during the aid surge period deteriorated for all countries except Uganda, Ghana's RER depreciated by much more, and in the case of Uganda the RER depreciated although the TOT were going up. This suggests, therefore, that the RER depreciation in the latter period should not be ascribed entirely to the TOT effects. Productivity changes could also have been at play. In fact, for the case of Ghana there seems to be a strong correlation between

⁹¹ See Appendix A for a brief discussion of the real exchange rate model, the estimation results and the associated concepts of RER equilibrium, RER undervaluation and overvaluation.

⁹² See, for example, Williamson (1997), and Elbadawi and Helleiner (2004) for a further articulation of this view.

⁹³ As already shown by for instance Elbadawi (1999).

the depreciation in the RER and lower productivity rates. Net foreign income flows could not have been the cause as they were increasing (becoming less negative) and thus should have had the opposite effect on the RER. The same thing can be said about government expenditures and taxes on non-traded goods which have been stable or have experienced an increase. Finally, the policy openness for Ghana did not increase if we hold 1999 as a benchmark. Therefore, further analysis on how aid was managed in Ghana and comparison to the other countries might shed some light on this issue as to why the RER did not appreciate and Dutch Disease did not materialize for most of the years after 1999.⁹⁴

Box 4.1: Definition of Aid Absorption and Spending

Absorption: the widening of the current account deficit excluding aid due to increased aid flows. It measures the quantity of net imports financed by the increased aid and captures the real transfer of resources entailed by aid. Absorption captures the direct effect of aid on imports through the purchase of imports by the government as well as its indirect effect through the aid-driven increases in government or private expenditure. Absorption captures the overall macroeconomic impact of increased aid covering monetary, exchange rate, and fiscal policies. An increase in aid can increase the rate of reserve accumulation, increase non-aid capital outflows, or increase non-aid current account deficit. The rate of absorption is defined as:

$$\text{Absorption} = \Delta(\text{non-aid current account deficit}) / \Delta \text{Aid}$$

For a given fiscal policy, absorption is controlled by the monetary authority through its decision on how much of the foreign exchange associated with aid to sell and through its interest rates policy which affects the demand for private imports through aggregate demand. The central bank can choose to increase reserves or to make them available to importers. In the case when the central bank uses the full amount of the aid to increase international reserves, none of the aid increase is absorbed.

Spending: the widening in the government fiscal deficit net of aid followed by an increase in aid.

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

Spending captures the extent to which the government uses the aid to increase expenditures or reduce taxation. The increase in expenditure can come through the purchase of imports or domestically-produced goods and services.

Unless aid comes in kind or the government spends the aid dollars on imports, spending and absorption are not equivalent. Four scenarios are possible:

1. *Absorb & Spend:* The government spends the aid increase, and foreign exchange is sold by the central bank and absorbed by the economy through a widening of the current account deficit. There may be some real exchange rate appreciation to sustain the higher level of aid. The mechanism of RER appreciation will depend on the exchange rate regime. When the currency is floating, the monetary authority would sell the foreign exchange and cause the exchange rate to appreciate. When the currency is pegged, prices would rise with the increase in government expenditures accommodated by the central bank.

2. *Not absorb & Not spend:* The authorities build international reserves and do not increase government expenditure or lower taxes. There is no impact on aggregate demand and no pressure on the exchange rate/prices. This option may be infeasible in the long run.

3. *Absorb & Not spend:* Authorities sell the foreign exchange associated with the increased aid to sterilize the monetary impact of domestically financed fiscal deficits. This would lead to slower monetary growth, a more appreciated real exchange rate, and lower inflation. Aggregate demand may increase because of inflation decline thus boosting consumption and investment. The deterioration of the trade balance is financed by the increased aid flows. When appropriate, the government can use the aid proceeds to pay down its domestically financed debt.

4. *Spend & Not absorb:* Fiscal deficit increases but the central bank does not sell the foreign exchange. The macroeconomic effects are similar to increasing government expenditures in the absence of aid, but now international reserves are higher. The aid does not support the fiscal expansion.

Source: IMF, 2005

Macroeconomics of aid management

4.23 **This analysis should aim at addressing two pivotal questions: was the aid absorbed? And was it spent?** Table 2 provides the data on the balance of payments and budget accounts for Ghana for two episodes of aid surges (2000-03 and 2004-07). Compared to 1996-99, the ratio of net aid to GDP increased by 3%, and between the two episodes it was further raised by 2%. However, the way in which

⁹⁴ The analysis of aid management in Ethiopia, Mozambique, and Uganda is taken from IMF (2005).

aid was managed during the two periods varied significantly. During the first period the non-aid current account balance improved by 3%. For aid to be translated into real transfer of resources to the economy, it must be absorbed in the economy through its sale by the central bank in exchange for domestic credit or to retire public debt. Thus aid was not absorbed. Instead, a sizable share of the aid was used to build up reserves. As early as 2000 gross reserves were 6.9% of GDP (from 4.2% in 1999) and reached over 19% in 2003. Therefore, it is clear that the authorities were more concerned about preventing an RER appreciation as a primary objective, with reserve accumulation being a byproduct of this policy.

4.24 Having established that aid was not absorbed, we next ask a similar question regarding whether aid was spent to finance an expanding budget. Between the first pre-aid surge period and the surge of aid, non-aid fiscal balance excluding interest payments decreased. Therefore, aid was not spent during this period. The economic stabilization objective must have clearly been the dominant consideration given the country's macroeconomic vulnerabilities such as a relatively high domestic debt at approximately 23% of GDP and high domestic interest rates (IMF, 2005). In addition, aid during the pre-surge period had been quite volatile and thus warranted the government's decision to smooth its spending.

4.25 In the second surge, however, aid management changed substantially, and the increased flows were almost fully absorbed and fully spent. International reserves tapered off without, however, going back to levels before the first aid surge. Despite the change of strategy from 'not absorb, not spend' to 'absorb, spend' there does not appear to be a surge in inflation which continues to be above 10% but which, if anything, has shown some strong declining signs.

4.26 Ghana's strategy change was likely driven by the recognition of the need to arrive at an outcome of 'absorb and spend' and that the previous policy choice was justified only for certain initial conditions. The macroeconomic management of aid in Ghana during the first aid surge was broadly similar to that of Ethiopia which failed to absorb and/or spend aid (IMF, 2005). In the second period Ghana's management choices were similar to those of Mozambique and to a lesser extent Uganda. For example, the (not absorb, not spend) strategy was justified to avoid RER appreciation or to hedge against aid volatility, but it was not viable in the long run and when considering other government objectives in terms of growth and poverty reduction. Finally, it appears that the signs of mild overvaluation seem to be consistent with the changed strategy of near complete absorption and spending. However, such appreciation may have been necessary to allow a reallocation of resources (IMF, 2005). Yet, this implies that the government is faced with a delicate balancing act between making good use of the increased aid and its focus on improving the competitiveness of the external sector and its diversification into new and higher-value traded goods.

EMPIRICAL MODEL OF THE REAL EXCHANGE RATE

4.27 The concept of RER equilibrium most commonly used in the literature is based on a single-equation reduced-form "behavioral" model of the RER that attempts to account for current-account flow variables as well as factors influencing longer-run stock equilibrium.⁹⁵ The underlining notion of RER equilibrium in this approach is essentially intertemporal, as the path of the equilibrium RER is assumed to be influenced not only by the current value of the fundamentals, but also by anticipations regarding the future evolution of these variables.⁹⁶

⁹⁵ See, for example, Edwards (1989), Clark and MacDonald (1999); Elbadawi (1994); Elbadawi and Soto (1997a, b); Baffes, Elbadawi and O'Connell (1999).

⁹⁶ An alternative concept is the Fundamental Equilibrium Exchange Rate (FEER), which is the RER path required to achieve simultaneous internal and external balance by some date in the medium-term future and maintain balance thereafter (Williamson, 1994). Internal balance is defined by domestic and foreign output levels consistent with non-accelerating inflation-rate unemployment, while external balance is given by the sustainable net flow of resources

4.28 **Following the “behavioral” RER modeling tradition, Elbadawi and Soto (2005) develop a general equilibrium model that controls for standard RER fundamentals as well as other RER determinants that are not frequently considered by the literature.** The model is applied to a small three-sector open economy (with exportable, importable, and non-tradable goods) and a representative household that chooses consumption and leisure so as to maximize its welfare. Moreover, the specification of the household and government budget constraints accounts for bond holdings and fiscal transfers, which allows for explicit derivation of portfolio and stock equilibrium variables as determinants of the RER equilibrium. Therefore this model controls for standard determinants such as TOT, productivity differentials, trade openness, and government consumption and innovative factors such as a model-consistent measure of sustainable imports, consistent with the restriction that net foreign assets should be zero in the long run (the no Ponzi-game condition), i.e., that the current account should be zero in present-value terms.⁹⁷ Another non-conventional RER fundamental included in this model is taxes on non-traded goods, which enter the government budget constraint. This is because the model assumes that the government collects taxes not just from traded goods, as in the conventional RER literature, but also from the consumption of non-traded goods and of inflation.

4.29 **We estimate a version of the Elbadawi and Soto model consistent with a medium-term concept of the sustainable current account, by including foreign aid net of changes in foreign reserves held by the monetary authority, net foreign income from abroad, and net private capital inflows.** The rationale for this choice is that while the Elbadawi and Soto model addresses some of the major critiques of the empirical real exchange rate literature, most notably the lack of an explicit and model-consistent concept of a sustainable current-account balance, the estimation of the latter is highly demanding in terms of time-series data. This is a major constraint for our focus on low-income, aid-dependent countries, such as Ghana and other comparator countries. Moreover, while their framework is useful for undertaking a theoretically-consistent analysis of the determinants of the long-run equilibrium RER, it abstracts from critical medium-term policy issues, associated with private capital flows and foreign reserve accumulation. In this medium-term model, a sustainable increase in foreign aid net of changes in foreign reserves, net foreign income from abroad, and net private capital inflows would lead to an equilibrium RER appreciation. This model also predicts the equilibrium RER to be more appreciated when production in the traded-goods sector is relatively more efficient than in the non-traded sector. Higher TOT (especially if associated to higher real prices for exports) and higher government expenditure on non-traded goods (such as government consumption) lead to equilibrium RER appreciation. On the other hand, a more open trade regime requires a more depreciated equilibrium RER. Finally, the model predicts that higher taxes on non-traded goods leads to a more appreciated equilibrium RER, provided that the weight of traded goods in domestic consumption is lower than the labor intensity in the non-traded sector. This is because such taxes would lower supply of, more than they would lower the demand for, non-traded goods.

4.30 **Drawing from the general empirical literature on RER behavior, and in particular from Elbadawi and Soto (2005), we analyze the following empirical RER model for a cross-section of countries over time:**

$$(1) \quad \log(RER_{it}) = \beta_{0i} + \beta_1 \log(TOT) + \beta_2 \log(PROD)_{it} + \beta_3 OPEN_{it} + \beta_4 \log(GOV)_{it} \\ + \beta_5 \log(TAX)_{it} + \beta_6 AID_{it} + \beta_7 NFI_{it} + \beta_8 NPC_{it} + \varepsilon_{it}$$

between countries, provided that internal balance is maintained. Therefore the FEER concept corresponds to a normative notion of the equilibrium RER.

⁹⁷ This is given by an expression of future discounted export proceeds minus debt service plus transfers (for example, aid and remittances). The failure to explicitly account for this feature as an endogenous outcome of RER models is one of the most fundamental problems of the empirical RER literature discussed by Edwards and Savastano (1999).

where subscripts i and t represent country and time indexes, respectively; TOT is the terms of trade; $PROD$ stands for productivity proxied by the ratio of income per capita in country i relative to the OECD average; $OPEN$ represents trade openness computed as the residual from a regression of trade as a share of GDP on geography variables (for example, land area of a country, landlockedness)⁹⁸; GOV is the share of government consumption on GDP; TAX corresponds to taxes on non-traded goods; AID denotes net aid as a share of GDP net of changes in foreign exchange reserves; NFI denotes net foreign income as a share of GDP; and NPC corresponds to net private capital inflows as a share of GDP. Finally, β_{0i} and ε_{it} are country-specific intercepts and a disturbance term, respectively.

4.31 We estimate equation (1) for a world sample of annual data for 83 countries (including 36 post-conflict countries) for the 1980-2004 period. Table 4.3 reports the results for the pooled mean group model (PMG), as well as results based on mean group (MG) and dynamic fixed-effects (DFE) estimation methods⁹⁹. The PMG estimator can be seen as a restricted-model estimator, in the sense that it imposes the restriction that all countries share the long-run coefficients, against the more general model that assumes that economies differ in their short and long-run parameters. However, the PMG estimator is more general than the individual-effects panel-data model, which assumes that all parameters are constant across countries. This restriction can be tested by performing Hausman tests. The null hypothesis of equality of coefficients can be rejected at the 1% level, except for productivity and foreign aid (net of international reserves), for which the null hypothesis can be rejected at the 10% level. This evidence favors the PMG model against the MG estimator.

4.32 The PMG results show that all parameters are highly significant (exceeding 99% confidence levels) and display expected signs according to theory. The PMG results dominate those based on the alternative estimators, consistent with the results reported by Elbadawi and Soto (2005) and comparable to the results found in the existing literature.¹⁰⁰ The semi-elasticities of net foreign income and foreign aid (net of reserve accumulation) are equal to 0.004 and 0.002, respectively. The estimated elasticity for the tax on non-tradables is substantial—i.e. 2.625.

4.33 Regarding the speed of adjustment and the short-term elasticities, the results in table 3 also show that there are marked differences among estimation techniques. Unlike the other two regression methods, the results for the PMG model suggest that some fundamentals like terms of trade and productivity have highly significant short-run effects.

4.34 The most important parameter in the estimation of short-run dynamics is the coefficient of the equilibrium RER correction term, which measures the speed of adjustment of the real exchange rate to its equilibrium level. The estimated average adjustment parameter is -0.20, which is equal to the one obtained by Edwards (1989) using a partial adjustment model for a group of 12 developing countries. The PMG coefficient estimate is, however, smaller than that obtained by the DFE model (at -0.25) and much smaller compared to the MG estimate of -0.70. The PMG estimate also is much smaller than coefficients obtained from time-series models. This suggests that, like other panel regressions, the PMG

⁹⁸ This residual measure of openness nets out natural openness and therefore is a better proxy for policy-oriented openness.

⁹⁹ The inclusion of the capital inflows variable is problematic, as it significantly worsens the results for the DFE model, which is used as a benchmark for the PMG model. Therefore we dropped it from the model, partly also to reduce the dimensionality of the PMG and increase regression precision.

¹⁰⁰ Comparable findings in the literature, include Chinn (1997) for productivity; Elbadawi and Soto (1997) and Drine and Rault (2004) for TOT; and Elbadawi and Soto (1997) and Maeso-Fernandez and others, (2002) for government consumption.

model might understate the true level of the convergence parameter because it fails to capture short-run heterogeneity across countries.¹⁰¹

Ghana: Economic Impact of Fundamentals

4.35 Since estimated elasticities and statistical significance are not the main interest for economic analysis, in particular when thinking about the effects of alternative policies on the RER, we measure the implied effect of fundamentals on the RER. The main reason is that the implied changes in elasticities need not be of significant economic meaning. For example, according to our estimation, a 10% increase in government consumption (as % of GDP) would lead to an appreciation of 20% of the RER. While these magnitudes are plausible, they are not typically observed in real life. Likewise, a 25% change in terms of trade—which would lead to a 5% change in RER— may appear as an excessively large foreign shock for most observers, yet it occurs frequently in Africa. In 1980-2003 there were 187 episodes of annual fluctuations in terms of trade above 25%; 143 of them occurred in African economies.

4.36 The implied economic effect of the fundamentals on the RER is obtained by multiplying the estimated long-run elasticity by the standard deviation of the variables in the sample. A one standard deviation change in the level of a variable reflects a typical shock for an economy (in fact, if the distribution of the variable is normal it would correspond to 68% of the cases). The results are presented in table 4 for Ghana and the regional SSA average.

4.37 The direct economically plausible effects of net foreign income and foreign aid (net of reserve accumulation) on the long-term path of the RER are much smaller than the corresponding direct effects for other traditional fundamentals. A one standard deviation increase in aid for Ghana (about 4%) leads to less than 1% RER appreciation in the long-run, while a similar shock to net foreign income (at 0.72%) leads to 0.27% RER appreciation. Compared to Ghana, aid and, especially, net foreign income tend to be much more volatile for the mean African country. Therefore, the implied net effects are larger.

4.38 On the other hand, the long-run impact of openness and productivity and to a lesser extent fiscal policy and TOT are much more important. First, the recent history of Ghana suggests that productivity and openness have experienced modest shocks (at standard deviations of 0.46 and 0.79%, respectively). However, given their high estimated long-run coefficients, the two fundamentals have had substantial (and opposing) long-run effects of the RER. Assuming the above positive shocks, more openness will cause an RER depreciation of 44%, while higher productivity would lead to 24% appreciation. Second, fiscal policy appears to have been fairly stable—both government consumption and taxes have standard deviations of only 0.02%. Therefore, they have rather modest long run effects on the RER at 6 and 5%, respectively. The same applies to the TOT, which have a long-run effect of 4.3%.

4.39 The main policy implication of these long-run results is that aid has not been, so far, associated with RER appreciation. However, as the analysis of section two suggests, this result could have been driven by the fact that aid was only partially absorbed by Ghana and other highly aid-dependent countries, and in fact, recent absorption of a rapidly scaled-up aid seems to have led to some RER appreciation in the long-run. Moreover, the estimated coefficient of aid measures the direct long-run effect of aid, while aid could also have an indirect effect through fiscal policy. Such effect has been found to be fairly substantial for the case of Ghana. Very importantly, aid has also been found to induce a significant reduction in borrowing (Osei and others, 2003).

¹⁰¹ However, unlike other panel regression models, the possible failure of the PMG to account for short-run country heterogeneity is likely to be because of the inadequacy of the time-series dimension of the data, since the model does not impose restrictions on short-run parameters.

The RER Misalignment in Ghana: How Serious?

4.40 Using the long-run estimation results of Table 3 and following Elbadawi, Kaltani, and Soto (2006), we proceed to construct indexes for the equilibrium real exchange rate (ERER) and real exchange rate misalignment (*rermis*). The ERER index is obtained from the estimated model with the permanent components of the fundamentals (estimated with the conventional Hodrick-Prescott procedure) substituted into the estimated RER equation. The permanent components of the fundamentals are characterized as sustainable levels and are therefore consistent with the concept of RER equilibrium. The ERER index is normalized (through the country-specific intercept) so that the average RER misalignment (the mean logarithmic difference between the RER and ERER for each country) is set equal to zero. This imposes the plausible identification condition that no country is allowed to be misaligned for the full estimation period. The log of the resulting normalized ERER is then subtracted from the log of the RER to obtain the *rermis* time-series measures for each country. The analysis can be developed using the three below pivotal equations (Appendix A contains a detailed derivation of the construction of these indexes):

$$(2) \quad e_t^i = \hat{\beta}' F_t^i + \hat{\varepsilon}_t^i$$

$$(3) \quad \tilde{e}_t^i = \bar{e}^i + \hat{\beta}'(\tilde{F}_t^i - \bar{F}^i)$$

$$(4) \quad rermis_t^i = e_t^i - \tilde{e}_t^i = \hat{\beta}'\left\{(F_t^i - \bar{F}^i) - (\tilde{F}_t^i - \bar{F}^i)\right\} + \left\{(e_t^i - \bar{e}^i) - \hat{\beta}'(F_t^i - \bar{F}^i)\right\}$$

where the log of the real exchange rate for any given country *i* at time *t* is given by (e_t^i); F_t^i is the vector of country *i*'s fundamentals in period *t*; \tilde{F}_t^i is the corresponding vector of “sustainable” fundamentals; β is a vector of long-run coefficients; and a bar over a variable indicates the mean over time. Equation (2) expresses the log of the RER in terms of the component due to the current fundamentals and a residual term, while equation (3) specifies the log of the equilibrium RER that satisfies the above normalization condition. The equilibrium RER is expressed as the sum of the mean of the observed RER and a term that depends on the difference between the sustainable fundamentals and their mean values ($\hat{\beta}'(\tilde{F}_t^i - \bar{F}^i)$). Equations (2) & (3) allow us to derive the expression for the RER misalignment in equation (4). This expression decomposes the *rermis* at any point in time into two components. The first term on the RHS of equation 4 is the “Fundamentals” effect, which measures the contribution to the *rermis* due to the divergence between the current fundamentals and their long-term “sustainable” path. The second RHS term is the error-correction effect, which accounts for the short-run divergence between the actual RER and the RER path associated with the current fundamentals¹⁰².

4.41 **Ghana's *rermis*—the vertical distance between the actual and the estimated equilibrium RER in Figure 4.4—seems to indicate that the RER has been well managed since 1986.** Following substantial RER overvaluation in the first half of the 1980s, there was a long spell of undervaluation, where the RER was undervalued by 33% per annum for eleven years from 1986-96. And, following a brief spell of overvaluation (at an annual rate of 13% for three years), the RER became undervalued again for six years at about 15% per year. For the last two years (2006-07), we estimate the RER to have been overvalued by about 8% per annum.¹⁰³ The pattern of the Ghanaian RER adjustment following the start of economic reforms in the mid 1980s and the subsequent aid scaling up appears to be consistent with other experiences of comparator high aid-dependent countries, such as Ethiopia, Mozambique and especially Uganda (Figure 4.5).

¹⁰² Note that the normalization condition requires that both terms on the RHS of the *rermis* equation be expressed relative to their mean values (see Appendix A for more details).

¹⁰³ This is however based on preliminary data.

4.42 **Probing further, we analyze the contributions of the two channels (the fundamentals and error-correction) to the overall rerms for Ghana (Table 5).** The first half of the 1980s was one of substantial RER overvaluation associated with hyper inflation and maximum nominal exchange rate devaluations. This explains the significant marginal effect of the short-run error-correction channel in deriving the ensuing overvaluation. However, the following period (1986-96) earmarked an extended undervaluation spell. Again this was driven by the short-term error-correction channel, which generated a partial undervaluation effect of -32% per annum and was consistently negative throughout the period. On the other hand, the fundamentals' channel contributed a miniscule average of -1% to the overall rate of undervaluation. The small marginal influence of the fundamentals' channel could be explained by their major swings around their long-run "sustainable" path¹⁰⁴. The prominence of the error-correction channel during this phase is reflected by some progress on macro stabilization, which drastically reduced inflation from 60% per annum in 1980-95 to about 31%, despite the still relatively high rate of devaluation which averaged more than 30% per year. The following three spells were characterized by more balanced contributions by the two channels and a much smaller degree of RER misalignment. Unlike the first spell (1986-96), hyper inflation and excessive deficit financing were no longer the main macroeconomic policy concerns during the last three phases. This is reflected in the relatively moderate and stable inflation and much lower rate of nominal devaluations, and, therefore, a lesser role for short-term macroeconomic correction measures. Moreover, during the brief overvaluation spell (1997-99) the policy fundamentals (trade openness, taxes, government consumption) had, at least partially, offset the overvaluation effect due to their exogenous and structural counterparts (terms of trade, productivity, net foreign income, official development assistance net of international reserves). And, in the subsequent undervaluation spell (2000-05) all channels contributed to the undervaluation effect. However, in the last two years (2006-07) the relatively modest (expected) overvaluation was associated with the Fundamentals' effect. In these latter two years inflation is expected to have declined sharply from 21% in 200-05 to just 10%. However, controlling inflation is likely to be at the cost of reduced exchange rate flexibility, which is estimated to average just one% per year compared to 20% for the earlier spell.

4.43 **However, for all of the five spells, aid appears to have contributed very little through the Fundamentals channel,** with a maximum average effect of 1.3% in 2000-05. Nonetheless, this is not necessarily incompatible with a substantial role for aid through the error-correction channel or indirectly through the fiscal policy effect on the Fundamentals' channel. The evidence suggests that Ghanaian authorities had elected not to fully absorb aid and, instead, they used aid to stabilize the economy. According to a vector autoregression analysis due to Osei and others, (2003), a one standard deviation shock to aid (at US\$93 million) induced borrowing to fall by US\$36 million and was associated with a rise in tax revenues and government expenditure of equal magnitudes of about US\$76 million each. Of the latter, current expenditure is estimated to have risen by US\$56 million.

4.44 **Ghana's aid, which has been significantly scaled up, is likely to be sustained in the future, given the financing requirements called for by the GPRS II and the broad commitments pledged by the donors in support of Ghana's poverty reduction strategy (G-JAS, 2007).** Aid to GDP ratios have averaged more than 13% since 2000, and in 2005 they were above 15%.¹⁰⁵ Therefore, we construct two new indexes of RER equilibrium for 2000-07 according to the following scenarios (Figure 4.6):

¹⁰⁴ The year-by-year contribution of the fundamentals' channel ranges between a maximum partial overvaluation of 16% and a maximum partial undervaluation of -23%.

¹⁰⁵ As already mentioned above, the data source for aid flows is the World Development Indicators. For 2005-07 the data from G-JAS (2007) were rescaled by splicing them with the original series.

Scenario 1:

- “Sustainable” aid ratio (2000-07) = 15%.
- “Sustainable” Government expenditure/GDP (2000-07) = {historical “permanent” component derived by time series analysis for 1980-2004+ (56/93)* “sustainable” aid ratios}.
- “Sustainable” values for all other fundamentals remain at their original time series-based levels.

Scenario 2:

- “Sustainable” aid ratio (2000-07) = 15%.
- “Sustainable” Government expenditure/GDP (2000-07) = {historical “permanent” component derived by time series analysis for 1980-2004+ (56/93)* “sustainable” aid ratios}.
- “Sustainable” tax ratios (2000-07) = {historical “permanent” component derived by time series analysis for 1980-2004+ (76/93)* “sustainable” aid ratios}.
- “Sustainable” values for all other fundamentals remain at their original time series based levels.

4.45 **The corresponding RER misalignment indexes associated with the two scenarios suggest a similar trend to the earlier analysis regarding the phasing out of the undervaluation spell by 2006 and the beginning of a new overvaluation spell.** However, under both scenarios the estimated RER overvaluation was much smaller and, the actual RER for the 2006-07 might very well be within the confidence interval of the equilibrium level.

4.46 **Summing up, Ghana’s RER appears to have been reasonably well managed and has been undervalued for most of the post-1985 period, despite high aid flows and recent further scaling up of aid since 2000.** The direct impact of aid on the long-term behavior of the RER has not been significant so far, mainly because aid has only partially been absorbed until the past few years. However, there is strong prima facie evidence that aid tends to exert strong indirect influence on the RER through its effect on fiscal policy. Moreover, aid could have multiple influences on the short-run through the error-correction channel. For example, high *aid volatility* could lead to large discrepancy between aid in a given year and its mean value (second RHS term of equation 4). This effect will increase the degree of misalignment. Moreover, if aid is used in lieu of inflationary or debt financing it will directly depreciate the real exchange rate level through reduced inflation (the first RHS term of equation 4). However, to the extent that aid flows are sustained, which allows fiscal policy to be insulated from major shocks, scaled-up aid should not necessarily be associated with extreme overvaluation provided that other fundamentals remain close to their long-term sustainable values. As the above simulations suggest, Ghana’s RER should be experiencing mild overvaluation or could very well be in virtual equilibrium in the last two years. These findings are broadly consistent with current IMF staff assessments of real exchange rate adjustment in Ghana.

4.47 However, to the extent that at least mild RER undervaluation is necessary for growth and export diversification for low-income countries, as the recent literature and country experiences seem to suggest, the end of the undervaluation spell in Ghana could have some negative consequences for its growth and economic diversification prospects. We turn to this issue in the next section.

AID, REAL EXCHANGE RATE MISALIGNMENT, AND ECONOMIC PERFORMANCE

Real Exchange Rate Misalignment and Economic Growth Performance

4.48 **A general result from the recent cross-country econometric research on aid effectiveness is that aid does not generally influence economic performance, most notably economic growth. However, when aid is delivered to countries that feature a good policy environment, it may increase growth but its effect is subject to diminishing returns** (for example, World Bank, 1998; Burnside and

Dollar, 2000).¹⁰⁶ Instead of emphasizing the role of the overall institutional and policy environment in enhancing the absorptive capacity of aid as done for example by Collier and Hoeffler (2002), we control for the direct growth effects of institutions and other conventional growth fundamentals and emphasize the growth and aid-effectiveness consequences of RER misalignment.

4.49 A strand of the empirical growth literature that accounts for the impact of RER misalignment finds robust negative association between RER overvaluation and growth. While moderate undervaluation might support growth, extreme undervaluation also leads to less growth (Razin and Collins 1997, Aguirre and Calderon, 2005). Rodrik (2007) on the other hand finds that undervaluation is always good for growth. Another finding of this literature is that the growth impact of RER overvaluation and RER volatility is contingent on the level of financial development; they generally reduce growth in countries with low levels of financial development while having no significant effect in financially advanced economies (Aghion and others, 2006).

4.50 Table 6 provides some preliminary evidence of the facilitating role that RER alignment or undervaluation may have played on economic performance. It starts off by listing those countries that have experienced acceleration and subsequent sustained growth in the 1980s and 1990s as captured in Hausmann, Pritchett and Rodrik (2004).¹⁰⁷ The table indicates the year when the growth acceleration took place and then analyzes a window spanning seven years prior to the acceleration and seven years after it.¹⁰⁸ The list captures countries that are well-known for their take-off and sustained good performance. These are countries like Malaysia, Thailand, Korea, Indonesia but also Chile and Ireland. The majority of the countries listed in the table have experienced earlier growth accelerations in the period since 1950. Given our lack of RER misalignment data for the more historical accelerations, we focus here on later ones.

4.51 To give a broad context of each country's economic conditions, column two illustrates the income per capita of each country in the year of the growth acceleration. In the third data column the table provides information about each country's average RERMIS during the window of analysis. The conclusion that we draw is that all countries avoided extreme overvaluation, and a large number of countries were either very close to equilibrium or undervalued. The median RERMIS in fact was -0.1%. Clearly, the countries were chosen based on their growth performance, and thus column 3 confirms that the growth rate was very high with a median value of 4.8%. The next columns analyze the longest undervaluation spells within the growth acceleration window. These may not be full spells in that we stop at the year when the growth window ends. *We find that RER undervaluation is a necessary but not sufficient condition for growth to take place and be sustained.* Aside from a few exceptions (Mauritius, Korea, and Indonesia), the other countries in the list have experienced RER alignment or undervaluation. However, Ghana and two other comparator countries (Ethiopia and Mozambique) have experienced rather long periods of undervaluation spells without them leading to growth take off and sustainability. This could be explained by the inadequacy of other institutions and/or policies that are necessary in order for growth to take hold. In addition, it appears that RER undervaluation may have non-linear effects on

¹⁰⁶ More recent work by Clements, Radelet, and Bhavnani (2003) argues for the need to disaggregate aid by its purpose to accurately assess its impact on economic growth. They find that the growth impact of disaggregated aid flows is larger than previously found (although it presents diminishing returns) regardless of recipient countries' policy environment. This research direction, although appealing, goes beyond the scope of our current work.

¹⁰⁷ The criteria that Hausmann and others, use to assess whether a country has experienced a growth acceleration are: the change in average growth before and after the acceleration is greater than 2.5%; the country grows by an average 3.5% for at least seven years after the year of acceleration; the country's income per capita is higher than prior to the acceleration. From the list of countries constructed by Hausmann and others, we removed five whose data, taken from the most recent version of World Development Indicators did not corroborate the authors' findings. The countries were Spain, Finland, Great Britain, Norway, and Papua New Guinea.

¹⁰⁸ In our case, for some countries we may not have data for all seven years prior to the acceleration since the RERMIS data start in 1980. Thus the window could be shorter than 15 years.

growth. Some of the countries that have experienced the highest growth have managed to keep their RER aligned or barely undervalued without it being grossly undervalued.

4.52 **To study the link between RER misalignment and economic growth more rigorously, next we specify and estimate a rich empirical growth model that nests the strands of the growth literature discussed above: aid, RER competitiveness, and financial development, as well as their possible interactions.** Controlling for conventional growth determinants that are robustly identified in the empirical cross-country growth literature, we address the following issues that have not been addressed in the aid effectiveness literature. First, which are the separate effects of aid, RER misalignment, and financial development on growth? Second, does aid reduce or augment the impact of RER misalignment on growth? Finally, is the growth loss from RER misalignment ameliorated by financial development?

4.53 To address these questions, we specify and estimate the following growth model:

$$(5) \quad y = \beta_0 A_{it} + \beta_1 A_{it}^2 + \beta_2 RERMIS_{it} + \beta_3 FD_{it} + \beta_4 A_{it} * RERMIS_{it} + \beta_5 RERMIS_{it} * FD_{it} \\ + \beta_6 CV_{it} + \mu_t + \eta_i + \varepsilon_{it}$$

where i and t are country and time indexes, respectively; y is per-capita GDP growth; A is aid as a share of GDP,¹⁰⁹ $RERMIS$ is RER misalignment, FD is a measure of financial development, CV is a set of standard control variables that are robustly associated with cross-country growth (initial per capita GDP, initial GDP cyclical component, inflation, government expenditure as a share of GDP, human capital investment, a rule of law index, and a measure of trade openness); and μ_t and η_i are time and country fixed-effects, respectively.

4.54 **Our estimation technique addresses issues of endogeneity and unobserved country characteristics.** Aid is measured at the beginning of each period as it is believed to be more relevant for current growth because the overwhelming evidence (reviewed in section two above) seems to suggest that recipient countries tend to absorb and/or spend aid with some time lag. Beginning of period aid also is likely to be exogenous because aid is partially responsive to recipient countries' past economic performance, including past growth. However, policy fundamentals are likely to be jointly determined with growth as well as responsive to future anticipated growth performance. Therefore, to properly account for endogeneity and country-specific unobserved characteristics, we use the Generalized Method of Moments (GMM) system dynamic panel estimation method. We apply it to a world data panel of 77 countries, comprised by developing economies as well as industrial countries, for 5-year non-overlapping averages spanning the period 1970 until 2004. The system GMM (developed in Arellano and Bover, 1995 and Blundell and Bond, 1997) implemented here, uses lagged values of the dependent and independent variables as instruments (called 'internal instruments') and combines regressions in differences with the regressions in levels to better address the issue of weak instrumentation often attributed to the older, difference estimator. Under the assumed moment conditions, the system GMM accounts for the combined problems of endogeneity and unobserved country effects. The consistency of the GMM system estimator is assessed by two specification tests. The Sargan test of overidentifying restrictions tests the overall validity of the instruments. Failure to reject the null hypothesis gives support to the model. The second test examines the null hypothesis that the error term is not serially correlated. Again, failure to reject the null hypothesis gives support to the model. In the system specification, we test whether the differenced error term (that is, the residual of the regression in differences) is second-order serially correlated. First-order serial correlation of the differenced error term is expected even if the original error term (in levels) is uncorrelated, unless the latter follows a random walk. Second-order serial correlation of the differenced residual indicates that the original error term is serially correlated and follows a moving average process

¹⁰⁹ The values for official development assistance are set equal to zero for the OECD countries.

of at least order one. This would reject the appropriateness of the proposed instruments (and would call for higher-order lags to be used as instruments).

4.55 **The regression results presented in Table 4.7 show that the standard growth fundamentals have the expected sign and are statistically significant.**¹¹⁰ Moreover, both the Sargan and the serial-correlation tests validate our specifications.¹¹¹ The first column of Table 4.7 reports the results of estimating equation (5) without the interaction terms; the second column reports the results when we include the interaction of aid with RERMIS, and column 3 reports the complete regression where financial development is interacted with RERMIS.

4.56 **The fully specified model (column 3) indicates that aid, RER overvaluation, and financial development have both direct and non-linear effects on growth.** In fact, the results show that aid is positively but non-monotonically associated with growth. RER misalignment has a negative effect on growth. Furthermore, the interaction between RER misalignment and aid has a negative and significant effect on growth. The latter results corroborate two key findings about aid effectiveness. First, aid is more effective in a good policy environment, which in our case implies avoiding RER overvaluation. Second, aid effectiveness is subject to diminishing returns. Finally, the significance of the coefficient of the interaction between RER misalignment and financial development supports the view that financial development ameliorates the negative repercussions of RER overvaluation.

4.57 **The above findings make it possible to study the total effect of a change in RER overvaluation on growth.** Thus, we can probe deeper into the analysis of RER misalignment on growth. From equation (5), note that the overall growth effect of a change in RER misalignment is given by the following expression:

$$(6) \quad \Delta y_{it} = (\beta_2 + \beta_4 A_{it} + \beta_5 FD_{it}) \Delta RERMIS_{it}$$

where β_2 is the direct effect of RER misalignment on growth, and $\beta_4 A$ and $\beta_5 FD$ are the non-linear effects of RER misalignment on growth that depend on the levels of aid and financial development.

4.58 **The estimated parameters suggest that the direct effect of a standard deviation change in RER misalignment (which for the entire sample would be about 21%) would amount to about a 1.1% loss in economic growth.** In addition, if aid and financial development were held at their median values, the indirect effects of misalignment would amount to a loss of 0.04% when accounting for the interaction with aid (this is due to the fact that median aid for the entire sample is quite small) and a gain of nearly 1% when accounting for the interaction with financial development. Nevertheless, many developing countries are highly dependent on aid and have rather shallow financial markets. To reflect such reality and obtain more realistic scenarios, we perform two exercises. First, we investigate the effects of RER misalignments on growth under different levels of aid dependency. Second we simulate the growth impact of a one standard deviation change in RER misalignment under different levels of financial development while holding aid constant. Both exercises are tailored to Ghana's economic conditions in the most current years for which we have data.

4.59 **In the first exercise, we assume that a shock of a one standard deviation affects the RER misalignment and study its impact on growth under various levels of aid ratios.** This shock amounts to about 55% and corresponds to the standard deviation of RERMIS observed for Ghana in the sample

¹¹⁰ The only exception is the financial development measure in the first two regressions where it has an unexpected, small negative effect on growth. However, our focus will be on column 3 which we believe to be the correctly specified model.

¹¹¹ An alternative approach to identifying growth determinants can be based on regressing current per capita growth rates on lagged right-hand side variables by assuming that, aside from lagged income per capita, all other time-varying growth fundamentals are exogenous. This could be useful in minimizing the number of variables to be instrumented. However, the validity of this simpler approach hinges on a more restrictive assumption about the temporal endogeneity of the policy and institutional growth fundamentals.

period. We assume three levels of aid as a share of GDP. The value labeled ‘low’ is the median aid value for aid-recipient countries in the most recent period in the regression, 2000-04. The value labeled ‘medium’ corresponds to the average aid flows of Ghana in the period 2000-04. Lastly, the value labeled ‘high’ corresponds to the highest aid value that Ghana has received in the recent past and amount to 15.3% of GDP in 2004. The financial development measure in this exercise is held constant at Ghana’s value in the most recent period in the regression and amount to nearly 30% of GDP. Figure 4.7 depicts the impact of such scenarios on Ghana’s economic growth. As evidenced by the figure, the level of aid plays an important role in the ability of RER misalignment to affect growth. A one-standard-deviation change in RER misalignment would lower growth by 0.5% under a low-aid scenario, 1.5% under the current aid values as captured by the average for the period, and by 1.7% if Ghana’s aid levels were at 15% of GDP.

4.60 **Figure 4.7 also shows the growth impact of the same change in RER misalignment but under various levels of financial development while holding aid at its average value in 2000-04 for Ghana.** This exercise is driven by the realization that Ghana’s financial market is quite shallow at least as described by our proxy which is the level of liquid liabilities to GDP. As mentioned above, the average share of liquid liabilities was nearly 30% for Ghana while the median value for developing countries in the same period amounted to 39%. It is important to note that there are many countries in SSA whose financial development was as good as or better than the sample median. The simulation results show that the level of financial development mitigates some of the detrimental effects of overvaluation. Under the current level of financial development, a one standard deviation change in RERMIS would lower Ghana’s growth by 1.5%age points; if Ghana’s financial development moved to the median of the developing countries, the loss in growth would amount to 1.3%, and if financial development were to improve to the 75th percentile of the developing countries in the period 2000-04 (55% of GDP) the loss in growth would be about 1%.

4.61 **The simulations presented here can be useful in throwing light on the mechanisms at play in the growth model that we have estimated. Clearly a country like Ghana needs substantial donor support to address binding growth bottlenecks and to reach MDGs by 2015.** Our findings indicate the following three key messages:

- Aid would contribute to such goals since *aid is found to positively affect growth although with diminishing returns.*
- *Ghana needs to avoid RER overvaluation* which would not only directly undermine Ghana’s growth performance but would also hinder some of the beneficial effects of aid.
- Finally, *improvements in the financial sector can mitigate some of the negative effects of real exchange rate misalignment on economic growth*, and given Ghana’s shallow financial markets, emphasis on this sector would not only have direct beneficial effects on the economy but would also provide the added protection from the potentially harmful effects of overvaluation.

Real Exchange Rate Misalignment and Export Performance

4.62 **Export-orientation has been credited as a successful development strategy leading to economic transformation.** Furthermore, sustained export-oriented policies have been associated with significant export diversification, as countries initially limited to exploiting their endowments in natural resources have sought to avoid abrupt sector-specific shocks by moving into the production of non-traditional exports, such as manufacturing. In fact, non-traditional exports are characterized by higher income elasticities, less volatile terms of trade, and higher prospects of dynamic productivity gains (Elbadawi, 2002, Imbs and Wacziarg, 2003, Sekkat and Varoudakis, 1998, Gelb, 2000). Furthermore, empirical research has found that countries specialized in primary product exports tend to grow more slowly than economies with diversified export bases. Sachs and Warner (1997) have shown that the 1970 share of primary exports in GDP is negatively correlated in growth regressions in a sample of 83 countries over the period 1965–1990. Sala-i-Martin (1997) has found a similar result for the 1970 share of

primary products in total exports. In the special case of ‘point-source’ natural resources—those extracted from a narrow geographic or economic base such as for instance gold or petroleum—the received literature suggests that prudent and development-oriented management of oil and mineral booms has been the exception rather than the rule, with many countries experiencing a collapse of output after the end of the boom—the so called ‘resource curse’.

4.63 The empirical literature studying the abovementioned topic makes use of a variety of measures to capture export diversification. Elbadawi (2002) uses a measure that is the residual of exports after the ten largest three-digit commodity groups have been accounted for. Imbs and Wacziarg (2003) capture concentration (the inverse of diversification) through the use of a Herfindahl-Hirschman index (HHI), coefficients of variation of sector shares, and maximum-minimum spreads. Lederman and Maloney (2006) also make use of the HH index as well as of the share of natural resources in total exports. In a recent paper, Hausmann, Hwang, and Rodrik (2006) also study the implications for growth of the structure of exports and hint at a positive association between the latter and economic growth. In this context they develop a new index that ranks traded goods in terms of their implied productivity (it is the weighted average of the per-capita GDPs of the countries exporting a product, where the weights reflect the revealed comparative advantage of each country in that product). The higher this index, the higher the content of “rich country products” in exports. This index is motivated by the view that “not all goods are alike in terms of their consequences for economic performance,” and that specializing in some products will bring higher growth than specializing in others. In this setting, government policy has a potentially important positive role to play in shaping the production structure. Everything else being the same, 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 on to ‘rich-country products’, while countries that continue to produce ‘poor-country’ goods remain poor.”

4.64 Judging from various measures of export diversification (Figure 4.8), Ghana is situated in a region with the lowest level of export diversification, and its performance matches that of the region. In fact, SSA has the lowest share of manufacturing exports, the lowest EXPY and the highest HH export concentration index, even lower than the MENA region whose exports are heavily skewed toward primary fuel commodities. Moreover, Ghana’s own performance within SSA does not stand out; all three measures of diversification are very close, if not slightly worse than those of the median values for the SSA region. Therefore, studying what fosters or hinders export diversification is crucial for a country like Ghana. Moreover, the ability to study the determinants of various diversification measures that go beyond manufacturing as a share of exports allows us to capture the stories of various African countries (such as Kenya or Uganda) that have made substantial strides in diversifying their production and export structures by moving not into manufacturing but into high-value agricultural products (Chandra, Boccoardo, Osorio, 2007). Unlike the manufacturing shares, the HHI and EXPY measures would allow us to capture such successful diversifications.

4.65 Previous literature studying the determinants of export diversification has focused on countries’ factors of production (i.e. population, land per worker, natural resources) and/or geographic factors. Here we account for such factors but we focus in particular on the role of the real exchange rate. In fact, as discussed by Rodrik (2007), overvaluation can be particularly harmful to non-traditional exports which may be subject to market imperfections in the form of information (learning, cost discovery) and coordination externalities. Preliminary evidence illustrated in figure 4.9 a) and b) which is based on the residuals of simple fixed effects regressions accounting for standard controls seems to suggest that overvaluation can instantaneously lead to more export concentration and over time to countries’ specialization away from ‘rich-country products’¹¹².

¹¹² We also ran a similar regression for manufacturing as a share of merchandise exports, but none of the RERMIS variables were significant. However, this result changes later on when we address endogeneity.

4.66 **Our main empirical results focus on a panel dataset that spans the period 1993 to 2004.** The choice of such a sample was determined in the time series dimension by the availability of the EXPY measure which only starts in 1992 and in the cross-section dimension by the RERMIS measure which is available for 96 countries. Our estimation methodology is a Generalized Method of Moments as in the growth regressions presented in the subsection above. This technique allows us to correctly account for the effect of past values of the dependent variables and to address concerns with simultaneity or reverse causation. The model that we estimate can be written as:

$$(7) \quad E_{it} = \beta_0 + \beta_1 RERMIS_{it} + \beta_2 E_{it-1} + \beta_3 LnPop_{it} + \beta_4 LnGDPPC_{it} + \beta_5 LandPW_{it} \\ + \beta_6 Landlock_i + \beta_7 Prim_i + \beta_8 Fuel_i + \mu_t + \eta_i + \varepsilon_{it}$$

where i and t are country and time indicators. E is one of the three export performance indicators—manufacturing as a share of merchandise exports, the Herfindahl-Hirschman index of export concentration, or Hausmann and others' export sophistication measure, EXPY. $RERMIS$ is the real exchange rate misalignment, $LnPop$ is the log of population size, $LnGDPPC$ is the log of real per capita GDP, $LandPW$ is land as a share of the labor force, $Landlock$, $Prim$, and $Fuel$ are dummy variables which take the value of 1 if a country is landlocked, exports primary products other than fuel, or exports fuel products and takes the value of 0 otherwise. μ , η , ε are time, country dummies and the error term.

4.67 **The empirical results are presented in table 8, and they confirm the important negative role of RER overvaluation on export diversification and sophistication**¹¹³. For all three dependent variables their past values are highly significant confirming that all three measures tend to demonstrate stability over time. The RERMIS variable has the expected sign and is significant in all three regressions implying that a more overvalued exchange rate would damage the manufacturing base, lead to more export concentration, and would undermine the venture into more sophisticated products. In the regressions other controls also are significant; these are population, and income per capita. Furthermore, landlocked countries have a higher HHI and lower EXPY values. The availability of primary resources (be their fuel or otherwise) also are detrimental to diversification (a dummy for fuel exporters is significant in the regression for manufacturing as a share of merchandise exports and for HHI, and a dummy for other primary exporters is significant in the regression for manufacturing as a share of merchandise exports and for EXPY).

4.68 **While the results of Imbs and Wacziarg (2003) indicate that poor countries tend to diversify their production structure but beyond a certain income threshold further growth is associated with product concentration, our findings tell us that these countries choose to diversify their export structure** (since we are only focusing on developing countries, all observations lie to the left of the inverted U curve of income and diversification measure). Yet, another important finding is that developing countries' ability to diversify hinges on their ability to avoid real exchange rate overvaluation. Figure 4.10 presents a scatter plot of the link between income per capita and EXPY (both in logs) for the most recent year that we have data for both these variables which is 2003. The fitted line in the scatter plot describes the positive relationship between income and export sophistication for our sample of developing countries. The scatter plot also illustrates that there are many countries that are outliers to this described relationship, either through their ability to export more sophisticated products than their development level would predict or to export significantly below their predicted level.

¹¹³ There are cases where the Sargan test statistic cannot be computed given the near singularity of variance-covariance of the moment conditions. This arises when the cross-sectional dimension is small relative to the number of instruments. In those cases, of which we have one, we have to rely only on the residual autocorrelation test.

4.69 **China is one much-discussed country whose exports are much more sophisticated than its income level would predict.** For the case of China there has been much publicity to fact that its exchange rate has been *strategically kept undervalued* to make exports competitive abroad. Although we do not have data on China's RER misalignment from our own work, estimates by Rodrik (2007) as well as Ostry, Johnson, and Subramanian (2007) suggest that China's exchange rate has indeed been undervalued (grossly so by Rodrik's estimates, nearly 50% in 2004, the last year of his analysis). Other countries' experiences seem to follow a similar pattern (Table 9). Sudan's EXPY is much lower than its predicted value. Some of this shortfall may be explained by the fact that Sudan's RER was grossly overvalued in 2003 (the most recent year for which we have data) and has been overvalued for a long time averaging 17% since 1998.

4.70 **On the up side, countries like India, Indonesia, and South Africa have achieved a level of export sophistication that is a lot higher than what their income level would suggest.** This may be in part explained by their ability to keep their real exchange rates undervalued at least for the period since 1998. Of these three countries only South Africa shows signs of overvaluation in 2003; for South Africa this could mean harm to the levels of EXPY further down the road. As for Ghana, its EXPY performance is very close to what would be predicted by its level of income. Ghana has also managed to keep its real exchange rate very close to equilibrium since 1998. Nevertheless, our estimates show some RER overvaluation cropping up in 2006 and 2007. Just like for South Africa, our concern would be that continued overvaluation could undermine the gains that Ghana has achieved in terms of export diversification and sophistication and possibly undermine one of the most important channels for dynamic growth and poverty reduction.

4.71 **An important qualification, however, is provided by Eichengreen (2007), who argues that targeting certain sophisticated export activities by certain domestic policies, including those that promote RER undervaluation may merely play a role of a "facilitating" channel to permit the realization of certain favorable conditions.** For example, he argues that to the extent that Chinese firms rely on their links to overseas Chinese or to its proximity to Japan and Korea, RER undervaluation or other domestic policies may not be enough for other countries that do not possess such advantage. The implication of this analysis for Ghana is that while RER undervaluation and other standard fundamentals are necessary, increasing the sophistication of exports may require further creative approaches, such as engaging the Ghanaian scientists and engineers from the diaspora.

CONCLUSIONS AND POLICY IMPLICATIONS

4.72 **Ghana's strategy for the macroeconomic management of aid appears to have been driven by the concern over major RER overvaluation and loss of external competitiveness since the mid 1990s.** This perhaps explains Ghana's ability to maintain a depreciated RER and to experience spells of large undervaluation for most of the post mid-1980s period, despite a major surge in aid flows since 2000 from already high aid ratios. Ghana has also been able to achieve high and accelerating export-led growth since 2000.

4.73 **The evidence analyzed in this paper and other recent literature suggests that Ghana's recent growth spurt was likely to have been associated with its ability to avoid disequilibrium real exchange rate overvaluation.** In fact the evidence suggests an even stronger implication regarding exchange rate policy in that, not only overvaluation is bad for growth and export diversification, but that *undervaluation is good for both*.¹¹⁴ Therefore, the recent experience of Ghana itself should provide important lessons regarding the need to avoid high disequilibrium RER appreciation.

¹¹⁴ Though our analysis does not test for possible non-linearities between RER overvaluation and economic performance, previous work by Aguirre and Calderon (2005) has found that excessive undervaluation can also be harmful for growth.

4.74 **However, maintaining external competitiveness through appropriate RER adjustment should be just one, though central, objective in the context of a larger strategy based on scaled up aid.** Substantially or fully absorbing and spending scaled-up aid, as has been the case in the past four years, is unavoidable if low-income countries, like Ghana, are to achieve the MDGs by 2015, not to mention the even more ambitious Ghanaian national objective of becoming a middle-income country by that year. Given the current initial conditions of a relatively stable macro economy (low domestic debt and low and stable inflation and interest rates), Ghana's switch to an (absorb, spend) strategy may have been warranted. However, unless the degree of absorption and expenditure is linked to "sustainable" long-term aid flows, the country would risk large and extended overvaluation spells that, by derailing the growth and economic diversification drive, could substantially limit the development effectiveness of aid even in the social sector. Moreover, a sudden surge in absorption and expenditure could create a temporary boom similar to the ones frequently experienced by oil and mineral exporters. This could push the economy into a path of inefficient specialization on aid dependency and other non-tradable activities spawned by it. Recent literature suggests that inefficient specialization is a product of the combined effect of the level and structure of government spending, the volatility of that spending, the cost of lending to firms, and the extent of overall financial inefficiencies¹¹⁵.

4.75 **We argue that Ghana's strategy for maintaining long-term competitiveness, while absorbing large aid flows and spending heavily on the social sectors, should aim at keeping the fundamentals close to their long-term "sustainable" path.** If successful, the ensuing RER appreciation will be, on average, consistent with long-term equilibrium behavior. However, this would require stability of aid flows and the associated expenditure outlays among other long-term first-best policy measures. Moreover, stable aid flows and fiscal policies as well as financial development also are necessary for stemming short-term volatility. Therefore, temporary short-term second-best measures may be required as well. The first best policies are aimed at directly reducing the distortions in the economy created by the resource boom, while the second best measures are justified by the fact that oftentimes distortions are hard to remove, especially in the short run, and that measured interventions may be needed to level the playing field for agriculture and other tradable sectors. However, there are other entirely different problems generated by poor institutions and market failures, which tend to disproportionately reduce the profitability of tradable sectors, especially new tradable economic activities (Rodrik, 2007). It can be argued, therefore, that even if these policies could be implemented, they may not be enough for countering the impact of deep-seated institutional deficiencies. Instead, a strategy of a full-fledged real exchange rate undervaluation may be required for addressing the whole set of impediments to economic diversification, not just those associated with the Dutch Disease and the volatility associated with the resource boom.

4.76 Therefore, an appropriate strategy for maintaining external competitiveness for the scaled-up aid-dependent economy of Ghana could address at least three pivotal issues:

- What should be the appropriate blend of medium-to-long term macroeconomic policies for spending and absorbing large aid that would also minimize the trade-off for external competitiveness in the short-to medium runs?
- Would there still be need for second best options for using the aid (and other resources) to limit the potential negative consequences on competitiveness of spending cycles in the short-run?
- Can Ghana sustain high growth by just avoiding real exchange rate overvaluation or would it also need to engineer long spells of at least mild undervaluation?

4.77 *Longer-term, first-best measures:* **The first and most critical measures are in the area of fiscal policy.**

¹¹⁵ See for example, Hausmann and Rigobon (2003).

4.78 The authorities should maintain fiscal prudence and limit the volatility of expenditures, while keeping the primary non-aid deficit within limits consistent with expected “sustainable” debt and aid ratios. This should ensure that the ensuing RER appreciation is consistent with equilibrium behavior and, hence, it should not be harmful to tradable economic activities.

4.79 *Moreover, the structure of expenditures also matters.* For example, outlays aimed at improving the support system for agriculture, such as improving rural infrastructure and marketing, will contribute to the competitiveness of the sector and enhance economic diversification in the longer term (Estache and Vagliasindi, 2007).

4.80 *Fiscal policy measures must be part of a larger package*, since in addition to high fiscal deficits and volatile expenditures, high debt and an inefficient financial system contribute to high country risks and high costs of financing, which tend to blunt the growth of the tradable sector. Therefore, institutional and policy reforms in the banking and financial sector also will be required.

4.81 **As discussed, given Ghana’s achievement of macroeconomic stability, including by using aid in lieu of recourse to domestic debt and inflationary finance, the switch to an absorb-and-spend strategy is warranted, provided that the extent of absorption and expenditure is consistent with what are judged to be “sustainable” ratios of aid flows in the long-run.** This would, unavoidably, entail a process of RER *appreciation*, but that should not necessarily be associated with RER *overvaluation*, at least not a major RER overvaluation that could overly constrain long-term growth. For example, according to the empirical analysis of this paper, a one standard deviation shock to trade openness alone can depreciate the RER by more than 40%, which should constitute an effective policy response to short run cycles of increased government consumption or shifts in other exogenous factors (TOT, aid) or other less policy-responsive fundamentals (productivity). Moreover, in the longer run, appropriate utilization of aid could help enhance productivity, which allows the RER to appreciate in tandem with its associated equilibrium.

4.82 *Short-term, second-best measures:*

- **A stable macroeconomic environment with “sustainable” fiscal deficits and manageable debts and efficient financial sector that delivers financial resources at affordable costs to tradable sectors is usually associated with competitive real exchange rates, especially in relatively flexible exchange rate regimes.** However, given the envisaged scaling up and the ensuing resource-boom, the extent of these reforms may not be sufficient, or their pace may not be fast enough to prevent major disequilibrium real exchange rate appreciation. In such economies massive real appreciation could gather over a very short period, leading to real exchange rate overvaluation and a squeeze on agriculture and other non-resource tradable sectors.

4.83 **Therefore, second best measures to stem the tendency of real appreciation and stabilize the profits of the agricultural sector (as well as other labor-intensive industries) could be considered.** And, one potentially effective measure to consider is some form of “financial guarantees” contingent on the real exchange rate. Typically in aid-dependent (as well as resource-rich economies), the real exchange rate appreciates in good times, when both government revenues and public spending are high. So making these guarantees contingent on the real exchange rate will ensure that agriculture and other non-booming tradable sectors will have access to capital when public resources are relatively abundant. And, giving the tradable sectors a claim on future aid resources will protect agriculture and the poor who depend on it from potentially being marginalized by the macroeconomic consequences of the boom itself. Moreover, making the financial support contingent on the real exchange rate—a broad economy-wide relative price-should, hopefully, limit the moral hazards associated with idiosyncratic risks of a given project or narrowly defined sectors. This, we argue, should set the proposed policy apart from traditional “industrial policy”.

4.84 **It is important, however, to make explicit the potential downside risks of such policy.** The first is of course institutional, because if it is badly managed it could be counterproductive. What makes this all the more challenging is that there are very few success stories of credit guarantee schemes and the received literature seems to be divided regarding their effectiveness (Box 2)¹¹⁶. Second, it might be difficult to distinguish the extent of tradability of firms' economic activities when they produce a mixed variety of products¹¹⁷. Moreover, policy makers would be forced to identify what is "tradable" and hence eligible for preferential treatment. However, tradability is not a fixed attribute, but an endogenously-changing outcome. For example, until recently few people viewed services as tradable. Now it turns out that a broad range of business and professional services, from technical support and accounting to health care, are traded internationally¹¹⁸. The third problem is the difficult political economy of ensuring that the guarantees be suspended when resources are lower and the RER starts to depreciate. While the benefits of the financial guarantees are explicit and concentrated, the gains from RER depreciation are likely to be perceived as implicit and diffused. The last, and perhaps the least important, is the financial cost of this package to the public sector which would very much hinge on the extent of the other two problems

4.85 **Nevertheless, on balance, and despite the highlighted downsides, if carefully designed, the proposed credit guarantee scheme could be potentially beneficial, given that it is specifically targeted to extreme short-term RER appreciation.** This is because, unlike the standard guarantees, the proposed plan will have the central bank and/or the Ministry of Finance as the committed and able financier of the fund, as the program will only kick in at a time of plenty during commodity booms or high ODA flows. Moreover, and despite the political economy issues discussed above, this program is time-bound and is contingent on the presence of extreme RER appreciation, which is likely to be relatively short-lived. In addition, the proposed program will be "targeted" rather than "open" scheme, where the target group must satisfy special requirements. And, even then not all members of the target group will be automatically guaranteed, as they also have to meet the criteria set by the scheme. To minimize bureaucratic tardiness, this scheme could also be based on an "indirect guarantee" system, where a third party, such as a micro finance entity, administers the fund established by the central bank or the government¹¹⁹.

¹¹⁶ We are grateful to our colleague Constantinos A. Stephanou for providing the relevant literature on credit guarantees.

¹¹⁷ If the incentives are high enough, such firms may use tradable activities as a front to qualify for the subsidized credit though most of their products may be non-traded.

¹¹⁸ We are grateful to Luis Servén for pointing out this issue to us.

¹¹⁹ See Navajas (2001) for an overview of institutional designs of credit guarantee scheme.

Box 4.2: Credit Guarantees: Pros and Cons

The introduction of credit guarantees has been widely advocated by development finance professionals to address difficulties facing individuals, households, farms, and other small firms that wish to borrow from banks. SMEs and micro borrowers together with other credit-rationed groups, such as farmers, rural industries, and women have particular difficulty in developing countries around the world in obtaining formal sector credit. When they do obtain such credit, it is often on comparatively disadvantageous terms. Credit guarantees supported by donor and/or government subsidies have been recommended as a means of addressing these difficulties.

Advocates advance six arguments in favor of public sector investment or donor involvement in developing and operating credit guarantees. These are as follows: guarantees can overcome collateral constraints, offset the risk of lending to SMEs and micro borrowers, address information constraints, compensate for low profit margins, modify intrinsic risk characteristics of small businesses, induce learning and produce additionality (in terms of leveraging further lending).

However, the arguments for these schemes have also generated counter arguments by scholars and development professionals opposed to guarantees. They have argued that credit guarantees in general and in particular to SMEs and micro borrowers are a waste of precious development resources and a policy unlikely to produce the results held out by proponents. These critics argue that promoters of guarantees overlook several very important theoretical and practical points: banks do not lend to farms and micro borrowers for reasons that have little to do with the issues cited above. For example, they argue that guarantees tend to be prohibitively costly, difficult to price and that guarantee funds have no comparative advantage in credit assessment. Moreover, they dispute the capacity of guarantee programs to generate additionality. Furthermore they argue that banks prepared to lend to SMEs and micro borrowers can establish their own guarantees. Therefore, they suggest that SME and micro lending requires an “appropriate” technology not guarantee.

Michael Gudger (1998: p. 1-8).

Note: for more details see Michael Gudger (1998), who provides an assessment of the state of knowledge and new avenues of research on credit guarantees; see also Alvaro Ruiz Navajas (2001) who discusses theoretical and conceptual issues.

4.86 Can growth and diversification be sustained without undervaluation? Avoiding protracted spells of real exchange rate overvaluation in an era of fully absorbed/spent scaled-up aid is already a tall order. Still, it might not be enough to deliver the growth and export diversification agenda of GPRS II. According to recent literature, experiences of sustained growth driven by dynamic and diversifying export sectors have almost always been associated with extended spells of large real exchange rate undervaluation. This is consistent with the strong empirical association found in this literature (including this paper). It has been argued that this empirical finding is, in fact, a reflection of a deeper causal effect that promises to open a new set of ideas for thinking about growth in which the RER takes a center stage (Rodrik, 2007)¹²⁰. According to Rodrik, countries that have managed to engineer an RER undervaluation appear to have resolved deep institutional constraints.¹²¹ First, “weak institutions” create a wedge between private and social returns, which is different from simply having a low endowment of an input. Ample evidence seems to suggest that because tradables are more “complex” and entail more transaction-intensive activities, this problem is more severe in tradable than non-tradable economic activities, which leads to static misallocation of resources in favor of the latter and greater dynamic distortions in the former. To the extent that tradables are more dynamic sectors, as would be expected in many low-income small economies, an increase in their relative price can improve static efficiency and enhance growth in a second-best fashion. Therefore, RER undervaluation can be the most feasible and effective approach for

¹²⁰ This part of the analysis draws heavily from Rodrik (2007) and Eichengreen (2007). For previous, less formal argument of the role of RER undervaluation in promoting growth and export diversification, see Williamson, 1997 and Elbadawi and Helleiner 2004.

¹²¹ Country examples from Rodrik (2007) are China, Republic of Korea, Taiwan, Uganda, Tanzania.

alleviating such institutional weakness. Another theoretical justification for engineering an RER undervaluation strategy is based on the view that tradables (particularly new and non-traditional tradables) are subject to a variety of market imperfections, such as information externalities (learning and cost-discovery externalities) and coordination externalities. These imperfections keep output and investment in tradable sectors at suboptimal levels. Again, by raising profitability of tradable sectors, an RER undervaluation can be an effective strategy in a second-best world. In particular, it can be an effective substitute to traditional “industrial policy” or the type of short-term “second best” measures discussed above.

4.87 A central issue for the proposed RER-led strategy is whether the RER itself can be regarded as a policy instrument. This question is important because, after all, the RER is endogenous and undervaluation requires higher savings relative to investment or lower expenditure relative to income. As an economy-wide relative price, clearly it is endogenous to a variety of factors and, therefore, is not under the direct control of economic policy making authorities. However, it can be influenced by policy instruments subject to their direct control (Eichengreen, 2007). In the same vein Rodrik (2007) argues that while the RER is endogenous, it can nevertheless, be managed. He proposes several policy levers that policy makers might deploy for managing the real exchange rate:

Savings Policy:

- Compulsory saving schemes.
- Pension reforms.

Capital Account Management:

- Taxation of capital account inflows.
- Liberalization of capital outflows.

(Sterilized) Intervention:

- Increasing foreign exchange reserves.

Monetary Policy:

- Appropriate choice of exchange rate regime.
- Finding a role for RER in an “Inflation Targeting” framework.

4.88 Chile and Indonesia provide two relevant experiences for Ghana regarding the use of the above policy levers to influence the long-term behavior of the RER. In their recent histories, the two countries have managed to engineer real exchange rate undervaluation spells that were associated with sustained growth, *despite being recipients of high external resource flows*. Chile experienced an RER undervaluation of about 6% annually for ten years (1986-95) and grew by nearly 6% during the same period. While Chile has not been an aid dependent country, it has attracted relatively high private capital flows during this period, at about 3.5% of GDP. Moreover, it has experienced cycles of copper booms, including during this period. Indonesia had experienced even more dramatic RER undervaluation for about ten years (1967-75), at 27% per annum, and grew by nearly 5% in the same period. During this period Indonesia was an aid-dependent economy, with ODA averaging a modest 4% of GDP.¹²² However, Indonesia’s aid dependence is better appreciated in terms of aid ratios relative to public revenues, which averaged more than 32% during the period. The ability of the two countries to engineer the undervaluation spells, despite the high external resource inflows, could be explained by the ensemble of policy levers cited below (Boxes 4.3 and 4.4).

¹²² In the period prior to 1967 when the economy was shrinking and Indonesia was experiencing hyper inflation and depreciation of the Rupiah, aid to GDP exceeded 25%.

4.89 **The early experience of Indonesia suggests two important lessons for Ghana:**

- **First**, under commodity booms or large capital inflows, pegged exchange rate regimes are inappropriate for maintaining real exchange rate competitiveness or anchoring inflation in the long-run, especially when the economy is characterized by inflation inertia. This is the lesson that Argentina and many other Latin American countries learned the hard way several years later (Edwards and Savastano, 1999).
- **Second**, if appropriately designed, small scale banking and non-bank financial entities that target the marginal savers, especially poor rural households, can be powerful instruments for mobilizing investment funds and promote grass-root national savings on a sustained basis as well as underpin exchange rate competitiveness. On the other hand, though Chile has not been an aid-dependent economy, its macroeconomic management of private capital flows and the copper sector proceeds provides very important and relevant lessons for Ghana. Moreover, with the envisaged accelerated demographic transition in many African countries, the Chilean pension fund reform provides yet another important policy initiative for Ghana. Due to the effectiveness of these policy levers Chile has come to be considered one of the most successful emerging economies since the second half of the 1980s.

Box 4.3: Undervaluation Policies in Chile (1986-95)

Savings Policy:

Chile achieved sustained savings transition in 1985 from single digits in the early 1980s to more than 22% for 1986-95. The spurt in savings was triggered by a dramatic turn around in real income growth: from -1.4% for the five years prior to 1984 to 7.8% for the five years following 1984. However, structural economic reforms—including fiscal and financial sector reforms, social security reforms, and the stabilization policy have been critical in sustaining the high savings rates. During the decade of 1986-95 Chile had affected wide-ranging reforms in these areas:

- **Private Sector Debt Burden.** The government dealt with over-indebtedness of the private sector by writing off some debt and lowering income and corporate taxes as part of a major tax reform in 1984. These measures have promoted private corporate savings through retained earnings by productive firms.
- **Social Security Reforms.** Chile's creative approach to privatization of the social security system has attracted worldwide attention. The new system is based on a defined mandatory contribution plan of 10% of wages. Workers have individual retirement accounts that are managed by private pension funds and are subject to government regulation and oversight. This reform has been credited with helping develop Chile's capital market, with reducing government contingent liabilities of the old pay-as you go system, and with boosting Chile's traditionally anemic savings rate.
- **The Copper Stabilization Fund.** The law establishing the fund forces the public sector to save part of its income from copper sales when the market price of copper exceeds some reference price. With the dramatic rise in copper prices in the late 1980s, this law has a positive effect on public savings.
- **Stability and Confidence.** The stable macroeconomic environment (for example, low inflation and strong fiscal balance: 4.5% primary fiscal balance (including copper proceeds), coupled with smooth democratic transition) have greatly increased confidence in the government's economic management and, hence, also have helped sustain the high savings rates.
(Rodrik, 2000; Edwards, 1996)

Capital-account Management:

Capital account liberalization in Chile was a gradualist approach that followed a distinct sequencing: starting with an initial focus on the completion of the restructuring of the banking system, trade reform, liberalization of the exchange system, and selective liberalization of capital inflows. Subsequently the emphasis shifted to developing domestic money, bond and equity markets. The capital account liberalization was also combined with the evolution of macroeconomic policies and instruments: instruments for indirect monetary controls were strengthened, the exchange rate arrangement was modified to allow for greater flexibility for the rate within a crawling band exchange

arrangement. While liberalizing long-term capital outflows and inflows, Chile introduced selective controls on capital inflows (R. Barry Johnston et. al., 1997). The control regime (1991-99) was based on a system of unremunerated reserve requirement (UUR), designed to discourage short-term capital inflows. In particular, these controls were aimed at serving the following purposes:

- Reduce capital inflows in general and influence their composition (toward longer-term components).
- Reduce RER appreciation and shore up competitiveness of the economy.
- Set a wedge between foreign and domestic interest rates and, hence, expand the scope for monetary independence.
- Protect against contagion and global instability.

URR proved to be useful in the short-run, especially with regard to influencing the composition of the capital flows toward long term and FDI flows. However, it has been argued that in the longer run the URR became less effective, as the market learned how to evade the controls; and it raised the cost of capital, especially for medium and small local firms. Though it was eventually phased out in 1999, the Chilean URR has shown that capital controls can be a useful short-run complement to macroeconomic policies designed to limit counterproductive movements in the exchange rate. However, even leading proponents of the Chilean style of capital controls cautioned that, “their main danger is that they tempt governments into excessive reliance on them: Capital controls can only sensibly be used as an adjunct to, rather than a substitute for, “sound policies” (Williamson, 2000: p. 44).

Sterilized Intervention

Chilean international reserves had risen by a rate of 3% of GDP during the period, which suggests that reserve accumulation was an important instrument for sterilized intervention in response to rising capital flows. Moreover, as part of Chile’s copper stabilization program a portion of the saved revenues from copper sales were also invested abroad in a variety of instruments.

Exchange Rate Regimes

Chile experimented with an ill-fated pegged exchange rate regime (1979-82) that led to a major overvaluation crisis and the subsequent abandonment of the exchange rate as a nominal anchor for inflation. Instead, the country pursued a menu of crawling band and managed float for almost two decades, with the prime objective of maintaining competitiveness of the economy. Not only has this exchange rate arrangement been credited for Chile’s ability to maintain competitive real exchange rate despite surging capital inflows, but leading international economists, most notably John Williamson and Sebastian Edwards, have been advocating the Chilean approach to other developing countries. Though Chile eventually lifted its indirect capital controls and subsequently adopted full flexibility under inflation targeting in 2001, these changes have come at a time when the country achieved very strong policy fundamentals. Moreover, it has been argued that even in the context of inflation targeting, there should be room for some measure of exchange rate targeting as well. In this context authorities intervening in the foreign exchange market should not necessarily be seen as practicing “fear of floating”, rather they could well be pursuing a policy that minimizes a well defined loss function, where exchange rate development would play a direct role in the formulation of monetary policy under inflation targeting. In Edwards’ (2002) view, the targeting of changes in the real exchange rate amounts to “optimum floatation” and not “fear of floating”.

Box 4.4: Undervaluation Policies in Indonesia (1967-75)

Savings Policy:

National savings has averaged close to 30% of GDP since the early 1980s. However, the first savings transition took place in the later 1960s, when gross savings averaged about 12% in 1967-75, rising from a single digit ratio of 7.5% in 1969 to more than 15% in 1973. In the first half of the 1960s, the Indonesian economy was stagnating at negative per capita growth, which hit a low of -4.0% in 1963 while reeling from hyper inflation and massive macroeconomic instability. A drastic economic reform program in 1966 turned things around, leading to a double digit growth rate in 1968 and more than 5% average per capita growth rates ever since until the brief Asian crisis in 1997. The spurt in savings was likely triggered by the dramatic turn around in growth but, like Chile and many other high saving countries, they must have also been influenced by structural policies and institutional reforms directly aimed at promoting national savings. In this context, and as part of the first five year development plan, the government had sought to tap non-inflationary domestic sources of finance by fostering people's habit of saving:

- In 1968 the government introduced a time deposit scheme through the state banks: deposits were guaranteed by the government, tax exempt and not subject to any investigation as to the origin of the money; 18 and 24 month deposits with attractive interest rates were introduced in 1974.
- To encourage the savings habits of the larger section of the population with limited saving capacity, in 1971 the government launched the National Development Savings Scheme and the Insurance Savings Scheme, popularly known as Tabanas and Taska. These schemes accepted deposits from as little as the equivalent of US\$0.1. Approximately 4 million depositors emerged by 1975.
- Moreover, the strong macro stabilization during this period—which reduced the fiscal deficit from 63% in the early 1960s to just 3%, and brought inflation from almost 1500% in 1966 to a single digit by 1970—also helped reinforce the rising savings trend. And, despite the resurgence of inflation thereafter, the authorities' quick and decisive reaction to the rising inflation appeared to have managed to eventually regain the hard-won reputation for credible economic management.

Capital-account Management:

Because most of capital account transactions have, until the late 1980s, been dominated by official capital inflows in the form of aid, the capital account had generally been driven by developments in the current account and remained fairly open. Private capital flows averaged only 1% between 1970 and 1975, though the first four years (1970-73) witnessed much larger flows, at an average annual rate of 2.6%. However, in 1974 and 1975 the flows turned negative because of declining confidence on the part of the private sector on the performance of the Indonesian economy and as a reflection of Pertamina's debt repayment (the government had issued a loan for Pertamina's rescue operation at over 3% of GDP with official capital flows). This was the period of financial crisis for Pertamina, the oil and gas government-owned company. In 1974, the government implemented an anti-inflation package that focused on interest rates increases to limit bank credit and attract savings (sectors of high priority were spared from this), price controls, lowering and abolishing domestic sales tax on some commodities to reduce costs of production, regulating foreign capital (domestic banks had to save 30% of loans or other funds from abroad in Bank Indonesia without interest). The latter measure suggests that the authorities sought to reduce the pressure on the real exchange rate in the post 1973 oil boom by imposing indirect controls on inflows. However, it was only until the turn of the 1990s when private capital flows rose so significantly to the extent that private sector debt became a matter of grave concern, which eventually led to the 1997 crisis that impacted Indonesia and other Asian tigers.

Sterilized Intervention:

Indonesia's international reserves had risen modestly by a rate of 1.5% of GDP during the period, which suggests that reserve accumulation was at least a marginal instrument for sterilized intervention in response to rising capital flows, including those associated with commodity booms, such as the timber boom in 1969-72 and, especially, the oil boom in the post 1973 period. However, the reserves dropped substantially in 1975 because of the need to finance the rescue operation of Pertamina.

Exchange Rate Regimes:

As part of major liberalizing reforms initiated by the new government during 1966-69, the maze of trade regulations and the multiple exchange rate system were dismantled and by 1970 the exchange rate was fully unified. Combined with tight fiscal policy and sharp reduction in inflation, the fixed exchange rate regime allowed the authorities to achieve substantial real exchange rate undervaluation. Under a more flexible exchange rate regime the RER (and possibly the equilibrium RER as well) would have appreciated, given the massive flow of funds from oil and aid. Exchange rate stability and undervaluation was further strengthened with successive maxi devaluations, the last of which was in August 1971, followed by pegging of the Rupiah to the US dollar for seven years. However, the post 1973 oil boom and the subsequent surge in monetary growth led to the reversal of the undervaluation spell as inflation cropped up and went out of control. This experience makes clear that there are limits to pegged regimes under large capital flows and inflation inertia. The post-oil boom exchange rate regime had eventually evolved into a more flexible managed float regime in 1986, following a relatively long “transitional” regime with a series of maxi devaluations.

Sources: Hal Hill (1996); Arief (1976)

4.90 It is pertinent to note that some of these policy levers (such as increasing foreign reserves) have been deployed by Ghanaian authorities during the recent aid surge and appear to have been successful in generating extended spells of RER undervaluation. However, with the switch to a full or substantial (absorb, spend) regime of macroeconomic management of aid, some of these options may be limited. However, they may still be needed as temporary measures. Moreover, as the experiences of Chile and Indonesia suggest, there are clearly many more potential policy levers that could be deployed, though the implementation of the full range of these policies in Ghana might pose a number of *practical* challenges, such as undertaking sterilized interventions given the available instruments it has.

4.91 The upshot of this analysis is that scaled-up aid should not necessarily be incompatible with a long-term strategy anchored on RER undervaluation. This is because though maintaining competitive, and especially undervalued RER, would require rather conservative fiscal policy overall, which might appear to be inconsistent with a scaled-up aid (absorb, spend) regime; how conservative such policy would have to be will depend on how much pressure is placed on the market for non-traded goods by other forms of spending. The following quote from Eichengreen (2007: p. 6) on China and East Asia illustrates this point: “If household and corporate savings are high, as in China, the government can undertake additional spending without placing undue pressure on the prices of nontraded goods. If investment spending is relatively weak, as it has been in East Asia since the crisis in 1997-8, then a given level of public spending will be associated with a more competitive real exchange rate.”

4.92 Therefore, to make room for the public sector to spend aid without triggering RER overvaluation, the authorities could deploy the ensemble of the policy levers listed above, for example, increase private and corporate savings, stem the flow of speculative short-term capital flows, or improve the efficiency of the service delivery of nontraded goods and services. This would require, however, that the macroeconomic management of aid in the context of the GPRS II should be flexible enough to accommodate the required policy package for engineering such undervaluation, or for maintaining the competitiveness of the RER as a minimalist strategy. Naturally, this suggests that aid delivery mechanisms and any potential direct or indirect aid conditionality should not be allowed to trump this central requirement.

REFERENCES

- Aghion, P., P. Bacchetta, R. Ranciere, and K. Rogoff (2006). "Exchange Rate Volatility and Productivity Growth: The Role of Financial Development," Harvard University, *manuscript*.
- Aguirre, A. and C. Calderón. (2005). "Real Exchange Rate Misalignments and Economic Performance," Central Bank of Chile Working Paper.
- Arellano, M., and O. Bover. (1995). "Another Look at the Instrumental-Variable Estimation of Error-Components Models." *Journal of Econometrics* 68(1): 29-52.
- Arief, S. (1976). *The Indonesian Economy and Finance: Selected Readings*. Sritua Arief Associates.
- Baffes, J., I. A. Elbadawi, and S. A. O'Connell. (1999). "Single-Equation Estimation of the Equilibrium Real Exchange Rate." in *Exchange Rates Misalignment: Concepts and Measurement for Developing Countries*. L. Hinkle and P. Montiel (eds). The World Bank, Policy Research Department, Washington, DC.
- Blundell, R. and S. Bond. (1997). "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models". University College London Discussion Papers in Economics: 97/07, July.
- Burnside, C. and D. Dollar. (2000). "Aid, Policies, and Growth." *American Economic Review*, Vol. 90(4): 847.
- Chandra, V. J. Boccardo, I. Osório. (2007). "Export Diversification and Competitiveness in Developing Countries." The World Bank Working Paper.
- Chin, M. (1997). "The usual suspects? Productivity and Demand Shocks and Asia-Pacific Real Exchange Rates." Pacific Basin Working Paper Series. Federal Reserve Bank of San Francisco.
- Clark, P. and R. McDonald. (1998). "Exchange Rates and Economic Fundamentals—A Methodological Comparison of BEERs and FEERs." *International Monetary Fund, IMF Working Papers*: 98/67.
- Clements, M., S. Radelet and R. Bhavnani. (2004). "Counting Chickens when they Hatch: The Short-Term Effect of Aid on Growth," Center for Global Development Working Paper No. 44.
- Collier, P and A. Hoeffler. (2002). "Aid, Policy, and Growth in Post-conflict Societies." Policy Research Paper Series, The World Bank: 2902.
- Cottani, J., D. Cavallo and S. Kahn. (1990). "Real Exchange Rate Behavior and Economic Performance in LDCs." *Economic Development and Cultural Change*. 39(1): 61-76.
- Drine, I. and C. Rault. (2004). "On the Long-run Determinants of Real Exchange Rates for Developing Countries: Evidence from Africa, Latin America and Asia", mimeo, Sorbonne University.
- Dufrenot, G. and E. Yehoue. (2005). "Real Exchange Rate Misalignment: A Panel Co-Integration and Common Factor Analysis," IMF Working Paper WP/05/164.

- Easterly, W. and R. Levine. (1997). "Africa's growth tragedy: policies and ethnic divisions," *Quarterly Journal of Economics*. 112: 1203-1250.
- Edwards, S. (1989), Real Exchange Rate, Devaluation and Adjustment: Exchange Rate Policy in Developing Countries. Cambridge, MA: MIT Press.
- Edwards, S. and M. A. Savastano. (1999), "Exchange Rates in Emerging Economies: What Do We Know? What Do We Need to Know?" NBER Working Paper W7228.
- Edwards, S. (2002), "The Great Exchange Rate Debate After Argentina," *The North American Journal of Economics and Finance*. 13: 237-252.
- Eichengreen, B. (2007). "The Real Exchange Rate and Economic Growth." Paper prepared for the World Bank's Commission on Growth.
- Elbadawi, I. (1994): "Estimating Long-Run Equilibrium Real Exchange Rates", in J. Williamson (ed.), *Estimating Equilibrium Exchange Rates*, Washington, D.C.: Institute for International Economics, 1994.
- Elbadawi, I. and R. Soto. (1997a). "Capital Flows and Long-Term Equilibrium Real Exchange Rates in Chile," *Revista de Analisis Economico*. Vol. 12(1): 35-62.
- Elbadawi, I. and R. Soto. (1997b). "Real Exchange Rates and Macroeconomic Adjustment in Sub-Saharan Africa and Other Developing Countries. *Journal of African Economies*, vol. 6(3): 74-120.
- Elbadawi, I. (1999). "External Aid: Help or Hindrance to Export Orientation in Africa?" *Journal of African Economies*, Vol. 8(4): 578-616.
- Elbadawi, I. (2002). "Real Exchange Rate Policy and Non-traditional Exports in Developing Countries," in G.K. Helleiner (ed.), *Non-Traditional Export Promotion in Africa: Experiences and Issues*, Palgrave, New York.
- Elbadawi, I. and G. Helleiner. (2004). "African Development in the Context of the New World Trade and Financial Regimes: The Role of the WTO and its Relationship to the World Bank and IMF," (forthcoming) in A. Oyejide and W. Lyakurwa (editors).
- Elbadawi, I. and R. Soto. (2005). "Theory and Empirics of Real Exchange Rates in Sub-Saharan Africa and Other Developing Countries." The World Bank Working Paper.
- Elbadawi, Ibrahim, L. Kaltani and R. Soto. (2006). "Real Exchange Rate Misalignment in SSA: How Serious, How Dangerous," Unpublished World Bank Memo. (forthcoming).
- Estache, A and M. Vagliasindi. (2007). "Infrastructure for Accelerated Growth in Ghana: Investments, Policies, and Institutions." Document prepared for the Ghana Country Economic Memorandum, 2007. The World Bank, Washington DC. mimeo.
- Gelb, A. H. (2000). "Diversifying Exports, Reorienting Trade Policy, and Pursuing Regional Integration," in *Can Africa Claim the 21st Century?* The World Bank, Washington DC.

- Ghana Joint Assistance Strategy: G-JAS. (2007) "Commitments by Partners to Work toward GPRS II Goals and Harmonization Principles." mimeo.
- Ghura, D. and T. J. Grennes. (1993). "The Real Exchange Rate and Macroeconomic Performances in Sub-Saharan Africa," *Journal of Development Economics*. Vol. 42.
- Gudger, M. (1998), "Credit Guarantees: An Assessment of the State of Knowledge and New Avenues for Research," FAO Agricultural Service Bulletin # 129. FAO, Viale delle Terme di Caracalla, 00100 Rome.
- Hausmann, R. and F. Rigobon. (2003). "An Alternative Interpretation of the 'Resource Curse': Theory and Policy Implications." NBER Working Paper No. 9424.
- Hausmann, R., J. Hwang, and D. Rodrik. (2006). "What You Export Matters." CEPR Discussion Paper No. 5444.
- Hill, H. (1996). The Indonesian Economy Since 1966. Cambridge University Press.
- Imbs, J. and R. Wacziarg. (2003). "Stages of Diversification." *American Economic Review*.
- IMF. (2005). "The Macroeconomics of Managing Increased Aid Inflows: Experiences of Low-Income Countries and Policy Implications" Available at <http://www.imf.org/external/np/pp/eng/2005/080805a.pdf>.
- Johnston, R.B., S.M. Darbar and C. Echeverria. (1997), "Sequencing Capital Account Liberalization: Lessons from the Experiences in Chile, Indonesia, Korea, and Thailand," IMF Working Paper WP/97/157.
- Kaminsky, G., and C.M. Reinhart. (1999). "The Twin Crises: The Causes of Banking and Balance of Payments Problems. *American Economic Review*. 89 (3): 473-500.
- Lederman and Maloney. (2006). *Natural Resources: Neither Curse nor Destiny*. The World Bank and Stanford University Press.
- Maeso-Fernandez, F. C. Osbat, and B. Schnatz. (2002). "Determinants of the Euro Real Effective Exchange Rate: A BEER/FEER Approach." *Australian Economic Papers*, Vol. 41(4): 437-461.
- Mengistae, T., and C. Pattillo. (2004). "Export Orientation and Productivity in Sub-Saharan Africa," International Monetary Fund. *IMF Staff Papers*, 51 (2): 327.
- Merrill Lynch. (1998). "A Global Currency and Interest Rate Outlook."
- Nabli, K. M., and M. Veganzones-Varoudakis. (2002). "Exchange Rate Regime and Competitiveness of Manufactured Exports: The Case of MENA Countries," The World Bank, Washington DC, Centre National de la Recherche Scientifique, Centre d'Etudes et de Recherches sur le Developpement International, France. (May).
- Navajas, A. R. (2001), "Credit Guarantee Schemes: Conceptual Frame," unpublished mimeo, Financial System Development Project, GTZ/FONDESIF.

- Osei, R., O. Morrissey, and T. Lloyd. (2003). "Modeling the Fiscal Effects of Aid: An Impulse Response Analysis for Ghana." Center for Research in Economic Development and International Trade, University of Nottingham.
- Ostry, J. S. Johnson, and A. Subramanian. (2007). "The Prospects for Sustained Growth in Africa: Benchmarking the Constraints." IMF Working Paper 07/52.
- Razin, O., and S. M. Collins. (1997). "Real Exchange Rate Misalignments and Growth," *National Bureau of Economic Research Working Paper #6174*. (September): Cambridge, MA.
- Rodrik, D. (1998), "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses," Harvard University, John F. Kennedy School of Government, mimeo.
- Rodrik, D. (2007). "Why Does the Real Exchange Rate Matter to Growth." Mimeo.
- Sachs, J.D. and A. M. Warner. (1997). "Sources of Slow Growth in African Economies." *Journal of African Economies*. Vol. 6(3): 335-376.
- Sala-i-Martin, X. (1997). "Economic Growth: A Review Essay." *Journal of Monetary Economics*. Vol. 40(3): 597-617.
- Sekkat, K. and A. Varoudakis. (1998). "Exchange Rate Misalignment and Manufactured Exports in Sub-Saharan Africa." OECD Development Center, Technical Paper No. 134.
- Wijnbergen, van S. (1984) "The Dutch Disease: A Disease after All?" *Economic Journal*, 94: 41-55.
- Williamson, J. (1994). *Estimating Equilibrium Exchange Rates*, Washington, D.C.: Institute for International Economics, editor.
- Williamson, J. (1997). "Exchange Rate Policy and Development Strategy" in Elbadawi and Soto (eds.) *Foreign Exchange Markets and Exchange Rate Policies in Sub-Saharan Africa*, *Journal of African Economies*, Supplement to Vol. 6(3): 17-36.
- Williamson, John. (2000), *Exchange Rate Regimes for Emerging Markets: Reviving the Intermediate Option*. Institute for International Economics, Washington DC.
- The World Bank. (1998). *Assessing Aid*. New York: Oxford University Press.

Table 4.1: Aggregate Net Aid Spells for Ghana and Comparator Countries

	<i>Spells</i>	<i>Mean</i>	<i>Min</i>	<i>Max</i>
<u>Ethiopia</u>	1981-94	10	4	19
	1995-00	11	9	15
	2001-04	21	17	24
<u>Ghana</u>	1970-83	3	1	4
	1984-91	9	4	14
	1992-99	9	7	10
	2000-07*	13	11	15
<u>Mozambique</u>	1980-86	6	4	8
	1987-92	44	28	74
	1993-04	34	20	58
<u>Uganda</u>	1970-79	2	1	3
	1980-81	10	9	10
	1982-87	5	4	6
	1988-92	15	6	25
	1993-99	14	10	19
	2000-04	15	12	17
<u>Developing Countries</u>				
	1970-85	3	0	54
	1986-99	4	0	95
	2000-04	2	-1	96
<u>SSA</u>	1970-85	7	0	54
	1986-99	11	0	95
	2000-04	9	0	96

*Data for 2006-07 are based on IMF estimates

Table 4.2: Analysis of Two Aid Surges in Ghana

	Pre-Aid Surge		Incremental Aid	
	Avg. 1996-99	Avg. Aid Surge Avg. 2000-03	Difference	Absorbed/Spent?
Change in Net Aid	8.5%	11.8%	3.3%	
Change in Non-aid Current Account Balance	-18.4%	-15.3%	3.0%	0% Absorbed
Change in Non-aid Fiscal Balance (excluding interest payments)	-11.5%	-10.8%	0.7%	0% Spent
	2000-03	2004-07		
Change in Net Aid	11.8%	13.9%	2.1%	
Change in Non-aid Current Account Balance	-15.3%	-18.0%	-2.7%	86% Absorbed
Change in Non-aid Fiscal Balance (excluding interest payments)	-10.8%	-14.0%	-3.1%	100% Spent

Source: Authors' calculations using World Bank/IMF data

Table 4.3: The Long-Run and Short-Run Determinants of the Real Exchange Rate

Estimator: Pooled mean group, Mean group, and Dynamic fixed effects (all controlling for country and time effects)

Dynamic Specification: ARDL(1,1,1,0,0,1,0,1)

Sample: annual data 1980-2004

Variables	Pooled Mean Group		Mean Group		Hausman Tests		Dynamic Fixed Effect	
	Coef.	St. Er.	Coef.	St. Er.	h-test	p-val	Coef.	St. Er.
Long-Run Coefficient								
Terms of Trade, logs	0.208	0.031	0.688	1.038	0.740	0.390	0.078	0.055
Productivity, logs	0.518	0.017	0.315	0.113	3.300	0.070	0.560	0.040
Trade Openness	-0.558	0.031	-0.337	0.193	1.340	0.250	-0.454	0.047
Government Consumption/GDP, logs	2.625	0.258	-23.496	23.438	1.240	0.270	0.227	0.399
Net Foreign Income/GDP	0.004	0.002	0.071	0.072	0.870	0.350	0.013	0.003
Foreign Aid Net of Int'l Reserves/GDP	0.002	0.001	-0.007	0.005	3.410	0.060	0.002	0.002
Taxes on Non-traded Goods, logs	2.031	0.403	8.550	7.317	0.800	0.370	1.102	0.730
Error Correction Coefficients								
Phi	-0.20	0.02	-0.70	0.04			-0.25	0.01
Short-Run Coefficients								
D(Terms of Trade, logs)	0.082	0.037	-0.028	0.035			0.009	0.022
D(Productivity, logs)	0.429	0.029	0.195	0.043			0.392	0.020
D(Net Foreign Income/GDP)	0.004	0.002	0.002	0.003			0.001	0.001
D(Taxes on Non-traded Goods, logs)	0.447	0.470	-0.486	0.489			1.093	0.317
Intercept	0.021	0.029	0.014	0.099				
	83		83				83	
No. Observations	1875		1875				1875	

Table 4.4: Net Effects of PMG Variables

	<i>Coefficient</i>	<i>Standard Deviation</i>	<i>Coefficient of Variation</i>	<i>Implied Net Effect</i>
Ghana				
<i>Terms of Trade, logs</i>	0.208	0.21	0.04	4.3%
<i>Productivity</i>	0.518	0.46	-0.12	23.8%
<i>Filtered Openness</i>	-0.558	0.79	-5.36	-44.0%
<i>Government Consumption, ln(1+x)</i>	2.625	0.02	0.21	5.6%
<i>Net Foreign Income (%GDP)</i>	0.004	0.72	-0.41	0.3%
<i>Aid net of Int'l Reserves (%GDP)</i>	0.002	4.23	0.52	0.8%
<i>Taxes on Non-traded Goods, ln(1+x)</i>	2.031	0.02	0.48	5.0%
SSA				
<i>Terms of Trade, logs</i>	0.208	0.23	0.05	4.8%
<i>Productivity</i>	0.518	0.41	-0.11	21.2%
<i>Filtered Openness</i>	-0.558	0.23	-18.76	-12.6%
<i>Government Consumption, ln(1+x)</i>	2.625	0.03	0.22	7.9%
<i>Net Foreign Income (%GDP)</i>	0.004	3.14	-2.36	1.2%
<i>Aid net of Int'l Reserves (%GDP)</i>	0.002	6.70	0.57	1.3%
<i>Taxes on Non-traded Goods, ln(1+x)</i>	2.031	0.01	0.32	2.8%

*SSA values are based on the average of the standard deviations for the regression sample.

Table 4.5: Decomposition of RER Misalignment for Ghana

Spells	Fundamentals									
	RERMIS, %	Short-term Effects and Error Correction, %		Total, %	Policy Variables*, %	Structural and Exogenous Variables**, %	of which: Aid Net of Int. Reserves, %	Nominal Exchange Rate Depreciation, %	Inflation, %	
Ghana	Mean	66	62	4	4	0	0	0	48	60
	Max.	138	106	32	39	4	1	1		
	Min.	8	10	-24	-23	-7	-1	-1		
1980-85	Mean	-33	-32	-1	0	-1	0	0	31	31
	Max.	-10	-11	16	14	11	1	1		
	Min.	-51	-44	-23	-23	-9	-1	-1		
1986-96	Mean	13	8	5	-4	9	0	0	16	18
	Max.	21	16	10	-2	12	0	0		
	Min.	2	2	1	-5	5	-1	-1		
1997-99	Mean	-15	-6	-8	-3	-6	0	0	20	21
	Max.	-8	12	6	7	-1	1	1		
	Min.	-19	-18	-31	-21	-10	-2	-2		
2000-05	Mean	8	-1	10	2	8	0	0	1	10
	Max.	11	0	13	4	9	1	1		
	Min.	6	-2	6	-1	6	0	0		

* Policy Variables are government consumption/GDP, taxes on non-traded goods, and trade openness.

** Structural Variables are terms of trade, productivity, net foreign income/GDP, and official development assistance net of intl reserves/GDP

RER misalignment series and subsequent decompositions are based on the estimation results of the pooled mean group estimates of table 3. Years 2006-07 are based on data estimates.

Table 4.6: Growth Accelerations and RER Performance since 1980

	Growth Acceleration Year	Income per Capita at Year of Acceleration	RERMIS (7 years prior and 7 years after)	Growth (0 to 7 years after)	Average Undervaluation in Longest Spell	Longest Undervaluation Spell in Years	Period of Longest Undervaluation Spell
Lesotho*	1985	315	-6.9	3.6	-12.8	9	1981-89
Mauritius*	1983	1728	13.0	5.0	na	na	na
Uganda*	1989	169	-0.5	3.6	-23.3	7	1990-96
Malaysia*	1988	2257	-1.7	6.4	-6.5	6	1986-91
Thailand*	1986	997	-3.7	7.7	-6.7	9	1985-93
Korea*	1984	4147	15.8	7.7	-4.2	3	1986-88
Indonesia*	1987	511	11.9	5.6	-7.9	7	1987-93
Chile	1986	2507	0.4	5.6	-6.9	8	1986-93
Argentina*	1990	5593	-15.1	4.0	-45.8	8	1983-90
Domenican Republic*	1992	1648	5.3	4.6	-16.7	5	1985-89
Portugal	1985	6424	6.9	4.5	-2.9	5	1987-91
Ireland*	1985	10847	-2.2	3.8	-8.1	6	1980-85
Median			-0.1	4.8	-7.9	7.0	
Ghana	na				-34.9	11	1986-96
Ethiopia	na				-16.1	7	1993-99
Mozambique	na				-14.7	10	1987-96

* Denotes countries that have already experienced an acceleration in since 1950.

Table 4.7: Economic Growth and the Role of RER Misalignment, Aid, and Financial Development

	[1]	[2]	[3]
Official Development Assistance/GDP (beginning of period)	0.2005 ** 0.0401	0.1612 ** 0.0358	0.1771 ** 0.0398
Official Development Assistance/GDP squared (beginning of period)	-0.2488 ** 0.0919	-0.14767 ** 0.0765	-0.17559 ** 0.0846
RER Misalignment (% difference b/w log REER and its equilibrium)	-0.0189 ** 0.0030	-0.0056 0.0037	-0.0512 ** 0.0246
Financial Development (Liquid liabilities / GDP, in logs)	-0.0007 ** 0.0003	-0.0009 ** 0.0003	0.0008 0.0012
Interactions			
RER*Official Development Assistance		-0.1956 ** 0.0532	-0.1540 ** 0.0604
RER Misalignment*Financial Depth			0.0128 * 0.0070
Standard Control Variables			
Initial GDP per Capita (in logs)	-0.0095 ** 0.0013	-0.0110 ** 0.0013	-0.0111 ** 0.0013
Initial GDP per Capita Cyclical Component	-0.1408 ** 0.0120	-0.1474 ** 0.0127	-0.1436 ** 0.0156
Inflation (in logs)	-0.0053 ** 0.0010	-0.0056 ** 0.0008	-0.0061 ** 0.0009
Government Expenditures/GDP (in logs)	-0.0222 ** 0.0039	-0.0236 ** 0.0038	-0.0260 ** 0.0045
Human Capital Investment (secondary enrollment, in logs)	0.0298 ** 0.0028	0.0297 ** 0.0031	0.0295 ** 0.0035
Rule of Law (from ICRG, 0-6)	0.0155 ** 0.0012	0.0169 ** 0.0014	0.0168 ** 0.0014
Trade Openness (trade volume/GDP, in logs)	0.0166 ** 0.0017	0.0182 ** 0.0018	0.0164 ** 0.0022
Period Shifts:			
Intercept (base period: 1975-79)	-0.1621 **	-0.1610 **	-0.1618 **
1980-84	-0.0146 **	-0.0156 **	-0.0160 **
1985-89	-0.0189 **	-0.0194 **	-0.0202 **
1990-94	-0.0248 **	-0.0257 **	-0.0261 **
1995-99	-0.0333 **	-0.0361 **	-0.0369 **
2000-04	-0.0304 **	-0.0324 **	-0.0335 **
No. Countries / No. Observations	77/357	77/357	77/357
SPECIFICATION TESTS (P-Values)			
(a) Sargan Test	0.68	0.68	0.68
(b) Serial Correlation :	0.01	0.01	0.01
Second-Order	0.39	0.34	0.35

Numbers below coefficients are the corresponding robust standard errors. * (**) denotes statistical significance at the 10 (5) percent level.

Source: Authors' calculations

Table 4.8: Export Diversification and Real Exchange Rate Misalignment

	Dependent Variable:		
	Manufacturing Exports/Merchandise Exports	Log of Herfindahl-Hirschman Index of Export Concentration	Log of EXPY
RER Misalignment (% difference b/w log REER and its equilibrium)	-0.0297 ** 0.0034	0.0013 ** 0.0005	-0.0007 ** 0.0003
Standard Control Variables			
Lagged Dependent Variable	0.9465 ** 0.0041	0.7443 ** 0.0304	0.7636 ** 0.0317
Population (in logs)	0.2227 ** 0.0547	-0.0823 ** 0.0118	0.0227 ** 0.0047
Real GDP per Capita (in logs)	0.6782 ** 0.1343	-0.1354 ** 0.0232	0.0577 ** 0.0121
Land per Worker	-0.5469 0.9044	-0.0219 0.1681	0.0114 0.0516
Landlock	0.1875 0.2103	0.0717 ** 0.0348	-0.0439 ** 0.0133
Dummy for Exporters of Primary Products (not fuel)	-0.4297 * 0.2359	0.0113 0.0371	-0.0626 ** 0.0162
Dummy for Exporters of Fuel	-2.0313 ** 0.2879	0.4502 ** 0.0751	-0.0230 0.0148
Year Shifts	Y	Y	Y
No. Countries / No. Observations	66/551	62/670	55/385
SPECIFICATION TESTS (P-Values)			
(a) Sargan Test	na	0.97	0.98
(b) Serial Correlation : Second-Order	0.00 0.72	0.00 0.27	0.03 0.14

Numbers below coefficients are the corresponding robust standard errors. * (**) denotes statistical significance at the 10 (5) percent level.
Source: Authors' calculations

Table 4.9: RERMIS Performance of Select Countries

	RERMIS, 2003	RERMIS, most recent year available	Past RERMIS Performance, average 1998-02
Ghana	-4.7	10.79	-0.78
South Africa	12	12	-3.48
Sudan	30.55	30.55	16.94
India	-2.76	-2.76	-8.09
Indonesia	-8.56	-14.4	-33.33

Figure 4.1: Ghana's Aggregate Net Aid and Real Effective Exchange Rate

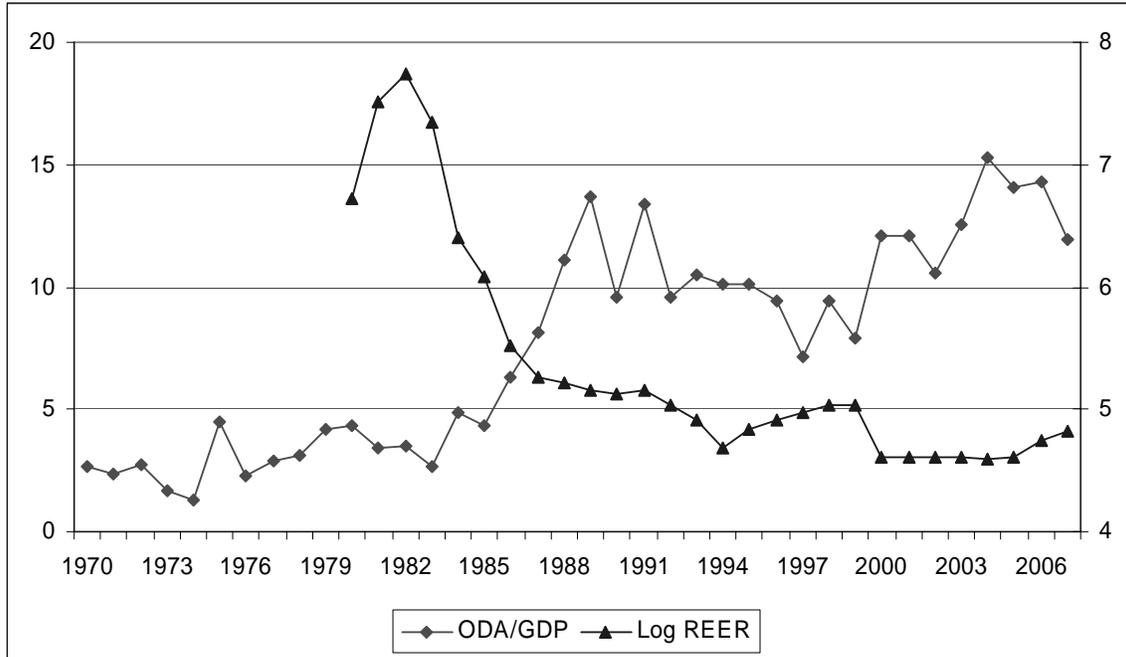
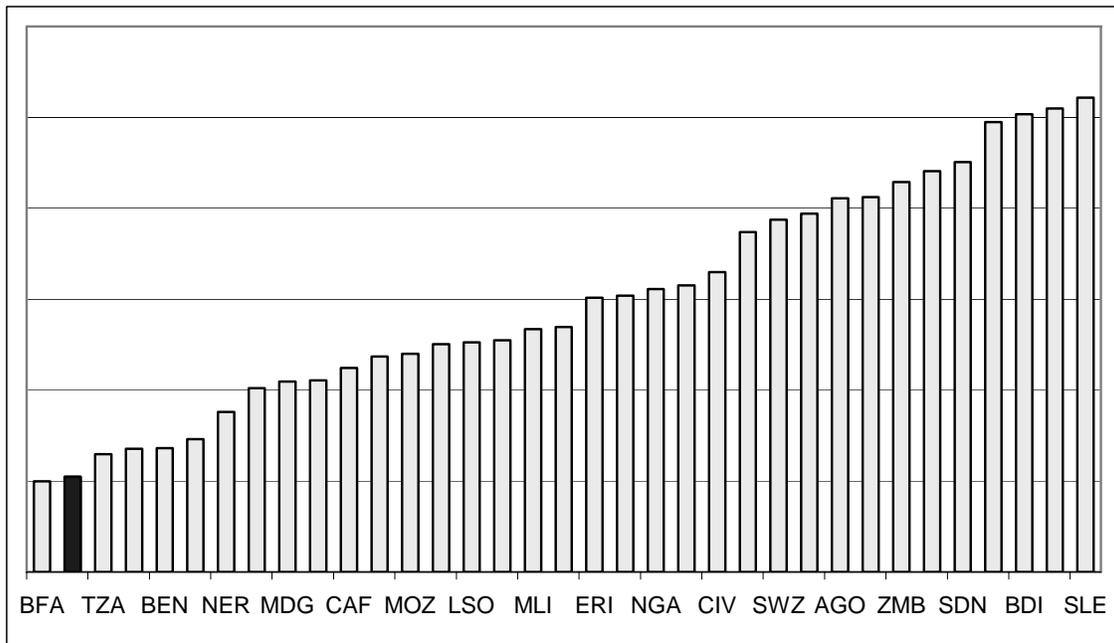
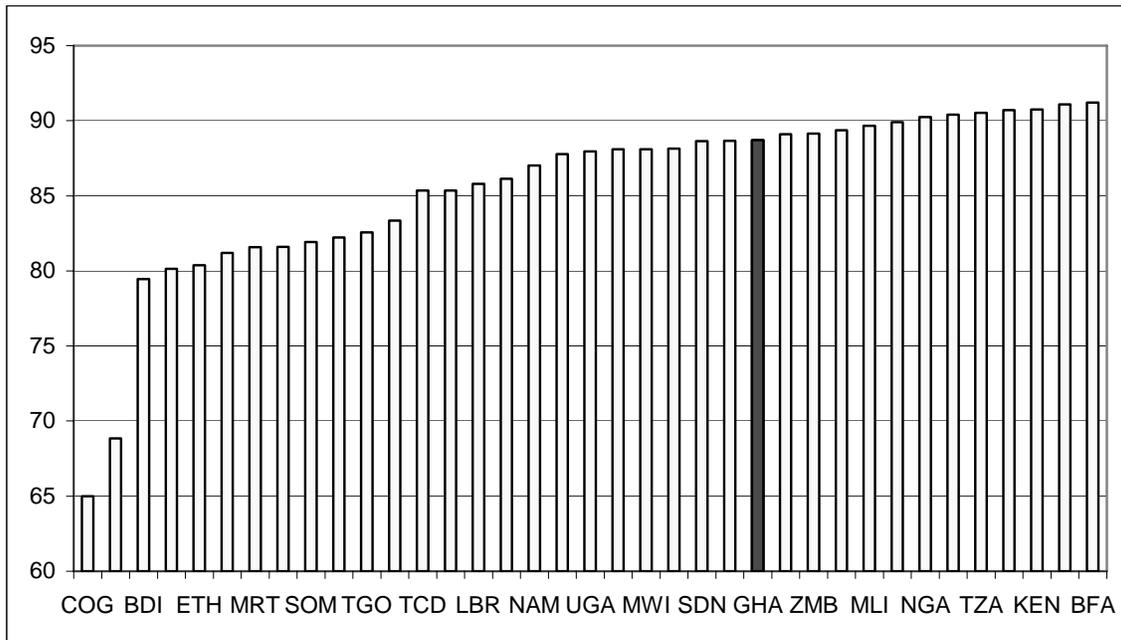


Figure 4.2: Herfindahl-Hirschman Index of Aid Sectoral Concentration in SSA, 2000-03



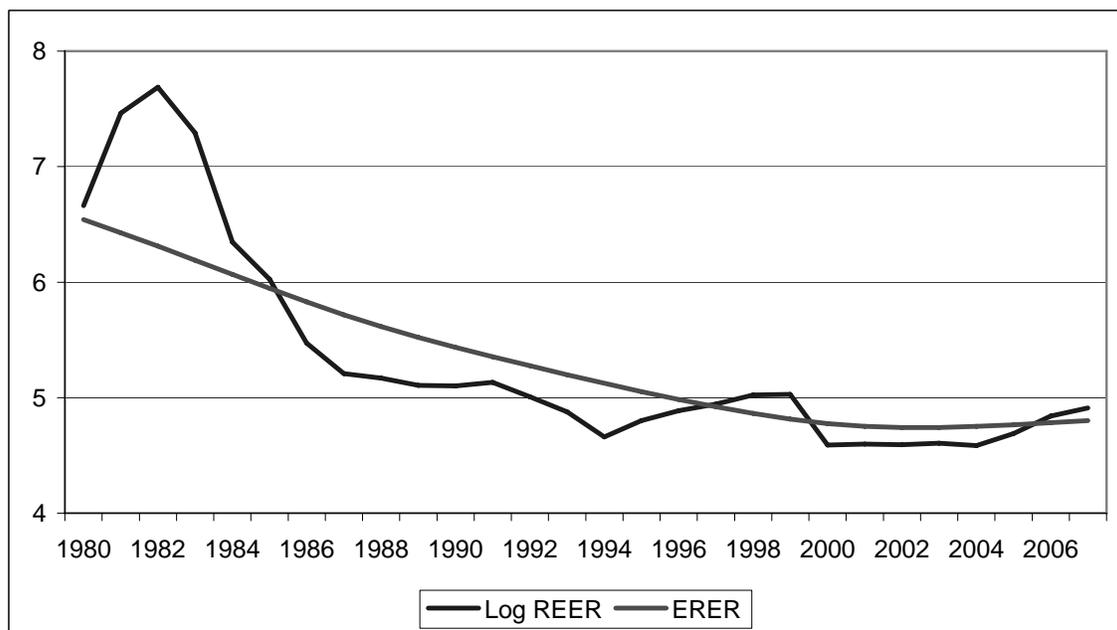
Source: Authors' calculations using donor commitment data from Creditor Reporting System of Development Assistance Committee (DAC)

Figure 4.3: Herfindahl-Hirschman Index of Aid Donor Fragmentation in SSA, 2000-03



Source: Authors' calculations using data Development Assistance Committee (DAC)

Figure 4.4: Ghana's actual and Equilibrium RER, 1980-07*



* Years 2006-07 are based on data estimates

Figure 4.5: RER Misalignment for Ghana and Comparator Countries

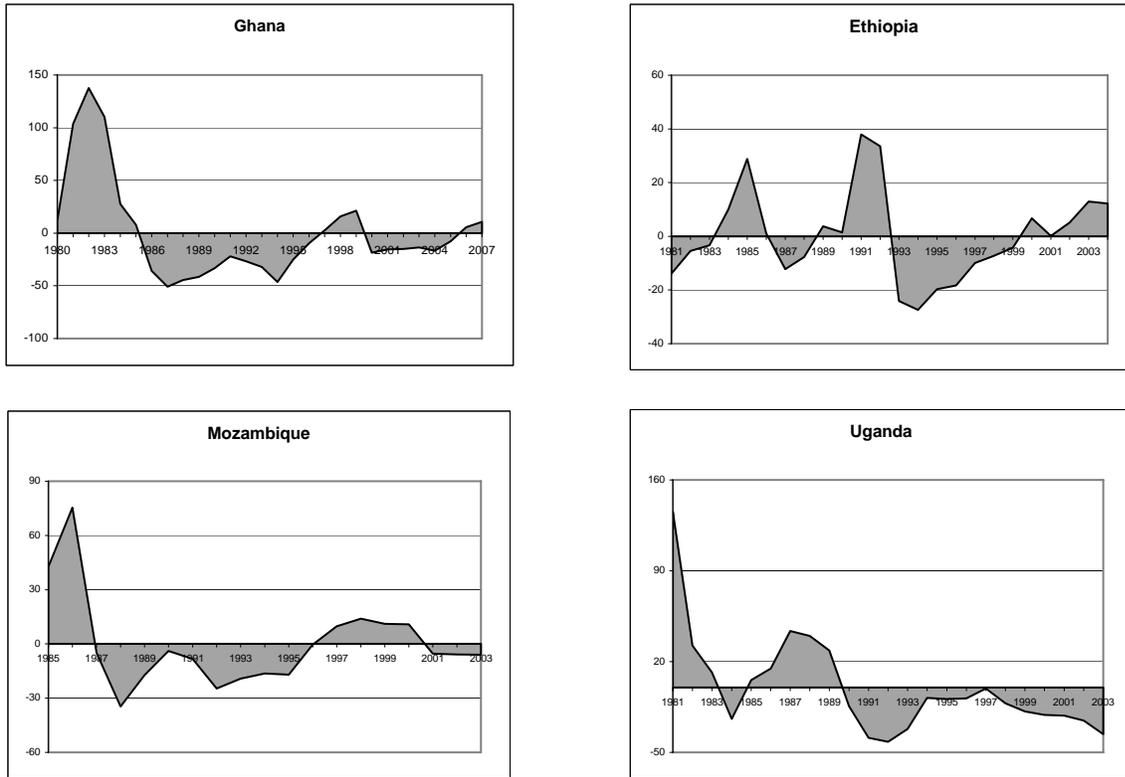


Figure 4.6: RERMIS under Various Scenarios

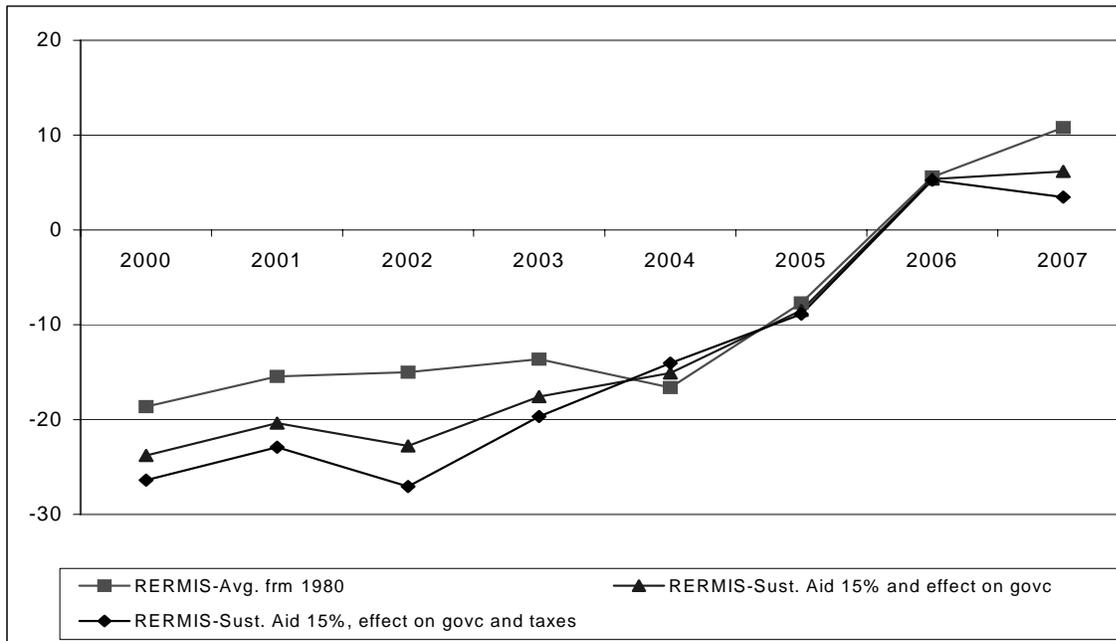
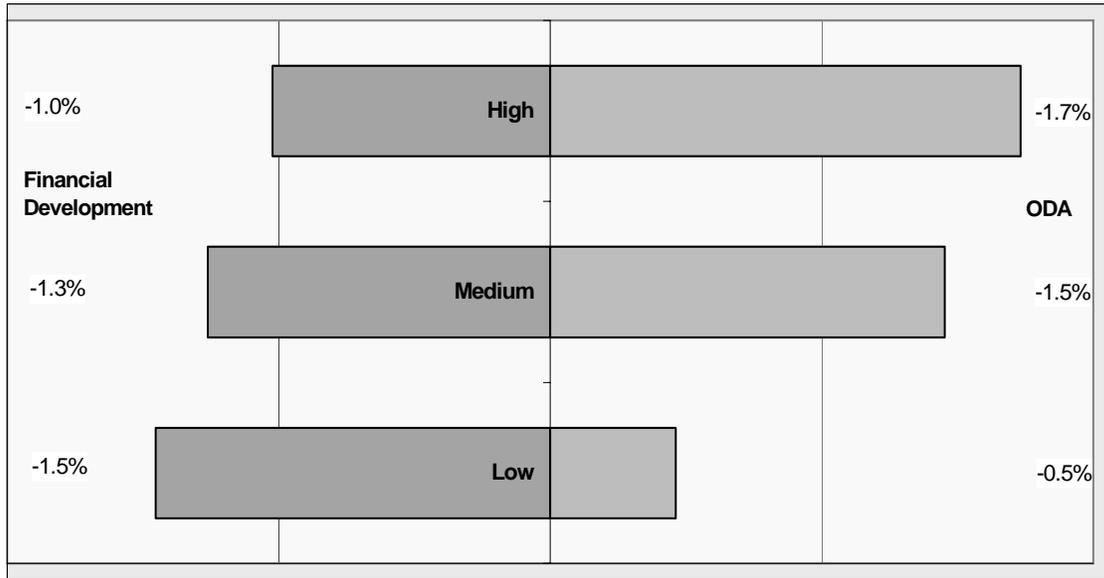


Figure 4.7: Impact of a one-standard-deviation change in RER misalignment on growth under various aid and financial development scenarios



Note: Simulations are based on the sample used for the growth regressions. See appendix A for a list of countries.

Figure 4.8: Various Measures of Export Diversification and Sophistication across Regions, 2003

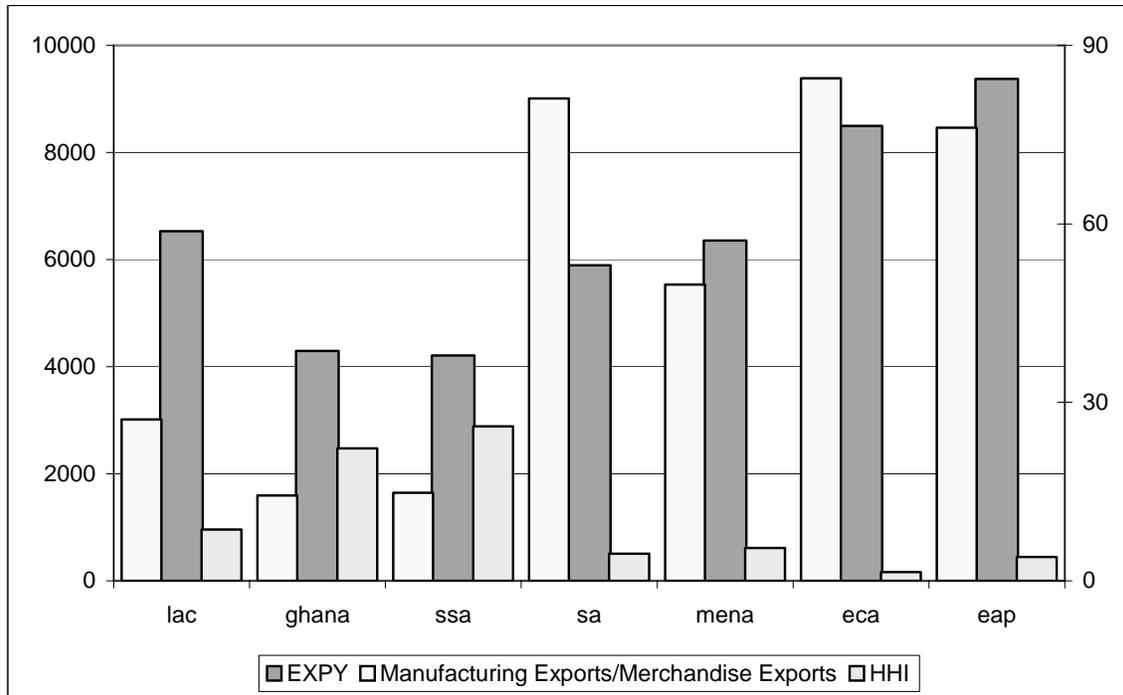


Figure 4.9: Relationship between RERMIS and EXPY or HHI (after accounting for other controls)

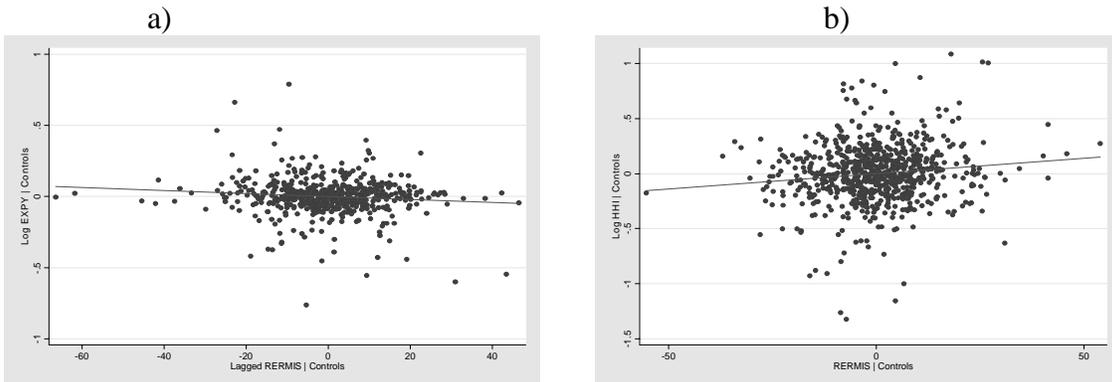
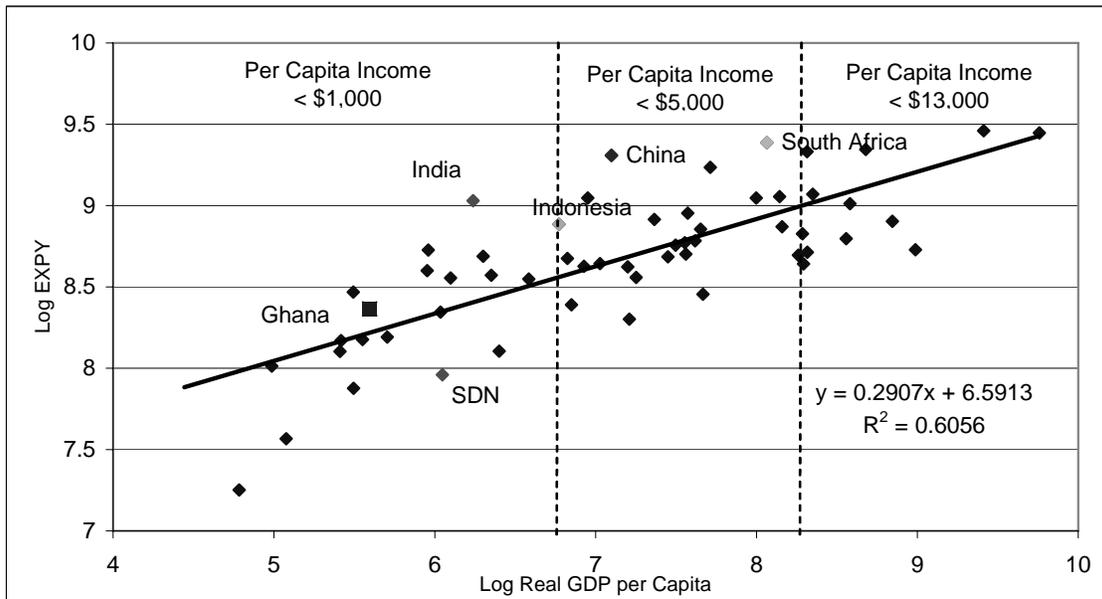


Figure 4.10: Income Per Capita, EXPY, and Real Exchange Rate Misalignment



*Ghana's EXPY value is from 2000.

**APPENDIX 1: COMPUTING THE EQUILIBRIUM REAL EXCHANGE RATE
AND RER MISALIGNMENT INDEXES**

To describe our methodology to determine the equilibrium RER it is useful to collapse all of its determinants into a category we call *fundamentals*. Let e_{it} be the log of the observed real exchange rate for country i in time t . Then we can write the equilibrium RER equation as:

$$e_t^i = \hat{\delta}_0^i + \hat{\beta}' F_t^i + \hat{\varepsilon}_t^i \quad (1)$$

where i denotes a country and ε_t^i is a stochastic innovation or short-term fluctuation. Note that the intercept varies across countries.

Let the equilibrium RER be as follows:

$$\tilde{e}_t^i = \tilde{\delta}_0^i + \hat{\beta}' \tilde{F}_t^i \quad (2)$$

where \tilde{F}_t^i refers to sustainable fundamentals, given by the permanent components of the fundamentals and $\tilde{\delta}_0^i$ is a scaled country-specific intercept to be identified below.

Under the assumption that the model is correctly specified, the real exchange rate misalignment is simply given by subtracting the equilibrium from the observed RER:

$$rermis_{it} = e_t^i - \tilde{e}_t^i = (\delta_0^i - \hat{\delta}_0^i) + \hat{\beta}' (F_t^i - \tilde{F}_t^i) + \hat{\varepsilon}_t^i \quad (3)$$

The scaled intercept of the equilibrium RER ($\hat{\delta}_0^i$) must satisfy the following identification condition of RER misalignment:

$$E_t(rermis_{it}) = E_t[(\delta_0^i - \hat{\delta}_0^i) + \hat{\beta}' (F_t^i - \tilde{F}_t^i) + \hat{\varepsilon}_t^i] = 0 \quad (4)$$

This condition requires that, for any given country, the expected value of the RER misalignment across time must be equal to zero. This is because eventually the RER must revert to its equilibrium level; otherwise it will not be “misalignment” but a permanent phenomenon. Though the expected value of the transitory components of the fundamentals (second right hand side term) should be zero, we do not make that restriction to allow for potential misspecification of the decomposition procedure¹²³.

Noting that the first right hand side term is time-invariant, we have the following sample estimate for the equilibrium intercept term:

$$\hat{\delta}_0^i = \delta_0^i + \hat{\beta}' \left[\frac{1}{n} \sum_t (F_t^i - \tilde{F}_t^i) \right] + \bar{\varepsilon}_t^i \quad (5)$$

¹²³ We will show below that the expression for the equilibrium RER is the same whether or not we assume the expected values of the transitory fundamentals to be zero. Moreover, under the general case, the equation for misalignment generates the one with the expected value equal to zero as a special case.

Note that though the panel estimation requires that $E_{t,i}[\varepsilon_t^i] = 0$, $E_t[\varepsilon_t^i]$ is not, in general, equal to zero and can be estimated by the mean of the residuals $\bar{\varepsilon}^i = \frac{1}{n} \sum_t \hat{\varepsilon}_t^i = \frac{1}{n} \sum_t e_t^i - \hat{\delta}_0^i - \hat{\beta}' \left(\frac{1}{n} \sum_t F_t^i \right)$ (from equation 1). Substituting for the mean residual in equation (5), we have the final expression for the equilibrium intercept:

$$\tilde{\delta}_0^i = \bar{e}^i + \hat{\beta}'(\bar{F}^i - \bar{\tilde{F}}^i) - \hat{\beta}'\bar{F}^i = \bar{e}^i - \hat{\beta}'\bar{\tilde{F}}^i, \quad (6)$$

where \bar{e}^i , \bar{F}^i and $\bar{\tilde{F}}^i$, respectively, denote the mean values (over time) of the actual RER, the fundamentals, and their corresponding permanent components.

Using equations (6) and (2) gives us the ultimate expression for the equilibrium RER index:

$$\tilde{e}_t^i = \bar{e}^i + \hat{\beta}'(\tilde{F}_t^i - \bar{\tilde{F}}^i) \quad (7)$$

This expression states that, for any given country i , the RER equilibrium index must be equal to the average of the observed RER over the estimation period plus (minus) a component reflecting equilibrium appreciation (depreciation), where an equilibrium appreciation (depreciation) is required when the weighted permanent component of the fundamentals in time t is larger (smaller) than the corresponding average over the estimation period (second right hand side term).

Subtracting the above index from the observed RER gives the corresponding expression for RER misalignment¹²⁴:

$$rermis_t^i = (e_t^i - \bar{e}^i) - \hat{\beta}'(\tilde{F}_t^i - \bar{\tilde{F}}^i) \quad (8)$$

Like the equilibrium RER index, the expression for RER misalignment also is very intuitive. It suggests that, at any point in time, if the difference between the RER at time t and the average RER is in excess of the equilibrium appreciation component the exchange rate is overvalued at time t , and the extent of the overvaluation is given by the net difference. This expression also suggests that depending on the size of the equilibrium appreciation component, a higher than average real exchange rate is compatible with overvaluation ($rermis > 0$), undervaluation ($rermis < 0$) or perfect equilibrium ($rermis = 0$).

If the permanent components of the fundamentals are time-invariant, the second term in the RHS of equations 7 and 8 will be zero. The equilibrium RER will, therefore, be equal to the mean of the observed RER and the misalignment will be given by the deviation from the mean RER. This will be consistent with a variant of the PPP model. However, the PPP restriction is neither corroborated by theory nor the time series characteristics of the fundamentals, especially for the case of developing countries.

¹²⁴ Under the assumption that $E_t[\hat{\beta}'(F_t^i - \tilde{F}_t^i)] = 0$, the corresponding expression for the equilibrium intercept is given by $\tilde{\delta}_0^i = \bar{e}^i - \hat{\beta}'\bar{F}^i$. However, since $\bar{F}^i = \bar{\tilde{F}}^i + \frac{1}{n} \sum (F_t^i - \tilde{F}_t^i)$ and the second RHS term is equal to zero

by assumption/construction, the expression for the intercept is the same under both cases. Therefore, the expressions for the equilibrium RER (equation 7) as well as misalignment (equation 8) also remain the same.

Decomposing RER Misalignment

Equation (8) is all what we need for constructing the equilibrium RER index and the corresponding aggregate index of RER misalignment. However, further manipulation of this equation would provide further insight for policy analysis. Using equation (1) to substitute for the first RHS term of equation 8 we have¹²⁵:

$$rermis_t^i = \hat{\beta}'[(F_t^i - \tilde{F}_t^i) - (\bar{F}^i - \tilde{\bar{F}}^i)] + (\hat{\varepsilon}_t^i - \bar{\varepsilon}^i) = \hat{\beta}'(F_t^{T^i} - \frac{1}{n} \sum_t F_t^{T^i}) + (\hat{\varepsilon}_t^i - \bar{\varepsilon}^i) \quad (9)$$

where a “T” over a variable indicates its “transitory” component. This expression suggests that RER misalignment can be accounted for by a fundamental component and an error-correction component. For example, the RER will be overvalued in time t if the “weighted” transitory component of the fundamentals is larger than the average and that deeper than average error-correction is required. The latter reflects the effect of short-run macroeconomic policies, which are not part of the long-run fundamentals but may influence the RER in the short-run (for example, rate of monetary expansion, nominal devaluation).

¹²⁵ Note that if $\frac{1}{n} \sum_t F_{it}^T = 0$ the expression for *rermis* becomes a special case of equation 8.

APPENDIX 2: DEFINITIONS AND SOURCES OF VARIABLES USED IN REGRESSION ANALYSES

Variable	Definition and Construction	Source
ERER Regressions		
Real Effective Exchange Rate	An increase in the index reflects an appreciation. In logs.	IMF's Information Notice System, 2006
Government Consumption Expenditures/GDP	$\ln(1+\text{government consumption}/\text{GDP})$	Authors' construction using International Financial Statistics, December 2004 CD-ROM Release, World Development Indicators, various years, and Africa Live Database (World Bank), various years
Taxes on Non-traded Goods	$\ln(1+\text{taxes on non-traded goods}/\text{GDP})$	World Development Indicators, Africa Live Database, and Government Finance Statistics, various years
Official Development Assistance Net of International Reserves	As a share of GDP	World Development Indicators, 2006
Terms of Trade	In logs	World Development Indicators, 2004 and 2005 and Loayza et al. (2005)
Productivity	Ratio of per capita GDP at factor cost in United States dollars over average GDP at factor cost in United States dollars for Industrial Countries.	Authors' construction using World Development Indicators, 2005
Openness	Residual of a regression of the log of the ratio of exports and imports (in current local currency units) to GDP (in local currency units), on the logs of area and population, and dummies for oil exporting and for landlocked countries	World Development Indicators, 2004 and Loayza et al. (2005)
Net Foreign Income	As a share of GDP	World Development Indicators, 2006
Economic Growth Regressions		
GDP per capita growth	Log difference of real GDP per capita.	Authors' construction using data from World Development Indicators (WDI), The World Bank (2006).
Initial GDP per capita	Initial value of ratio of total real GDP to total population, in logs	Authors' construction using World Development Indicators, 2006
Initial GDP per Capita Cyclical Component	Difference between the log of actual GDP per capita and the log of potential (trend) GDP; we used the Hodrik-Prescott filter to decompose the log of GDP	Authors' calculations using data from WDI (2006)
Inflation	Percentage change in CPI, in logs	Author's calculations with data from WDI (2006)
Government Expenditures	Ratio of government expenditures (in local currency) to GDP (in local currency), in logs	Data come primarily from International Financial Statistics (IFS), 2006; when missing, they are complemented with data from WDI (2006) and UN National Accounts Statistics (2006)
Human Capital Investment	Ratio of total secondary enrollment, regardless of age, to the population of the age group that officially corresponds to that level of education, in logs	Easterly and Sewadeh (2002), WDI (2006), UNESCO (2006).
Rule of Law	Presence of law and order. Range is between 0 and 6.	International Country Risk Guide (ICRG), Political Risk Services. www.icrgonline.com
Trade Openness	Ratio of exports and imports (in local currency) to GDP (in local currency), in logs	Data come primarily from International Financial Statistics (IFS), 2006; when missing, they are complemented with data from WDI (2006) and UN National Accounts Statistics (2006)
Official Development Assistance	Percentage of GDP	WDI (2006)
RER Misalignment	Percentage difference between real effective exchange rate and its estimated equilibrium value.	Authors' calculations. See Appendix A.1 for the methodology.

APPENDIX 2: DEFINITIONS AND SOURCES OF VARIABLES USED IN REGRESSION ANALYSES (*CONT.*)

Variable	Definition and Construction	Source
Financial Depth	Ratio of liquid liabilities to GDP, in logs. Liquid liabilities are also known as broad money or M3.	WDI (2006)
Period-specific Shifts	Time dummy variables.	Authors' construction.
Export Regressions		
Manufacturing Exports	% of Merchandise Exports	World Development Indicators, 2006
Hirfindahl-Hirschman Index	Concentration index based on SITC2-4 data from COMTRADE, in logs	Chandra et al (2007)
EXPY	GDP per capita of countries exporting a particular good weighted by the value of exports summed over a country's export basket, in logs	Hausmann et al (2006)
RER Misalignment	Difference between the log of effective real exchange rate and log of estimated equilibrium real exchange rate	Authors' construction
GDP per Capita	Real GDP/Populations, in logs	World Development Indicators, 2006
Population	In logs	
Land per Worker	Land/Labor Force	Global Development Network and World Development Indicators, 2006
Landlockedness	Dummy variable taking the value of 1 if a country is landlocked and 0 otherwise	Global Development Network
Exporter of Primary Products (not fuel)	Dummy variable taking the value of 1 if a country is an exporter of primary (non-fuel) products and 0 otherwise	Global Development Network
Exporter of Fuel Products	Dummy variable taking the value of 1 if a country is an exporter of fuel products and 0 otherwise	Global Development Network
Year-specific Shifts	Time dummy variables.	Authors' construction.

APPENDIX 3: COUNTRY AND PERIOD COVERAGE

	Equilibrium RER Regression	Growth Regressions	Exports Regressions with Dependent Variable:		
			Manufacturing/ Merchandise Exports	HHI	EXPY
Algeria	√	√			
Argentina	√	√	√	√	√
Australia	√	√			
Austria	√	√			
Bangladesh	√	√	√	√	√
Belgium	√	√			
Benin	√	√	√	√	√
Bolivia	√	√	√	√	√
Botswana	√	√			
Brazil	√	√	√	√	√
Burkina Faso	√	√	√	√	√
Burundi	√	√	√	√	√
Cameroon	√	√	√	√	√
Canada	√	√			
Central African Republic	√	√	√	√	√
Chad	√	√	√	√	√
Chile	√	√	√	√	√
Colombia	√	√	√	√	√
Costa Rica	√	√	√	√	√
Cote d'Ivoire	√	√	√	√	√
Democratic Republic of the Congo	√	√	√	√	√
Republic of the Congo	√	√	√	√	√
Denmark	√	√			
Dominican Republic	√	√	√	√	√
Ecuador	√	√	√	√	√
Egypt	√	√	√	√	√
El Salvador	√	√	√	√	√
Ethiopia	√	√	√	√	√
Finland	√	√			
France	√	√			
Gabon	√	√	√	√	√
Gambia	√	√	√	√	√
Germany	√	√			
Ghana	√	√	√	√	√
Greece	√	√			
Guatemala	√	√	√	√	√
Guinea Bissau	√	√			
Honduras	√	√	√	√	√
India	√	√	√	√	√
Indonesia	√	√	√	√	√
Iran	√	√			
Ireland	√	√			
Israel	√	√	√	√	√
Italy	√	√			
Jamaica	√	√	√	√	√
Japan	√	√			
Jordan	√	√	√	√	√
Kenya	√	√	√	√	√
Korea	√	√	√	√	√
Lesotho	√	√	√	√	√
Madagascar	√	√	√	√	√
Malaysia	√	√	√	√	√
Malawi	√	√	√	√	√
Mali	√	√	√	√	√
Mauritania	√	√	√	√	√
Mauritius	√	√	√	√	√
Mexico	√	√	√	√	√
Morocco	√	√	√	√	√
Mozambique	√	√	√	√	√
Namibia	√	√			
Netherlands	√	√			
New Zealand	√	√			
Nicaragua	√	√			
Niger	√	√	√	√	√
Nigeria	√	√	√	√	√
Norway	√	√			
Pakistan	√	√	√	√	√
Panama	√	√	√	√	√
Papua New Guinea	√	√	√	√	√
Paraguay	√	√	√	√	√
Peru	√	√	√	√	√
Philippines	√	√	√	√	√
Portugal	√	√			
Rwanda	√	√	√	√	√
Senegal	√	√	√	√	√
Sierra Leone	√	√	√	√	√
South Africa	√	√	√	√	√
Spain	√	√			
Sri Lanka	√	√	√	√	√
Sudan	√	√	√	√	√
Swaziland	√	√	√	√	√
Sweden	√	√			
Switzerland	√	√			
Syria	√	√			
Tanzania	√	√	√	√	√
Thailand	√	√	√	√	√
Togo	√	√	√	√	√
Trinidad & Tobago	√	√	√	√	√
Tunisia	√	√	√	√	√
Turkey	√	√	√	√	√
Uganda	√	√	√	√	√
United States	√	√			
United Kingdom	√	√			
Uruguay	√	√	√	√	√
Venezuela	√	√	√	√	√
Zambia	√	√	√	√	√
Zimbabwe	√	√	√	√	√

5. OPTIONS FOR EXPORT DIVERSIFICATION AND FASTER EXPORT GROWTH IN GHANA

SUMMARY

5.1 **In the 1980s, China and Ghana were low income countries with a per capita income of about US\$200 (constant 2000 US dollars):** Twenty five years later, exports of electronics, machine parts, children's toys and footwear have enabled China to leapfrog from a low- to a middle-income country. Ghana exports broadly the same products and has not become richer. There is near consensus on the need for Ghana to diversify its exports but there is less clarity on *what* it should diversify into.

5.2 **According to the standards of comparative advantage, Ghana should export *more gold and cocoa if it wants to grow faster.*** An alternative approach recently proposed by Hausman and Klinger (2006) posits that to become a richer country, Ghana needs to export 'rich country' products. While the two approaches are not entirely mutually exclusive, the latter stresses more the need for diversification. We develop a framework in which we draw on Hausman and Klinger's concepts to analyze the options for an income enhancing export diversification strategy for Ghana that grapples with concepts such as a product's income potential, Ghana's revealed comparative advantage in it, and the ease and scope of diversification. We make five contributions. (1) The outcome is a *sector specific strategy* based on (2) *scaling up* several 'potential emerging champions' instead of seeking export discoveries.

5.3 **Using this alternative approach to ascertain where Ghana could diversify to, we tentatively conclude that there may be at least 6 efficient sectors where Ghana's has the highest probability of diversifying into:**

- **In the short term:** scaling up of fresh and processed fishery and horticultural sectors.
- **In the medium term:** more complex processed products (salt and starch) and palm and vegetable oils.
- **In the longer term,** wood and metals manufactures.

5.4 **The paucity of technological capabilities and other local or nontradable inputs is the greatest hurdle to diversification in these sectors but in varying degrees.** Our analysis suggests that countries that also export products similar to Ghana's current exports were able to adapt their skills and diversify into these 6 relatively sophisticated sectors. The fact that in spite of Ghana's revealed comparative advantage in these sectors, they have not scaled up suggests that externalities are most likely the reason.

5.5 **This chapter suggests that one policy challenge for Ghana is to facilitate a comprehensive package of *sector specific policies* dedicated to fostering the technological capabilities and other nontradable public inputs necessary to potentially *scale up the 6 sectors.*** We also find that 3 of the 4 PSI products—starch, salt, palm oil are efficient choices but the efficiency of the textiles PSI is unclear. Our analysis also indicates that when income enhancement is the objective, there is no blueprint for a diversification strategy. Moreover, Ghana's path to a middle income status does not have to be paved with only manufactured products. There are multiple paths and processed natural resources-based products are not necessarily a curse, and if Ghana wants and it builds the requisite capacity, it can turn them into an opportunity.

INTRODUCTION

5.6 In the early 1980s, Ghana, India and China had per capita incomes in the range of 200-250 (in 2000 constant US dollars); today, the differences in their income levels are huge. By 2004, China had leapfrogged from a low to a middle income country, while Ghana's income level inched up to only US\$278. Other countries also made impressive strides during the same period. India and Malaysia's per capita incomes increased by 100% and Vietnam's by 125%. Export diversification in non-traditional products played a dominant role in powering economic growth in China, Malaysia and Vietnam. Over the 25 year period, China's top exports changed from petroleum, auto parts and outer garments to electronics-related parts and machines. In Vietnam, the change was from coal, natural rubber and crustaceans to footwear, crude petroleum oils and furniture; and in Malaysia, from natural rubber and timber to electronic microcircuits and machines. In Ghana, the only change in the top four exports of cocoa beans, aluminum, gold and cocoa butter was the replacement of cocoa butter with timber. Why this was so and how it can be reversed is the theme of this paper.

5.7 Two characteristics make Ghana a strong candidate for export diversification. It is known for being one of the earliest countries in Sub-Saharan Africa to implement structural adjustment reforms between 1983 and 2000, and enjoy the fortune of a relatively stable political and macroeconomic environment. "Yet the structure of the economy changed very little and its performance is not significantly different from what it was in the previous two decades before reform," (Aryeetey, Fosu and Bawumia (2001) and Aryeetey and Harrigan (2000), Easterly¹²⁶ (2001)). Trade liberalization improved resource allocation and reinforced Ghana's comparative advantage in natural resource-based and primary products. Exporting *more* of the same traditional products became the only channel of export growth and an encumbrance on Ghana's income levels.

5.8 Most would agree that to become a middle-income country, Ghana needs to diversify 'away' from natural resource-based exports, but exactly *what* it should diversify 'towards' is less clear; this paper is a tentative attempt to contribute to answering this complex question. It is tentative because the paper relies on a fairly new methodology and its conclusions, to be fully operational, must be further tested in fieldwork to take into account institutional and capacity constraints that might be important in implementing the policy conclusions. Nevertheless, it is hoped that the paper provides useful material to the authorities as they consider the implementation of their export diversification strategy.

5.9 Increasing domestic disappointment with an export policy stance that is neutral toward the export mix prompted the GoG to launch four Presidential Sector Initiatives (PSIs) to provide catalytic support to exports of cassava starch, salt, textiles and palm oil. Whether this choice of products holds promise of success and whether it is sufficient to put Ghana on the fast track to a middle income status is uncertain. We explore this issue in this paper.

5.10 Conventional export indicators do not explain why Ghana lags by a wide margin more successful countries such as China, India, Thailand, Malaysia and Sri Lanka. Between the 1980s-2004, growth in Ghana's per capita exports increased by only 88% relative to rates of 134—515% (nominal) in the comparators. It also had the most concentrated export basket¹²⁷—the export share of the top five products was 75% and high compared to less than 34% in Sri Lanka, China and India. The share of exports in Ghana's GDP was approximately 40%, much lower than

¹²⁶ Easterly (2001) used income data from the 1990s and aptly concluded: "Zero per capita growth is a disappointing outcome whatever the cause, especially for Ghana which is considered a good performer."

¹²⁷ This is measured by the change in the Herfindahl Index which is the most commonly used measure of export diversification and ranges between 1 and 0, where 0 implies perfect diversification.

in Thailand or Malaysia¹²⁸ where growth in per capita incomes was fueled by non traditional exports.

5.11 The slow growth of Ghana’s exports and per capita income is often attributed to the overwhelmingly large share of natural resources—cocoa, gold and aluminum—which are vulnerable to terms of trade shocks and accounted for about two thirds of total exports of over US\$3 billion in 2000-04. More recently though, it has been shown that natural resources are neither a curse, nor destiny—it all depends on how the exporter treats them. Between 1985-04, exports grew at an average of only 8% per annum (nominal). On the one hand, volatile prices suppressed overall export growth, and on the other, the small share of its nontraditional exports constrained catch up with many middle income countries in East Asia, Latin America and even some in low income ones in South Asia. At one time, many of the latter also exported natural resources.

5.12 The small size of Ghana’s domestic market makes exports a critical source of growth. Trends over the past 25 years suggest that reliance on its comparative advantage in unprocessed natural resources is more likely to sustain, rather than alter the low growth trajectory that the Ghanaian economy is charting. Evidently, to change course and achieve a middle income status in the next ten years, export diversification is no longer an option for Ghana.

5.13 Exporting fewer products with volatile prices can dampen the volatility of export growth, but whether diversification will enhance Ghanaian incomes depends on what replaces those products. What kind of new products should Ghana export? Should it be manufactured products that had an export share of less than 12% in 2004? In analyzing the options for export diversification in Ghana, we have made use of various constructs designed by Hausmann and Rodrik,¹²⁹ to examine the income potential of each product that Ghana exports. The rationale is that, in general, as the products exported by richer countries are quite different from those exported by lower income ones, there is a notional link between the export mix and income levels. The East Asian example underscores this link. Which income-enhancing products can Ghana export?

5.14 In section 2, we briefly review how development specialists have conceptualized the constraints to export diversification in Ghana and natural resource exporters in general. This is important as Ghana’s economic history and present economic structure are largely driven by cocoa and gold, its two leading exports. In Section 3, we evaluate how well Ghana’s current exports benchmark its position with respect to its goal to reach a middle income status by 2015. As this goal is tied to GDP per capita, an income-based measure of export diversification is warranted. In section 4, we explore the Hausmann and Klinger (2007) methodology and apply it to benchmark Ghanaian exports. We discover that there is a distinct set of export products that can be instrumental in guiding an income enhancing export diversification in Ghana. Section 5 is devoted to evaluating the efficiency of the four PSIs that the GoG launched not too long ago. They do not have the potential to raise its export growth, even in the longer term. So, in section 6, we propose an alternative export diversification strategy for Ghana. It hinges on scaling up rather than discovering new exports and sector specificity whose relevance we discuss further in section 7. The last section concludes. Overall, we make five major contributions to the export diversification literature on Ghana.

¹²⁸ In the large countries such as India and China, the share of exports in GDP is usually small because of the large size of the domestic market.

¹²⁹ We have applied several concepts designed by Hausmann and Rodrik and their co-authors in a series of papers. These are referenced as appropriate throughout the text.

SLOW EXPORT DIVERSIFICATION: SOME DEVELOPMENT PERSPECTIVES

5.15 **High levels of export concentration and a per capita income that is virtually unchanged from 25 years ago have provoked several competing and sometimes conflicting explanations.** Ghana's recent growth performance has given ground for optimism about its long-term growth prospects as the country accelerated to real GDP growth of 6% in 2006-7 (Bogetic and others, 2007). Earlier analyses such as Aryeetey, Fosu and Bawumia (2001), however, noted that slow diversification in exports in the past does not seem to be leading Ghana toward a modern economy, mainly because of the inability of Ghanaian firms in certain natural resource-based sectors to withstand globally competitive pressures unleashed on them by liberalization. One legitimate view explaining this lack of diversification is that although there was some macroeconomic stability in recent years, it was not sufficiently strong nor sustained over the longer period of time to spur growth of manufactured exports. Indeed, Ghana's recent growth spurt is *coinciding* with the period of macroeconomic stabilization.

5.16 **Teal (2002) arrived at a similar conclusion that could be summarized as follows.** (a) In the presence of a weak macroeconomic environment, it is simply not efficient for Ghana to diversify away from cocoa into other crops in agriculture as cocoa remains the most profitable sector. GoG could accelerate its export growth by reducing taxes on cocoa. (b) Relative to cocoa, diversification into processed agricultural products may be inefficient as they are *skill* intensive and Ghana may not have a comparative advantage in them. (c) Diversification toward manufactured exports also is inefficient. Ghana is skills-constrained but "there seems to be no basis for the usual assumption that investment in education and skills will enhance Ghana's ability to enter new export markets," (Teal, pp. 1333). Teal believes there are four problems in assuming that investment in skills can spur manufactured exports: (1) relative to capital, the returns to skills are low in Ghana; (2) the demand for skills actually declined in the 1990s; (3) if skills are necessary, they can always be imported because they are tradable; and (4) low productivity should not constrain firms' ability to export as long as wages are sufficiently low.

5.17 **Contradicting Prebisch and Singer's *natural resource hypothesis of the 1960s* which predicted that declining terms of trade for natural resource-based exports would be the bane of future development, Ledermen and Maloney (2006) have recently shown that 'Natural resources are neither a curse nor destiny,'** if they are managed well and channeled into productive uses. This means that the reason for the low level of export diversification in Ghana lies elsewhere. One view is that relative to human capital (skills), the abundance of land and natural resources adversely affects SSA's ability to diversify into manufactured products which are necessary for faster and sustainable growth (Mayer and Woods (2001), Mayer (2003), Collier (1998, 1999). (Collier, 1998, 1999, 2002) and Habiyaemye and Ziesemer (2006) note that weak infrastructure is a binding constraint to manufactured exports in SSA. Eifert, Gelb and Ramachandran (2005) explain that business losses due to power outages, logistical failures, crime and differences in indirect costs make SSA's exports uncompetitive.

5.18 **The analysis in this paper makes a simple point, suggesting that Ghana needs a new product mix—one that is income enhancing, sector specific and rests on scaling up existing products that can contribute significantly to its income but which have likely not scaled up because of underlying externalities.** In this sense, our paper is the closest in spirit to Aryeetey, Fosu and Bawumia (2001) who make a plea for sector specificity but do not take it further nor discuss what it might mean for policy. This view contradicts the contention that Ghana's cannot develop until it exports manufactured products.

EXPORT DIVERSIFICATION AND EXPORT GROWTH – WHY A DIFFERENT APPROACH MAY BE NEEDED

5.19 **The previous chapter has shown that an appropriate exchange rate (and general export promotion measures) was insufficient in significantly accelerating the growth of nontraditional exports in Ghana.** In spite of volatile cocoa and gold prices and large aid flows that are could trigger the Dutch Disease, Elbadawi and Kaltani (2007) find that over the longer term, due to good exchange rate management, the real effective exchange rate in Ghana was fairly aligned for most of its post-reform period (1983 onward).¹³⁰ Yet, in spite of other complementary reforms such as deregulation and economic liberalization, nontraditional exports or non-cocoa, non-gold, especially manufactured exports¹³¹ did not grow rapidly after 1985, although they did grow faster in the most recent period (Figure 5.1).

5.20 **The government established a Free Zones Scheme to attract investors¹³² to all export sectors including BPO, telemarketing, call-center operations, and IT services.** The incentives include a fairly wide range of tax holidays, exemptions, foreigners' right to 100% equity, employer's right to contract local labor under terms set by the employer only and visa privileges. However, net FDI increased very gradually from a low of US US\$15 in 1990 to only US\$139 million in 2004. In contrast, in 2003, the numbers were US\$1200 in Nigeria, US\$283 in Uganda and US\$762 in South Africa. Aryeetey, Fosu and Bawumia (2001) note that in addition to macro policies, "sectoral policies will be necessary to increase manufactured exports" in Ghana.

5.21 **Over the longer term, unprocessed natural resource exports have constrained growth in Ghana.** As a share of GDP, exports grew from 12% in the early 1980s to 44% in 2000-04 but commodity prices dampened growth. The correlation between cocoa and gold price shocks and GDP growth was weak over the longer term but during subperiods it was stronger during downswings in prices than upswings. Between 1998 and 2000, cocoa prices dropped by almost 50% and real GDP by 20%. However, between 2001 and 2005, when commodity prices increased, real GDP growth was low. Even though the economy's resilience to commodity price shocks has increased now (Bogetic and others, 2007), the relatively low demand elasticity of cocoa, gold, diamonds, and aluminum exports continues to hinder export growth.

5.22 **Export diversification was slow and limited.** Ghanaian exports grew from about US\$821 million in 1980-84 to about US\$2.5 billion in 2000-04 by tapping the intensive as opposed to the extensive margin, i.e., producing more of the existing products rather than discovering new ones, a finding also noted by Teal (2002). Non-traditional exports stagnated between 1993- 2004 at approximately US\$850,000 while the dominance of traditional exports was preserved. Today, the export share of non traditional products is less than one-third and most have negligible values. The contribution of non-traditional agricultural exports is even smaller.¹³³ Horticultural products, nuts, cotton, some furniture parts are relatively new and each has a share which is no greater than 2%. Fish and horticultural products collectively account for only 6% of Ghana's total exports.

¹³⁰ Signs of some mild overvaluation of the exchange rate may have cropped up in the past two years, Elbadawi and Kaltani (2007).

¹³¹ As an in depth analysis of export diversification and exchange rate dynamics is being undertaken in a companion paper, we will not elaborate further on the subject.

¹³² Presented by Osey Boeh-Ocansey "Exporting Business and Professional Services: Exporting Solutions Ghana Experience," International Trade Center, Executive Forum on National Export Strategies, October 5-8, Montreux, Switzerland.

¹³³ Daniel Bruce Sarpong and Susanna Wolf "Export Performance and Investment Behavior of Firms in Ghana," Draft paper presented for the ISSER/Cornell University Conference on Ghana's Economy at Half-Century, June 2004.

5.23 The number of export “discoveries” in Ghana is too small and their export values are miniscule. Export statistics show that Ghana’s *revealed comparative advantage* (RCA)¹³⁴ in a product over a 25 year period reflects their sustainability. If an export discovery is defined as a product in which Ghana had a RCA in 2004, and whose export value increased by at least 100% during the early 1980s and 2004, only 10 discoveries with a collective share was 1.5% emerge. The aggregate value of the 10 discoveries was about US\$36 million in contrast to only US\$500,000 in the early 1980s. In 2004, their export values ranged from US\$13 million for fresh vegetables and US\$6 million for palm oil to less than US\$600,000 for vegetable fibers and flours. As in most other countries, Ghana’s export discoveries are largely serendipitous outcomes that can neither be predicted nor planned. However, if Ghana has maintained a RCA in certain products over the past 25 years, and they have a high income potential, it would make sense for a smart export diversification strategy to facilitate the scaling up of such winners.

5.24 A simple idea behind this paper is that export diversification, to be effective, might need to be linked more to per capita income. Over the longer term, even as Ghana’s per capita income levels remained almost the same, the Herfindahl Index¹³⁵ recorded significant diversification when it declined from 0.5 in 1980 to 0.2 in 2004. Contrary to the hypothesis tested by Imbs and Wacziarg (2003),¹³⁶ and Hesse (2007), the disconnect between income levels and diversification indicates that the Index is an inappropriate metric for Ghana. The main reason is that while the discovery of new metals (aluminum, diamonds, manganese etc.) would qualitatively preserve Ghana’s dependence on natural resource-based products, the Herfindahl Index would show it as a significant diversification of Ghanaian exports. A measure that links exported *products* to *income* levels would be more useful.

5.25 By separating the types of products that developed countries export from those which developing countries do, two other measures of diversification link exported products with income, and suggest that perhaps some high-tech exports may also an important way for Ghana to enhance its income per capita. The sectoral classification disaggregates exports into agricultural, mineral (metals and ores) and manufactured categories, and notes that richer countries export more manufactured products. Lall’s (2003) technology classification¹³⁷ labels products by their level of ‘technological sophistication’ and is a major improvement on the sectoral classification. However, even though it is intuitive, it is ad hoc and recommends the same policy: Ghana’s income can only rise when the share of its LT, MT and HT products that is presently less than 0.05% of total exports¹³⁸ increases.

¹³⁴ A country has a revealed comparative advantage in a product if the value share of that product in the country’s exports exceeds the product’s share in global trade.

¹³⁵ The Herfindahl Index is a traditional measure of diversification. It ranges between 1 and 0, where 0 denotes perfect diversification. A decline in the Herfindahl Index can occur either when new products are added to the export basket or when the distribution of export shares becomes more even. The Index is insensitive to the type of product.

¹³⁶ Imbs and Wacziarg have found that there is a U-shaped relationship between diversification and per capita GDP. For low income countries, this relationship is positive until they reach per capita income levels of 2000 US\$10,000. Thereafter, the relationship turns negative as upper middle and high income countries begin to specialize.

¹³⁷ Lall (2003) classified products by their technological content as follows: primary (pp) for commodities like cocoa, maize; high value (hv) for high value agricultural products such as vegetables, fruits, flowers—we created this category to allow for distinctions between coffee and fish for example; resource-based (rb) such as wood, metals, minerals, oil; low (lt), medium (mt) and high tech (ht) products—manufactures.

¹³⁸ Note, there is an inconsistency between the sectoral definition which records the share of manufactured exports as close to 12%, and Lall’s tech definition which records the same as only about 5%. The former is from the WDI and it is possible that products such as ores and concentrates that are classified as natural resources by Lall’s definition, are classified as manufactured products by the sectoral definition.

GHANAIAN EXPORTS MAY NEED A RICHER PRODUCT MIX

5.26 **The sections in the remainder of this paper draw on a new and innovative methodology that provides a transparent link between the export mix and per capita income** and can be instrumental in guiding export diversification in Ghana (Hausmann, Hwang and Rodrik (2005) and Hausman and Klinger (2007)). As noted above, the methodology is new and conclusions of the paper are tentative and would need to be tested in additional fieldwork. As such, the paper is a first attempt at drawing conclusions from such an approach and consistent policy implications that would need to be validated during fieldwork analysis and policy discussions before they can be turned into policy recommendations.

The product space

5.27 **Ghana could, in principle, diversify by attempting, selectively, exporting products that other countries presently export;** though easier said than done, it is worth exploring this simple idea and what it could mean in Ghanaian context. After all, Ghana's diversification so far, as that of many African countries, could not be termed a success so new ideas may be worth exploring. This idea can be conceptualized by assuming that the world market is a forest that contains every possible product exported by every country. At the SITC2—4 digit level of disaggregation, the forest has about 800 products or trees and Ghanaian firms that export a product are located on its tree. Export diversification involves moving from one tree to another. Whether a jump is a smart step forward depends on whether exports of the new product can enhance Ghana's income level, and whether Ghanaian firms have a capability to reach new product trees.

The 'income level' of a product —PRODY

5.28 **Whether a product can help to raise a country's income can be measured by PRODY, which is a unique dollar denominated 'income tag' attached to each product exported by any country.** It is weighted by the per capita GDP of countries that have a revealed comparative advantage in that product. As an example, chocolate's PRODY would be higher than cocoa's because it is exported mostly by high income countries, and cocoa beans would have a lower PRODY because more low income countries export it. All products have the same PRODY. This suggests that to catch up with middle income countries, Ghana needs to start exporting some higher PRODY products which they also export.

5.29 **Interestingly, the PRODYs of natural resource-based products are not always lower than those of low tech ones, which implies that manufactured exports are *not* a prerequisite for catch up.** For instance, the ability of low income countries to comply with EUROGAP standards and export frozen fish fillet to the OECD markets places them at par with higher income ones who export similar products. In 2004, the PRODYs of Ghanaian products—mostly unprocessed cocoa beans, cotton lintens and sawn wood ranged from US\$500 to US\$3000. 5. 6 indicates that if Ghana were to export processed transformations of the same products—chocolate from cocoa, knitted garments from cotton lintens and fabric, and wooden packing cases from sawn timber, its export PRODYs could increase to US\$4000 to US\$12000 in the future.

5.30 **High PRODY products can enhance Ghana's income only when they have sufficiently large export value shares.** Presently, the number of Ghana's high PRODY exports is too few, and each has a negligible export share. In 2000-04, among the small number¹³⁹ of relatively high PRODY products were palm oil, wood furniture, aluminum alloys, chilled or fresh

¹³⁹ Among the products exported in 2000-04, there were only 10 export discoveries in which Ghana had a revealed comparative advantage.

vegetables¹⁴⁰ and preserved fish. After excluding export discoveries, preserved fish was the only high PRODY product with a share of 3.5%.

PRODYs, EXPYs, and economic development in developing countries

5.31 **Just as PRODYs indicate the income level of a product, EXPYs indicate the income level of a country's export basket.** EXPY is the weighted sum of the PRODY's of all products that a country exports. It is broadly consistent or reflects well a country's per capita GDP. Sufficiently large increases in the PRODY of exports raise a country's EXPY and income levels.

5.32 **Whether export diversification, measured by the traditional Herfindahl Index, is income enhancing is illustrated in Figure ?.** The differences in the economic development outcomes between Ghana and some of the countries that export at least one product that Ghana also exports¹⁴¹ can be explained by their EXPYs. Bilateral comparisons are revealing. In 1980-84, the export baskets of Mauritius and Indonesia were even more concentrated than Ghana's but by 2000-04, their EXPYs exceeded Ghana's by a significant margin and reflected the underlying PRODYs of the products that transformed them into middle income countries. In 1980-84, Brazil's had the lowest EXPY. By 2000-04, the EXPYs of Brazil, Malaysia, and China had increased significantly while Ghana's EXPY barely changed even though its Herfindahl Index recorded significant diversification.

5.33 For rapid economic growth, not all Ghanaian exports must transform into higher **PRODY or "rich-country" products.** In most countries, competitiveness in a *few* higher PRODY products, usually produced from natural resources, was sufficient to leapfrog. Table 5.1 points out that, as does Ghana, Malaysia still exports palm oil and rubber. However, to become a middle-income country, Malaysia also developed the capability to export some medium-tech products such as electronics. Brazil's leading export remains soy beans, but it also learned to export passenger cars. China's ex228

5.34 port basket contains high PRODY minerals, fish, and forestry products, which Ghana also exports, but in very small shares. The leap in China's EXPY (Figure 5.9) is an example a country's leading exports that virtually transformed it in 25 years.

Organizing framework

5.35 **We use the new methodology by developing a simple framework to benchmark Ghanaian exports in the forest and then study the scope for their diversification.** Whether Ghana enjoys any particular advantage in exporting a product is indicated by its RCA in that product. In this exercise, a product's RCA is assigned a value of 1 if Ghana's RCA in that product is larger than 1, and 0 otherwise. All Ghanaian exports were sorted by their RCAs in 1980-84 and 2000-04. Changes in the RCAs indicate the broad direction of Ghanaian exports in the past 25 years when structural transformation of its export basket could occur. For simplification, only products with export values in excess of US\$10,000 are listed in text Table A in this section. A

¹⁴⁰ Daniel Bruce Sarpong and Susanna Wolf "Export Performance and Investment Behavior of Firms in Ghana," Draft paper presented for the ISSER/Cornell University Conference on Ghana's Economy at Half-Century, June 2004.

¹⁴¹ Malaysia (MYS)—palm oil exporter, Mauritius (MAU)—garments exporter, Botswana (BWA) - diamonds exporter, China (CHN)—exporter of textile and garments, processed minerals and their products, horticultural and fishery, forestry products, and medium and high tech products, India (IND)—exporter of garments, cut flowers, horticultural and fishery products, and other low and medium tech products, Indonesia (IDN)—a low income natural resources exporter turned into a middle income, Brazil (BRA)—cocoa and other natural resources and manufactured products exporter, and Uganda (UGA)—coffee, cut flowers, horticultural and fishery products exporter.

necessary selection criterion for scaling up a product is that its PRODY is greater than Ghana's EXPY to ensure that it is a stepping stone to a higher income level. Text Table A in this section lists the results. All Ghanaian exports can be classified into 4 broad categories (a–d).

- **Disappearances:** The first quadrant lists only one product: live/dead or chilled fish in which Ghana had a RCA in 1980-84 but had lost it by 2000-04.
- **The classics:** In 1980-84 and 2000-04, Ghana had a RCA in its traditional exports: gold, cocoa beans, cocoa butter and paste, metals, sawn wood logs and prepared or preserved fish. Most of these products are relatively low tech but collectively they account for the bulk of Ghana's exports today. Fish products and aluminum have the highest PRODYs. However, cocoa beans, Ghana's leading traditional export, has the lowest PRODY (US\$1500), which explains why it is not the driver of export growth.
- **Emerging champions:** In 1980-84, the adherents of the Heckscher-Ohlin theory of factor endowments would have predicted the classics as the *only* efficient exports for Ghana. Suppose efficiency implied an income (or EXPY) enhancing pattern of export diversification. Then the most interesting category of exported products would be the emerging champions in which Ghana acquired a RCA after the mid-1980s. Compared to its average PRODY or EXPY of US\$2437 in 2000-04, several higher PRODY emerging champions qualify as perfect candidates for scaling up. In addition to those listed in text Table A, there are many with negligible export values. Only 8 have values in excess of US\$10 million.
- **Marginal exports:** Ghana did not have an RCA in these products in either 1980-84 or 2000-04. Support for these products could be risky and would not be a part of a prudent export diversification strategy. Many of these products have high PRODYs and most have export values of less than US\$1 million, probably because they are exported by only a few firms.

Density: Country-specific measure of ease of diversification

5.36 **The potential, emerging champions are attractive because Ghana has acquired a RCA in all and several also have high PRODYs.** However, they are too many, too small, and too diverse, and, presently, Ghana does not have the critical mass of technological capabilities required for all. Whether a particular emerging champion can be scaled up depends on its density, that is, the *ease* with which Ghana's current capabilities can be adapted to produce it. As such, technological capabilities differ across products, and some types are more easily adaptable than others. Dense areas of the forest would have many trees in close proximity with related products that use skills that are weakly substitutable. This is typically true of manufactured products,¹⁴² which, on average, also have higher PRODYs. Unfortunately, the ease with which Ghana can diversify into manufactures is low. Ghana's product densities locate it in a sparse or isolated part of the forest with trees of lower PRODY: unprocessed, natural-resource-based products.¹⁴³ To leapfrog from a sparse to the dense part of the forest usually requires a different skills mix, which Ghanaian firms may not find in sufficiently large numbers and which may be costly to create. Tables 8A–8D list the product densities of Ghanaian exports.

¹⁴² As an example, countries that produce machines find it easier to learn how to build automobiles.

¹⁴³ Cocoa bean is an example of a product in the sparse area of the forest from where it is not easy for firms to move to too many high PRODY products.

Table 5.1: Presidential Special Initiative (PSI): Efficiency of government's choice of products and its options

(a) Disappearances			(b) The Classics		
RCA_ '80-84 =1 RCA_ '00-04 = 0	Ease of diversification (density)	PRODY	RCA_ '80-84 =1 RCA_ '00-04 = 1	Ease of diversification (density)	PRODY
Fish,fresh(live/dead)or chilled,exc	0.128	4,919	Fish,prepared/ preserved,n.e.s. i	0.118	10,775
			Cocoa beans, whole or broken,raw	0.209	1,542
			Cocoa powder,, paste	0.104—0.126	5,477
			Sawlogs and veneer logs,	0.148	2,287
			Wood sawn sliced/peeled,	0.142-0.104	5,237
			Aluminum and alloys	0.102	9,077
			Industrial diamonds, sorted	0.102	5,376
			Manganese ores&concentr	0.119	4,238
			Gold,non-monetary	0.121	5,716
(c) The Marginals			(d) Potentially emerging champions		
RCA_ '80-84 =0 RCA_ '00-04 = 0	Ease of diversification (density)	PRODY	RCA_ '80-84 =0 RCA_ '00-04 = 1	Ease of diversification (density)	PRODY
PSI sectors in orange			PSI sectors in orange		
Cotton fabrics,woven,mercer	0.028	8,974	Cassava starch	0.136	4,789
Clothing acces. Knitted/ crocheted	0.032	8,102	Cotton uncarded	0.168	1,500
Horticultural products industry			Common salt;rock/sea	0.108	7,080
Vegetables, prepared or preserved,n.	0.025	8,482	Palm oil	0.157	4,635
Bananas, fresh or dried	0.076	5,183			
Metals and aluminum manufactures			Food oil industry		
Waste/scrap metal of iron or st	0.021	5,711	Fixed vegetable oils,n.e.s	0.107	5,377
Puddled bars and pilings;ingots,blo	0.020	6,234	Cotton seeds	0.141	2,473
Boxes,bags & other packing	0.023	9,274	Oil seeds and oleaginous fruit. N.e	0.116	1,902
Miscellaneous					
Maize (corn), unmilled	0.022	6,430	Rubber industry		
Meal and flour of wheat and flour o	0.019	5,944	Natural rubber latex; nat.rubber &	0.181	1169
Malt extract;prep.of flour etc,for	0.024	15,805	Metals and aluminum manufactures		
Tobacco, wholly or	0.052	1,531	Aluminum ores and	0.110	3,393

partly stripped			concentrates		
Groundnuts	0.048	2,739	Other non-ferrous base metal	0.105	6,030
Perfumery,cosmetics and toilet pr	0.022	9,444	Wood manufactures		
Soap;organic surface-active	0.034	5,409	Plywood - sheets etc.	0.132	7,267
Polyvinyl chloride	0.013	13,177	Wood panels,n.e.s.	0.099	7,848
Portland cement,ciment fondu,slag	0.045	5,109	Manufactures of wood for	0.121	5,919
Containers,of glass,used for	0.025	6,824	Fuel wood	0.119	2,214
Art.for the conveyance or packing	0.023	11,728	Plywood consisting of sheets of	High	7,267
Miscellaneous art.of materials of d	0.018	16,183	Fishery industry		
Basketwork,wickerwork etc. of plait	0.034	7,789	Fish,frozen (excluding fillets)	0.131	6,457
			Crustaceans and mollusks,fresh,chil	0.147	3,369
			Horticultural products industry		
			Plants,seeds,fruit used in perfumes	0.138	3,622
			Other fresh or chilled vegetables	0.125	5,477
			Fruit,fresh or dried, n.e.s.	0.133	5,187
			Fruit,temporarily preserved	0.102	5,415

Paths: Product-specific measures

5.37 **While density refers to country specific capabilities, distance is a product-specific metric.**¹⁴⁴ that measures the similarities in the capabilities needed to produce two products. Capabilities can be technological, related with managerial, logistical, marketing and related skills. Distance is measured ‘between each pair of products based on the probability that countries in the world export both.’ Countries are able to diversify into ‘rich country’ products because the latter are relatively close to the ones they already export. It was easier for the East Asian countries to diversify into semiconductors because they already *had* the capabilities to produce TVs and they *could be adapted* to produce semiconductors. Paths are the distance-weighted number of products around a tree and indicate whether the capabilities to produce a product are likely to facilitate further diversification. Manufactured products have longer paths that reflect a larger scope for diversification. Ghana’s classic exports have very short paths whereas the emerging champions have longer ones.

5.38 **There are important trade offs between density and path which can affect Ghana’s economic development.**¹⁴⁵ Its location in a sparse part of the forest suggests that moving closer

¹⁴⁴ It is an object measure compared to the endowments-related or technological sophistication-based measures that are subjective.

¹⁴⁵ The complete set of PRODYs, densities and paths for each product in the classics, emerging champions, marginals and disappearances categories is available from the author.

to high PRODY products will require significant capability building. Given the scarcity of public and private resources, it would be judicious to base the decision to invest on the type of skills that will increase the scope for further diversification. Agricultural products such as cocoa beans, cotton seeds and raw cotton, palm oil and natural rubber have the highest densities which indicate that Ghana has the strong skills to produce them. However, these products also have the shortest paths which suggest that the same skills would limit the scope for diversification. In comparison, in cocoa powder, Ghana has a lower density (0.10) but longer path (113). The reason is straightforward. As cocoa powder is a manufactured product that requires relatively sophisticated skills, it is difficult for Ghana to export it and many other manufactured products. But, higher income countries that have the capabilities to export the latter also are able to export cocoa powder. In fact, most exporters of cocoa powder and chocolate do not export cocoa!

PRESIDENTIAL SECTOR INITIATIVES: ARE THE GOVERNMENT'S CHOICES EFFICIENT?

5.39 **In a series of Presidential Sector Initiatives (PSIs), the GoG has made a commitment to target the cassava starch, textiles and garments, palm oil, and salt sectors for export promotion.**¹⁴⁶ Its rationale is that in the past, its sector-neutral export promotion policies spread scarce public resources too thinly and could not adequately facilitate the growth of any product. Targeting would ensure the PSIs adequate support to scale up. GoG views the PSIs as temporary and catalytic mechanisms. Since the initiative was launched in 2006, government has supported the seeding of privately owned firms¹⁴⁷ in selected products, facilitation of financing through the local banking system, identification of buyers, provision of marketing support etc. As the four products are presently exported, the initiative is about scaling up exports rather than seeding new products. Information that could inform GoG's decision relate to two questions:

- Is GoG's choice of the four PSI products (starch, salt, palm oil and textiles)¹⁴⁸ efficient? How easy is it for Ghana to diversify into the new products?
- Do these sectors have the potential to raise Ghana's per capita income more than its current exports?

We attempt to contribute to answering these questions by providing tentative answers from the perspective of the new methodology. We do not pretend these to be definitive answers, just tentative conclusions based on one approach that may be useful to consider in the authorities' own deliberations about these initiatives.

5.40 **While we use the PRODY of a product as the first criterion, its efficiency¹⁴⁹ also is based on its RCA, density, and path as well as its value and value share.** Of the 4 PSIs, salt,

¹⁴⁶ The following criteria were used in the choice of sectors: generate mass employment in rural areas; generate mass employment in rural areas; be technology driven; have the potential to earn foreign exchange, and have multiplicative effects on the local economy (Minister for Trade and Industry 2006).

¹⁴⁷ In the case of cassava, GoG started a pilot firm through a partnership with local banks to fund seed capital. The firm is owned (individually) by farmers through loans from government. Once a loan is paid off, the farmers become owners. GoG has facilitated the provision of public goods such as marketing. The firm is run by professional management and has started well by winning a contract with Nestle. In the case of other sectors, GoG recently facilitated a deal with US firms to take advantage of AGOA.

¹⁴⁸ Cassava starch, textiles and garments, palm oil, salt.

¹⁴⁹ We have tested the methodology to see how well it predicts the emergence of new products in countries in other regions. The predictive power is low if the governments intervened to create new products (RCA-0 in 1980–84 and 2000–04), but in such cases there were many failures and some successes. Most importantly, governments that created products had exceptional ability to correct for market failure while avoiding government failure.

cassava starch and palm oil are emerging champions in which Ghana has successfully developed a RCA since the 1990s, and their PRODYs exceeded Ghana's EXPY of US\$2437 in 2000–04.

5.41 **Salt is the most sophisticated PSI product.** It also is exported by developed exporters such as the Netherlands, Germany, Australia, Denmark, Poland and Mexico which have a high level of technological skills reflected by high salt densities that range from 0.25–0.44. In comparison, Ghana's salt density of only 0.11 implies that it will not be easy for Ghanaian firms to scale up salt exports. However, there would be a clear future benefit from acquiring the skills. Salt has a long path that suggests that the skills used to scale up salt exports could also be adapted to related industrial products, that is, lead Ghana to a denser part of the forest.

5.42 **Ghana's density for exports of cassava starch is relatively high.** Together with its reasonably long path, scaling up starch exports also will help diversification in other manufactured exports.

5.43 **There is a tricky trade off with the palm oil PSI.** Ghana's skills are well suited to palm oil exports in which Ghana has a RCA. While this would make scaling up this native tree crop easy, its short path suggests that the skills used to produce it would have limited application in other products.

5.44 **GoG's fourth PSI, cotton products, is an ambiguous choice as it is unclear whether the PSI covers cotton without linters or textiles or both.**

- The PSI would be an efficient choice if it covers **exports of cotton without linters** which is a potentially emerging champion, but there is a tradeoff. The advantage of cotton's high density and Ghana's RCA in it is offset by cotton's low PRODY and short path.
- Catalytic support for scaling up **two 'textiles' products**—cotton fabrics (bleached and mercerized) and clothing accessories (knitted or crocheted)—would be an inefficient choice—they are marginal products in which Ghana does not have a RCA yet. Ghana presently exports raw cotton to China which transforms it into high value textiles for export. Scaling up exports of cotton textiles implies that Ghana would compete with China and other 'high-skills' exporters of this product. This could be risky in the short to medium term. Contrary to expectations, the textiles PSI would not lead to greater employment creation. These products involve industrial bleaching, mercerizing, machinery aided knitting and crocheting which have a low employment potential.
- One could contend that Ghana has the potential to export exclusive Ghanaian fabrics to *niche* markets outside Africa and that fostering this segment is a candidate for a PSI. This may be so but its evaluation is beyond the scope of this paper.

5.45 In a nutshell, of the 4 PSIs, the above analysis, tentatively, suggests that, based on the methodology applied, there may be a case for (1) the choice of salt, starch and palm oil as being potentially efficient, while (2) textiles could potentially be an inefficient choice. Whether there is a case for a PSI dedicated to exclusive ethnic fabrics is an issue that we do not analyze in this paper.

5.46 ***Can the PSIs contribute to a larger income potential or EXPY than Ghana's current exports?*** As the differential between Ghana's EXPY and the PRODYs of salt, starch, palm oil and textiles is large enough, diversification in these products *can* enhance Ghana's per capita income but their export value shares are too small to matter for growth even in the medium term. Palm oil exports grew from US\$4,000 in 1980-84 to US\$5.6 million in 2000-04 but currently, their export value share is only 0.002%. In fact, compared to Ghana's total exports of about US\$3 billion in 2000-04, the aggregate value of the four PSI exports is only US\$28 million or about 1% of overall exports. While they are unlikely to increase Ghana's income levels in the medium term,

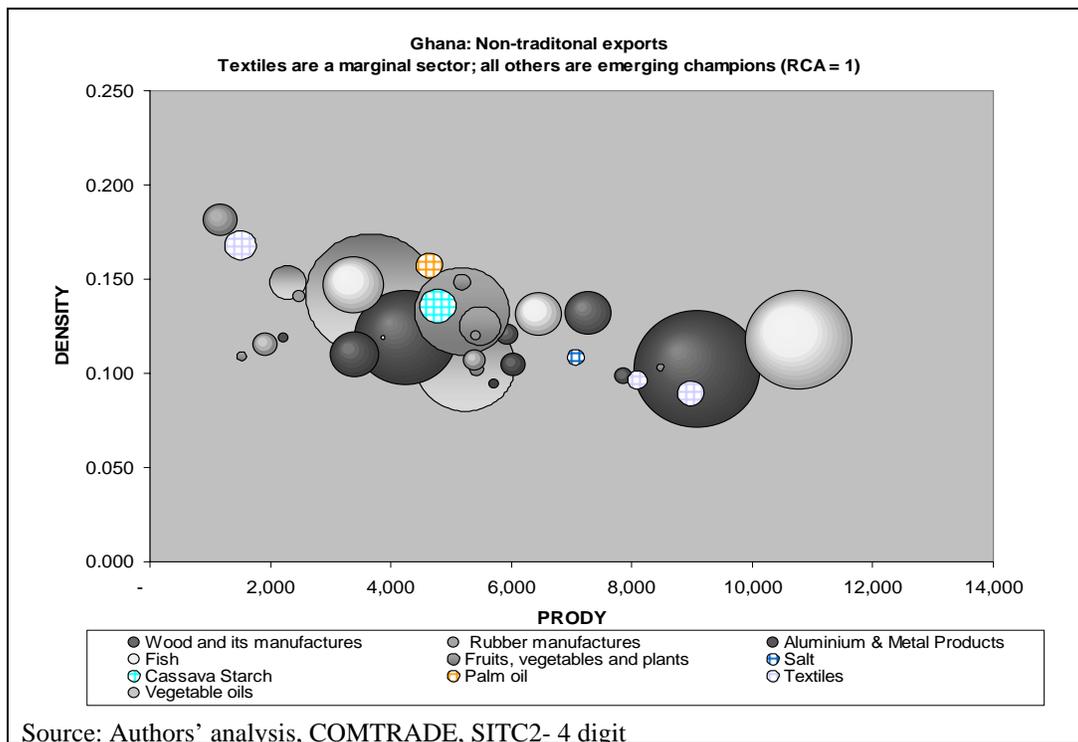
the PSIs have the potential to pay off sometime in the distant future, mostly because their skills would be valuable for other high PRODY products too.

**INCOME ENHANCING EXPORT DIVERSIFICATION
STRATEGY: NEED FOR SECTOR SPECIFICITY**

5.47 **Hausman and Klinger constructs provide precise product level information about each product that Ghana and other countries export.** However, Ghana’s location in the space of all possible exports indicates that it is far from most manufactured and processed products that have higher income potential. The framework we construct offers a simple demonstration of how the GoG can make informed choices for an income enhancing export diversification strategy for Ghana. Other strategic options may be possible.

5.48 **In the short term, reinforcing GoG support for traditional products, the classics, is necessary for export expansion as Ghana current capabilities for producing these products are strong.** However, for the medium and longer term, income-enhancing export diversification will require that at the center stage of the GoG’s diversification agenda are emerging champions with a potential to transform Ghana’s natural resource-based raw products into high PRODY ones and pave the path to a modern economy founded on processed and related manufactured products.

Figure 5.1: Presidential Special Initiative (PSI) sectors (in checks)
(Other efficient sectors (solids). Value of exports (US\$'000 – size of the bubble)



5.49 **Several considerations underlie a possible strategy we propose.** First, to preempt the risk of picking winners or seeking export discoveries, *rewarding known winners by scaling them up* is proposed. Although the list of potential emerging champions is too long, Ghana’s has had a RCA in them for at least 25 years. The fact that they still have small values suggests that externalities must be keeping them small, and that appropriate policies can reverse the trend.

Second, relative to current exports, products with higher PRODYs are preferred. Third, while Ghana's weak skills mix constrains the extent of current diversification, a gradual transformation of its technological capabilities to scale up selected emerging champions is assumed. This assumption rests on the finding that countries which export products similar to Ghanaian exports, also export these produce these emerging champions. The probability that Ghana will be able to develop its technological capabilities to export these six products is higher than it is for the other emerging champions. Fourth, the paucity of public resources and limited government capacity should guide public support toward products with longer paths or the greatest scope for further diversification in high PRODY products. However, to maximize the impact of public investments, scaling up a set of *related* products categorized as emerging champion *sectors* is preferable to scaling up a few products.

5.50 The strategy we propose is achievable through the pairing and scaling up selected products from the classics with emerging champions' categories to form six high PRODY sectors—fishery, horticulture, palm and vegetable oils, processing of locally available natural products, wood products and metals manufactures (Text Table B). These 6 options are presented but not ranked in the table.

5.51 In Figure 5.1, the small size of a bubble illustrates the export dollar value (in thousands of US\$) of a product while the sum of the same colored bubbles depicts a sector created by the paired products. Note, the size of the sectors suggests that the contribution to export growth from scaling them would be significantly higher than scaling up exports of an individual product.

5.52 Presently, as Ghana does not have the stock of diverse technological capabilities needed to scale up the proposed sectors, to a large extent, the pace of export diversification will be determined by the pace with which the requisite capabilities are scaled up. However, some skills take longer to develop than others, and some sectors are more intensive in sophisticated skills than others. Assuming that the development of skills is underway, it is reasonable to assume that export diversification in Ghana is likely to unfold in three stages.

- The **fishery¹⁵⁰ and horticulture sectors** are quick wins. They are high PRODY, high density and can, with appropriate incentives for firms, be scaled up in the short term. These sectors use locally available natural resources and offer Ghana a *complementary* path to faster export expansion that is *not* dependent on manufactured exports. Both sectors are driven by small producers and have demonstrated the potential to move countries along the fast track to a higher income status. In many countries, a catalytic environment was sufficient to deliver high growth in a few years. Chilean salmon and grapes, Indian grapes and other fruits, East African horticultural products and flowers, Colombian and Ecuadorian flowers are some examples.

¹⁵⁰ The fishery exports sector has emerged as a winner in a fairly short period in several developing countries. Chilean salmon is a good example, although Chilean style catalytic support to seed the sector would be inefficient in Ghana as there is already a critical mass. Sector-specific support to salmon incentivised the production of fishing tanks, fish food and production practices in Chile. Kenyan, Tanzanian, and Ugandan exports of high-value *fillet* to the EU (for details of the '*how to*,' see Chandra 2006) require regulation and assistance in helping producers to comply with phytosanitary standards (an action the Great Lakes countries in East Africa were able to implement speedily), cold chains-related infrastructure, and regular air transport to the EU. Between 2000–04, Uganda's fish fillet exports increased from negligible values to become its second largest export product, rivaling coffee.

- **Palm and vegetable oils,¹⁵¹ and other natural processed products** are relatively small sectors, involve large and small firms and are more likely to scale up in the medium term. Relative to other sectors, scaling up exports of food oils, cassava starch and salt would have large spillovers for Ghana's industrial capabilities. Note, palm oil, salt and cassava starch are PSI products whose contribution to income would be infinitesimal as individual products.
- **Wood and Metal manufactures** will evolve over the longer term. They would be capital intensive in the initial stages of development and spawn a diverse range of light and heavy industries that usually form the foundation of an industrial economy.

5.53 These 6 options are listed in Table 5.2. They are not ranked, nor are all necessary for Ghana to become a higher income country.

Table 5.2: Sector-specific Options for an Income-enhancing Export Diversification Strategy for Ghana

SITC Code	Product Description	Classic Product	Emerging Champion	Export Level 80-84 ('000 dollars)	Export Level 00-04 ('000 dollars)	Path	Density	Expected gains from diversification
I	Fishery and fish products industry							Short term
371	Fish,prepared/ripreserved products	x		3,534	88,523	120	0.118	
342	Fish,frozen (excluding fillets)		x	2,433	18,070	105.2	0.131	
360	Crustaceans and mollusks,fresh,chil		x	2,662	28,582	96.1	0.14	
II	Horticultural products industry							Short term
2924	Plants,seeds,fruit used in perfumes		x	430	1,647	105	0.14	
545	Other fresh or chilled vegetables		x	22	13,206	122	0.125	
579	Fruit,fresh or dried, n.e.s.		x	706	71,671	117	0.133	
586	Fruit,temporarily preserved		x	37	1,656	150	0.10	
III	Timber and manufactured wood products industry							Med-longer term
2472	Sawlogs and veneer logs nonconiferous	x		11,426	11,605	96	0.148	
2483	Wood of non-coniferous species, sawn	x		19,978	133,594	110	0.14	
6341	Wood sawn lengthwise, sliced/peeled,	x		4,516	77,808	136	0.104	
6342	Plywood consisting of sheets of wood		x	398	16,471	102	0.132	
6344	Wood-based panels,n.e.s.		x	158	2,808	138	0.099	
6354	Manufactures of wood for domestic/d		x	36	4,142	118	0.121	
2450	Fuel wood (excluding wood waste)		x	5	1,095	130	0.119	
IV	Metals and aluminum manufactures industry							Med-longer term

¹⁵¹ Palm oil has one of the lowest paths or export diversification potential. Most of its exporters have, at best, transitioned from crude to refined palm oil. Malaysia is one of the rare exporters that had rapid success in transforming crude into refined palm oil and the latter into oleo-chemicals. It is at the global frontier in oleo-chemicals exports but this was possible because it had a well developed manufacturing base before it entered the oleo-chemicals industry.

¹⁵¹ Ghana's experience with other manufactured products made it easy for it to shift to palm oil. To compensate for its small manufacturing base, it might be more beneficial for Ghana to consolidate the palm oil sector with other oil-based sectors so that there is general capacity building in the food oils sector.

SITC Code	Product Description	Classic Product	Emerging Champion	Export Level 80-84 ('000 dollars)	Export Level 00-04 ('000 dollars)	Path	Density	Expected gains from diversification
6841	Aluminum and aluminum alloys,unwr	x		196,795	127,229	117	0.102	
2771	Industrial diamonds,sorted,whether	x		2,062	2,524	78	0.102	
2877	Manganese ores and concentrates	x		11,374	81,972	64	0.119	
2873	Aluminum ores and concentrates (in		x	3,926	19,011	78	0.110	
2882	Other non-ferrous base metal waste		x	1,197	5,109	129	0.105	
V	Food & other oils industry							Short-medium term
4242	Palm oil		PSI	4	5,677	67	0.157	
4249	Fixed vegetable oils,n.e.s		x	3	4,020	122	0.107	
2223	Cotton seeds		x	5	1,628	85	0.141	
2238	Oil seeds and oleaginous fruit.		x	722	5,481	125	0.116	
VI	Other processed natural products							Short-medium term
548	Vegetable products, roots & tubers,		PSI	113	11,601	108	0.136	Short term
2631	Cotton (other than linters),		PSI	522	8,111	80	0.168	Short term
2783	Common saltsalt;rock sat,sea salt;pur.s		PSI	1,089	2,553	129	0.108	Short term
2320	Natural rubber latex; nat.rubber industry		x	685	9,352	56	0.181	

WHY SECTOR-SPECIFICITY MATTERS FOR GHANA

5.54 **Section 6 indicates that for an income enhancing export diversification strategy, Ghana needs to export more products that are similar to those exported by richer countries.** It also shows that presently, there are many *such* 'rich country' products, albeit with very small export values, in the Ghanaian export basket. This raises two critical questions: (a) should policy makers extend public support to *all* nontraditional 'rich country' products or should they be selective? And, (b) should they focus on existing products and, if yes, which ones? Or should they also seek the discovery of new products? The case for sector-specificity rests on the answers to these two questions.

5.55 **Interestingly, Ghana has maintained a RCA over the past 25 years in a fairly large number of nontraditional 'rich country' products.** The fact that they still have very small values suggests that something in the economic environment continues to deter private firms from scaling them up. As the overall macroeconomic environment has been relatively stable, and as the discussion in sections 1 and 2 suggest, sector specific policies may be necessary to alleviate sector specific constraints related with externalities. As an example, the growth of horticultural exports may be constrained by the lack of compliance with the phytosanitary, pesticide, and quality standards required to penetrate developed country markets and/or farm to airport feeder roads and regular air transport to the European market. In contrast, diversification in more sophisticated wood products may be constrained by poorly developed industrial areas, shortage of power, water, a weak investment climate etc..

5.56 **The case for sector specificity is motivated by the prevalence of distinct constraints to scaling up in each sector.** A second reason is that in the presence of scarce financial and government capacity-related public resources, it would be prudent for policy makers to focus on a manageable number of sectors as opposed to spreading scarce public resources too thin without providing adequate support to any sector. An appropriate sector specific strategy would entail

providing comprehensive support to a selected sector until its exports started tracking a high growth trajectory. The next question then is ‘which sectors?’ Our analysis in section 6 identifies a set of 6 sectors that would be most feasible for Ghana to diversify into.

5.57 The choice of products can be tricky, and Ghana has neither the resources nor the luxury of time to experiment with new products. Besides, global experience suggests that product/export discoveries are mostly outcomes of serendipity which has well known hazards and should be avoided. The long list of ‘marginals’ in text table A is evidence of export discoveries in which Ghana does not have a RCA and which have not scaled up. Many of these are likely to be dead-end sectors that would not prepare incumbent firms to evolve toward other sophisticated activities.

5.58 In the Ghanaian context, based on the technical analysis, a strategy of *rewarding or scaling up known* and winning sectors is superior to picking unknown winners, some of which are yet to be discovered. The 6 winning or emerging¹⁵² highlighted in text table A shows that their collective value shares are adequate to constitute the critical mass necessary to increase income levels in Ghana.

CONCLUSIONS

5.59 Our objective was to explore the options for export diversification in Ghana when the development goal is accelerated and sustained increase in per capita income. For the past twenty five years, Ghana practiced the standard rule of comparative advantage, i.e., continue to export cocoa and gold, and more of them, but in spite of a reasonably favorable environment, the anticipated gains in income gains did not accrue. Nevertheless, with recent strengthening of macroeconomic stability, Ghana’s overall growth and export performance improved.

5.60 Ghana’s merchandise exports presently account for about 40% of GDP which makes them a critical driver of its growth. If it wishes to achieve a middle income status in the next ten years, export diversification is an imperative.

5.61 This chapter presents a *tentative* analysis with at least five preliminary contributions—and it should be noted that, strictly interpreted, they flow somewhat beyond the mainstream literature on export growth and diversification in Sub-Saharan Africa and Ghana. The main contribution is to show what an income enhancing export diversification strategy could be and what it implies for Ghana’s export mix. By appealing to a new and innovative methodology (Hausmann, Hwang and Rodrik (2005) and Hausmann and Klinger, 2007) which links an exported product to the income levels of countries that export it, we benchmark Ghanaian exports in the universe of products exported by all countries.

5.62 We find that if Ghana would export more of at least some products ‘rich country’ products that it already produces, it may be able to leapfrog and transform itself into a modern economy, just like some developing countries in East Asia did in a relatively short time span. Interestingly, our analysis indicates that presently, Ghana already exports many ‘rich country’ products but their export values and shares are too small to affect its income levels. After applying stringency tests to this list of products, as a second contribution, we identify six *potentially* efficient sectors and speculate that *rewarding or scaling up* these known and winning sectors would be superior to the more risky strategy of picking unknown or inefficient winners or seeking export discoveries.

5.63 The proposed diversification strategy does *not* imply that the GoG should neglect the traditional export sectors. In the short term, they are indispensable; over the longer term, as

¹⁵² Efficient products are based on the analysis in section 6. They have a high income potential (PRODY), pass the RCA test, for which Ghana either has or could develop appropriate technological capabilities (Density) and have a high potential to foster forward linkages to more sophisticated products (path).

the new, potential emerging champions are scaled up, the share of traditional exports should diminish. As Ghana's current skills mix would have to be adapted and developed further to satisfy the skills requirements of the six emerging sectors, the proposed strategy would likely evolve in three stages.

- In the *short term*, the quick wins would be fresh or processed produce that form the (1) horticultural and (2) fishery sectors which engage small producers who have the basic skills but need other complementary inputs such as public goods to attract investors and scale up. The experience of at least three Sub-Saharan African countries—Uganda, Kenya and Tanzania—demonstrates that with political commitment, this goal is achievable. Scaling up the remaining four sectors is technically feasible but a policy challenge for Ghana.
- The second stage or the **medium term** would involve emerging champions such as the fledgling salt and starch products that presently fall under the (3) processed natural resources sector, and oils from palm, cotton seeds and vegetables that form the (4) food and vegetables oils sectors.
- In the third stage or the **longer term**, products such as furniture, plywood, and other construction materials made of wood that form the (5) wood manufactures sector, and, perhaps, some (6) metal products sectors are possible. Demonstrating the need for *sector specificity* as the core of our proposed export diversification strategy is our third contribution.

5.64 **The recommendation for sectors (3)—(6) is based on the result that countries that presently export what Ghana exports in these sectors but in raw form, also export these products.** Their technological capabilities were similar to Ghana's, but were adapted to facilitate exports of more sophisticated products. This finding does not imply that diversification in these four sectors would be market driven and occur naturally.¹⁵³ Nor has it in the past twenty five years. Rather, it shows that other natural resource exporters like Ghana were able to diversify in this direction, and the probability that Ghana could do the same is the highest in these than in the universe of sectors. Can Ghana do it?

5.65 **Excluding the necessity of maintaining a reasonably stable macroeconomic environment, a sector specific diversification strategy has sector specific policy implications.** As we noted earlier, our objective in this paper was to demonstrate what an income enhancing export diversification strategy for Ghana could look like. Accordingly, we leave the detailing of sector-specific policy recommendations for a later exercise to be completed with the benefit of a field study, including that of the institutional mechanisms. Below, we highlight the central justification—technological capability building—for sector specific policies.

5.66 **The fact that in spite of Ghana's revealed comparative advantage in them since the early 1980s, these sectors have not scaled up suggests that externalities and/or institutions, possibly specific to each sector, have deterred new firms from entering or expanding in that sector.** The brunt of our sector specific diversification strategy falls directly on the fostering of *technological capabilities* that Ghanaian firms have little incentive or expertise to develop. If we reasonably assume that in an integrated global market, private capital and most other material inputs are mobile or importable, then the most costly public inputs that private investors seek and the GoG can facilitate are technological skills and some other location specific inputs such as standards and infrastructure. As these prerequisites for scaling up the 6 sectors are distinct,¹⁵⁴

¹⁵³ In fact, in a related context, the complexities of the global market would suggest that the scaling up of new sectors would be challenging.

¹⁵⁴ The horticultural and fishery sectors would need incentives such as the distribution and dissemination of superior plant technologies, regulation of phytosanitary standards, marketing and other logistical support,

entail high fixed costs and long time horizons, there is no substitute for GoG facilitation, especially to ensure that a sufficiently large pool of high quality capabilities is delivered. It would be a mistake to postpone the development of technological capabilities for the woods and metals related manufacturing sectors as these should, in the longer term, become the backbone of a modern natural resource based economy.

5.67 Arguably, skills or infrastructure are ingredients in almost any development policy package but there is an important distinction. We suggest that these and other essential non-tradable public inputs, as well as institutional hurdles could be diagnosed after further fieldwork and be considered an integral part of a comprehensive support package provided by the GoG to each selected sector until it achieves a critical mass. Sector specificity implies dedicated sector specific policy implementation.

5.68 GoG may find it useful to learn from the experience of other countries that successfully nurtured sector-specific export strategies (Appendix 2).¹⁵⁵ In the short run, governments often overcome the technical skills constraint by welcoming FDI that is usually endowed with the technology and skills needed to operate the host sector, but recognized this as an interim measure.

5.69 An evaluation of the four recent Presidential Sector Initiatives intended to spur export diversification shows that it may be efficient for Ghana to export 3 of the 4 PSI products—salt, starch and palm oil. The efficiency of the textiles PSI is ambiguous. It would be efficient if it covers exports of cotton without linters, but inefficient if it covers textiles or fabrics in which Ghana does not presently have a revealed comparative advantage. Individually as well as collectively, the PSIs are unlikely to have a significant effect on export and income growth, as well as employment creation because their collective export value is only 1% of Ghana's total exports.

5.70 We make two other contributions. We show that an income enhancing export diversification strategy for Ghana cannot be formulated by simple formulae that produce a unique recipe. Sector specificity introduces tradeoffs between selection criteria such as the income potential, ease and scope for diversification. As an example, catalytic government support to scale up the PSIs without cognizance of their skills requirements or potential to spawn other sophisticated sectors can be counterproductive for Ghana's development in the longer term.

5.71 We find that for low income Ghana, the path to a middle income status is possibly but not necessarily paved with only manufactured exports. After all, very few low-income African countries have managed to develop significant manufacturing sectors (See chapter on investment climate above in this volume). The tentatively identified sectors indicate that there may exist multiple paths to income enhancing export diversification. Natural resource based sectors such as wood and metals are not necessarily a 'curse,' and if scaled efficiently and sufficiently, they can boost income levels significantly. In fact, the income potential of these sectors often exceeds that of some low tech manufactures.

and foreign assistance from soil scientists and fishery experts. This strategy would not be transferable to the timber and metals manufacturing sectors where the main productive agents, the firms, are few and need a workforce that has the forestry and metallurgy type engineering and related technical capabilities. Concurrent and large scale investments in building technological capabilities in all six sectors would be indispensable but also quite distinct.

¹⁵⁵ Ten sector specific successful diversification experiences of developing countries are documented in "Technology, Adaptation and Exports: How Some Developing Countries Did It" (Chandra, ed. 2006).

REFERENCES

- Aryeetey, E. (2003) "Explaining Economic Growth in Ghana," presented at the GoG workshop on "How Can Ghana Achieve Growth and Prosperity?" paper from the Workshop organized by the GoG with support from DFID.
- Aryeetey, E., A. Fosu, and M. Bawumia (2001). "Explaining African Economic Performance: The Case of Ghana," prepared for the African Economic Research Consortium.
- Barro, Robert J. and Jong-Wha Lee (2001). "International Data on Educational Attainment: Updates and Implications." *Oxford Economic Papers* 2001; 53: 541-563.
- Bogetić, Z., M. Bussolo, X.Ye, D. Medvedev, Q. Wodon and D. Boakye (2007). "Ghana's Growth Story- How to accelerate growth and achieve MDGs?" Volume 1 of the *Ghana Country Economic Memorandum*, The World Bank, Washington D.C.
- Bonaglia, F. and K. Fukasaku (2003). "Export diversification in low-income countries: an international challenge after Doha." OECD Technical Paper, No. 209.
- Chandra, V. (2006). *Technology, Adaptation and Exports – how some developing countries did it*, The World Bank.
- Collier, P. (1998). Globalization: implications for Africa, in Iqbal,Z. and Khan, M. (eds), *Trade Reform and Regional Integration in Africa*, IMF, Washington, D.C.
- Collier, O. (1998) Comments, *Brookings Papers on Economic Activity*, no. 2, 274-81.
- Collier, P. (2002). *Primary Commodity Dependence and Africa's Future*, The World Bank.
- Collier, P. and J. Gunning (1999). "Explaining African Economic Performance," *Journal of Economic Literature*, vol. XXXVII, pp. 62-111.
- Collier, P. (2006) based on his 2006 annual public lecture of the Royal Economic Society, and his forthcoming book, *The Bottom Billion*, The Financial Times Limited 2006.
- The GOPDC website www.gopdc-ltd.com.
- Eifert, B., A. Gelb and V. Ramachandran (2005). *Business Environment and Comparative Advantage in Africa: Evidence from the Investment Climate Data*, mimeo ?).
- The Economist, EIU, April 2007, Print edition, Country Report 2005.
- Elbadawi, I. and L. Kaltani (2007). "Scaling-up Aid for Ghana: Maintaining Competitiveness, Avoiding the Dutch Disease, and Accelerating Growth," Draft for Ghana CEM, 2007.
- Fafchamps, M. (2003), "Future Prospects for Growth in Africa," paper from the Workshop organized by the GoG with support from DFID.

FAO. “The Global Cassava Development Strategy and Implementation Plan” FAO, Agricultural Department.

-----“Small Scale Palm Oil Processing in Africa”, FAO Agricultural Service Bulletin 148.

FAOSTAT.

Ghana EIU Country Report, November 2005.

GIPC “Ghana Investment Profile: Food Production and Processing”, www.gipc.org.

Ghana: 2005 Article IV Consultation, Third Review Growth Facility, and Request for Waiver of Nonobservance and Extension of the Arrangement—Staff Report; Growth with Stability—2007 Budget Speech (Thursday, 16th November, 2006), Kwadwo Baah-Wiredu, M.P. MINISTER OF FINANCE AND ECONOMIC PLANNING.

Ghana: -“Ghana International Competitiveness: Opportunities and Challenges facing the Non-Traditional Exports”, The World Bank, Africa Region Report No. 22421-GH, June 21, 2001.

Ghana Investment Promotional Council “Ghana Investment Profile: Furniture and Wood Processing”, The GOPDC website www.gopdc-ltd.com.

Government of Ghana (2003). “How Can Ghana Achieve Growth and Prosperity?” papers from the Workshop organized by the GoG with support from DFID. Hon.Y. Osafo-Mafo, Minister of Finance and Economic Planning, Ghana , Growth Report, (May 14, 2003).

Habiyaremye, A. and T. Ziesemer (2006). “Absorptive Capacity and export diversification in SSA countries,” UNU—UNU MERIT, Working Paper Series, No. 2006-030.

Hesse, H. (2006) “Export Diversification and Economic Growth,” mimeo.

Hausmann, R., J. Hwang and D. Rodrik (2005). „What you export matters,“ CID Working Paper no. 123.

Hausmann, R. and B. Klinger (2006). ”Structural Transformation and Patterns of Comparative Advantage in the Product Space,” CID Working Paper No.128, August 2006.

Imbs, J. and Wacziarg, R. (2003). “Stages of diversification.” *The American Economic Review*. 93(1): 63-86.

IMF Ghana Statistical Appendix, 2005.

International Trade Center Program for building African Capacity for Trade (PACT)“PACT Ghana: Export Development of Horticultural Products” www.intracen.org.

Lall, S. (2000). “The technological structure and performance of developing country manufactured exports, 1985-1998.” *Oxford Development Studies*. 28(3): 337-369.

- Lederman, D. and W. F. Maloney (2007) 'Trade Structure and Growth,' in *Natural Resources: Neither Curse Nor Destiny* (eds.) D. Lederman and T.N. Srinivasan, Stanford University Press, Palo Alto.
- Logan, C., T. Fujiwara, and V. Parish (2006), "Citizens and the State in Africa: New Results from Afrobarometer Round 3," Afrobarometer Working Paper No. 61.
- "Market for Mangoes in the UK" GEPC Market Briefs, www.gepcghana.com.
- Morgane Danielou and Christophe Ravry "The Rise of Ghana's Pineapple Industry: From Successful Take-off to Sustainable Expansion" The World Bank Africa Region Working Paper No. 93, November 2005.
- Nweke, F. "New Challenges in the Cassava Transformation in Nigeria and Ghana", International Food Policy Research Institute, EPTD Discussion Paper No. 118, June 2004.
- Osey Boeh-Ocansey "Exporting Business and Professional Services: Exporting Solutions Ghana Experience", International Trade Center, Executive Forum on National Export Strategies, October 5-8, Montreux, Switzerland.
- Rodrik, D. (2006). "What's So Special About China's Exports," NBER Working Paper Series, No. 11947.
- Sarpong, D.B. and Susanna Wolf "Export Performance and Investment Behaviour of Firms in Ghana", Draft paper presented for the ISSER/Cornell University Conference on Ghana's Economy at Half-Century, June 2004.
- Seini, A.W., V. K. Nyanteng and A. Asantewah Ahene "Policy Dynamics, Trends in Domestic Fish Production and Implications for Food Security in Ghana", Draft paper presented for the ISSER/Cornell University Conference on Ghana's Economy at Half-Century, June 2004.
- Stanton, D. (2003) "The Global Experience of Private Sector Development," paper presented at the Workshop organized by the GoG with support from DFID.
- Teal, Francis, James Habyarimana, Papa Thiam, and Ginger Turner (2006). "Ghana: An Analysis of Firm Productivity," Regional Program for Enterprise Development (RPED), Africa Private Sector Group (AFTPS) (June), The World Bank, Washington D.C.
- Teal, F. (2002) "Export Growth And Trade Policy in Ghana in the Twentieth Century." *The World Economy* 25 (9): 1319–37.
- Wood, A. (2003). "The Global Experience of Growth." Paper from the Workshop Organized by the GoG with Support from DFID.
- Wood, A., and J. Mayer (2001). "Africa's Export Structure in a Comparative Perspective," *Cambridge Journal of Economics* 25: 369–94.

The World Bank. (2001). Ghana: “International Competitiveness Opportunities and Challenges Facing Non-Traditional Exports.” The World Bank Report No. 22421-GH. June 21.

_____. Annual. World Development Indicators Database.

_____. 2006. Doing Business.

_____. 2004. World Development Indicators.

WSP/EUWI/UNDP. 2006. “Getting Africa on Track to Meet the MDGs on Water and Sanitation.” October.