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GHANA

Selected Issues

Prepared by a staff team consisting of Piroska M. Nagy (head), Plamen Iossifov, Elena Loukoianova, Oduetse A. Motshidisi, Catherine Pattillo, Amar Shanghavi (all AFR), and Bernardin Akitoby (FAD)

Approved by the African Department

May 15, 2007

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I. Competitiveness and the Equilibrium Real Exchange Rate for Ghana[1]

1. **In this chapter of the selected issues paper, we estimate a behavioral equilibrium exchange rate model for Ghana to establish to what extent REER movements have been driven by an adjustment to its equilibrium values, consistent with changing fundamentals.** The real effective exchange rate (REER) of the Ghanaian cedi depreciated sharply in 2000 as a result of a large negative terms-of-trade shock and the collapse of the cedi in nominal terms in 1999–2000. Since then the cedi has been appreciating in real effective terms, despite the depreciation of the nominal effective rate. What factors are driving the REER in Ghana? Is there a misalignment between the actual and equilibrium REER at present? In this chapter of the selected issues paper, these questions are addressed by estimating a behavioral equilibrium exchange rate (BEER) model for the REER of the cedi using quarterly data for 1984 through 2006.

2. **This chapter of the selected issues paper is organized as follows:** Section A briefly discusses measures of Ghana's external competitiveness other than the gap between the actual and the estimated equilibrium REER. Section B reviews recent literature on REERs and identifies the model to be estimated. Section C describes the data used in the empirical analysis and data patterns for the main variables. Then, it investigates the presence of a long-run cointegrating relationship between the REER and a set of fundamentals. The results are used to derive measures of the equilibrium REER and the gap between the actual and estimated equilibrium values of the REER. Section D concludes.

A. Measures of External Competitiveness

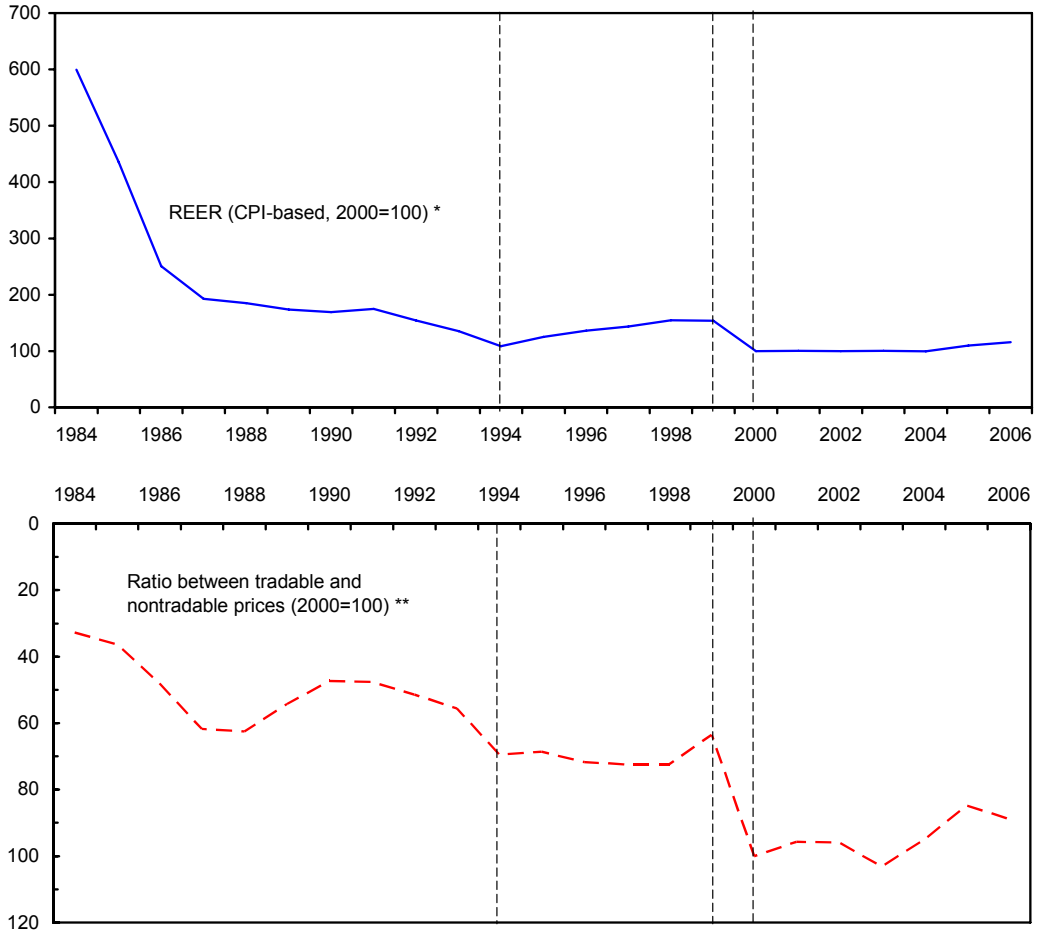
3. **There are two main approaches used in assessing external competitiveness: one is based on relative price indicators and the other one on current account flows.** The first relative price approach makes use of various measures of the REER based on CPI, PPI, and unit labor cost, as well as the ratio between tradable and nontradable prices. The second approach, based on current account flows, relies on both "traditional" and "nontraditional" competitiveness indicators. The traditional competitiveness indicators look at export growth, market shares, and the overall current account position. Increasingly, non-traditional competitiveness indicators, which aim at assessing the quality of the business climate and hence the country's attractiveness for investors, have been included in competitiveness assessments. This section briefly reviews the traditional competitiveness indicators for Ghana before moving to the analysis of the REER.

4. **Four distinct periods can be seen in the evolution of Ghana's external competitiveness, as measured by the REER, and the ratio of the prices of tradable and nontradable goods**: (i) an improvement from 1984 though 1994; (ii) some deterioration in

[1] Prepared by Plamen Iossifov and Elena Loukoianova. Amar Shanghavi and Anne Grant provided invaluable research and editorial assistance.

1995-99; (iii) a rapid improvement in 1999-2000; and (iv) some worsening since 2000 (Figure I.1). Both indicators based on aggregate price indices (for tradables and nontradables)[2] suggest deterioration in external competitiveness after 2003 of around 10 to 15 percent in magnitude.

Figure I.1. Ghana: Measures of External Competitiveness Based on Aggregate Price Indices, 1984-2006



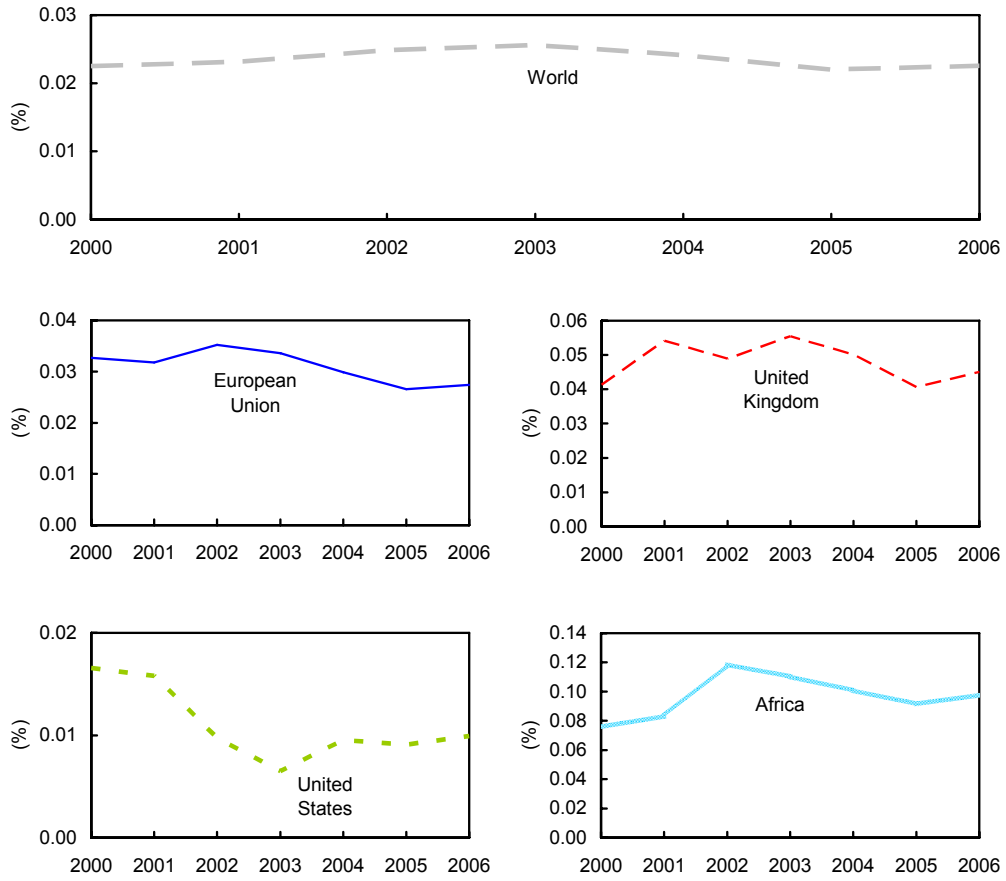
Source: IMF, Information Notice System, national authorities, and IMF staff estimates.

* An increase in the indicator implies a deterioration of competitiveness; a decrease implies improvement.
** Ratio of export price index (2000=100) to tertiary GDP deflator (2000=100). An increase in the indicator implies an improvement in competitiveness; a decrease implies deterioration.

[2] "The intuition behind measures of competitiveness based on aggregate price indices is that they give an indication of differences across countries in the extent of resource pulls between traded and nontraded goods sectors. Specifically, if prices of traded goods in different countries are closely related through international competition, then a real appreciation of the currency based on aggregate prices would suggest that developments in the internal terms of trade are more favorable to nontraded goods in the appreciating country. From this it is implicitly inferred that resources are being drawn out of the production of traded goods into that of nontraded goods at a faster pace than in other countries—a process that should weaken the external trading position of the appreciating country." (Lipschitz and McDonald, 1991).

5. **Competitiveness indicators based on Ghana's export performance exhibit different time patterns than measures based on aggregate price indices (Figure I.2).** Since 2000, the market share of Ghana's exports in total world imports has hovered around 0.023 percent, showing little sign of loss of competitiveness. Over the same period, the market share of Ghana's exports in total imports of Africa and to a lesser extent the United Kingdom have increased. On the other hand, the market share of Ghana's exports in total imports of the United States and to a lesser extent the European Union have declined. The evidence derived from export market shares is discounted because these measures are heavily influenced by factors that affect the relative prices of Ghana's export commodities compared to other imports of trading partners (e.g., crude oil) and the specifics of its exchange rate management. For example, the observed "loss of market share" in the United States after 2002 is most likely an artifact of the sizable depreciation of the U.S. dollar against most currencies, though not the cedi. This increased the dollar-equivalent of total U.S. imports with no effect on the dollar-equivalent of imports from Ghana.

Figure I.2. Ghana: Measures of External Competitiveness Based on Export Market Shares, 2000–2006 [1]



Source: IMF, Directions of Trade database; and IMF staff estimates.

[1] Ghana's exports to certain countries as percent of total imports of those countries.

B. Model Selection

6. **This section reviews selected theoretical literature on REERs in order to identify a model for estimation.** The starting point is modeling the short-run behavior of the REER using the uncovered interest rate parity (UIP) condition. Following Frankel and Rose (1995), the expectations of the inflation differential are subtracted from both sides of the UIP equation and reinterpreted so that the real interest rate differential is equal to the expected depreciation of the REER plus a risk premium:

$$r_t - r_t^* = E_t(q_{t+1} - q_t) + \rho_t, \qquad (1)$$

In equation (1), r_t and r_t^* are expected domestic and foreign real interest rates defined by $r_t = i_t - E_t(p_{t+1} - p_t)$ and $r_t^* = i_t^* - E_t(p_{t+1}^* - p_t^*)$; q_t is (log) real exchange rate defined by $q_t = e_t + p_t^* - p_t$; e_t is (log) nominal exchange rate (domestic currency units per unit of foreign exchange); p_t and p_t^* are (log) corresponding domestic and foreign prices; and ρ_t is the (time-varying) risk premium.

7. **In the long run, the REER will revert toward an equilibrium time-varying path (Frankel and Rose, 1995):**

$$E_t(q_{t+1} - q_t) = -\theta\left(q_t - \bar{q}_t\right), \qquad (2)$$

In equation (2), $\bar{q}_t$ is the long-run equilibrium real exchange rate.

8. **Combining (1) and (2) yields:**

$$q_t = \bar{q}_t - \frac{1}{\theta}\left(r_t - r_t^*\right) + \rho_t \qquad (3)$$

9. **There are two approaches for modeling the long-run equilibrium value of the REER:[3] the fundamental equilibrium exchange rate (FEER) and the behavioral equilibrium exchange rate (BEER).** In the FEER approach the notion of equilibrium that is considered relevant for assessing current exchange rates is that of macroeconomic balance. This concept is absent from the BEER approach, where the relevant notion of equilibrium is the value given by an appropriate set of explanatory variables.[4]

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[3] See MacDonald (1999) for a detailed survey of existing approaches.

[4] Clark and MacDonald (1998).

10. **The FEER and BEER approaches identify different sets of explanatory variables as the main determinants of the equilibrium REER (MacDonald, 1998).** FEER models single out variables that affect the equilibrium current and capital account balances, such as domestic and foreign real incomes, and factors influencing national savings and investment, such as permanent fiscal consolidation. BEER models, on the other hand, emphasize variables that affect the relative prices of traded to nontraded goods at home and in foreign countries, such as differing trends in productivity in traded goods sectors and asymmetric terms-of-trade shocks. In the BEER framework the equilibrium REER ($\bar{q}_t$) in equation (3) is proxied by its determinants, such as macroeconomic fundamentals.

11. **This study employs the BEER methodology to estimate the equilibrium real exchange rate in Ghana.** The measure of the real exchange rate in Ghana is the log of the real effective exchange rate (*lreer*), based on a definition of the nominal effective exchange rate in terms of foreign currency units per unit of the domestic currency. As part of a vector error correction model (VECM), a version of equation (3) is estimated. In this model, the short-run and long-run elasticities of the real exchange rate with respect to macroeconomic fundamentals are evaluated simultaneously. A long-run equilibrium path of the real exchange rate is then obtained by applying the long-run elasticities to the actual values of macroeconomic fundamentals in a given period.

12. **The choice of macroeconomic fundamentals is informed by the FEER and BEER approaches to modeling the long-run equilibrium real exchange rate.** In addition to the real interest rate relative to trading partners *(rirr)*, the empirical model uses variables that capture productivity differences across countries (the Balassa-Samuelson effect[5]), terms-of-trade shocks,[6] fiscal stance (*fby)*,[7] trade openness (*openy*) as a proxy for commercial policies that may affect the equilibrium current account balance, and net foreign assets of the banking system (*nfy*) as a proxy for changes in the equilibrium capital account balance. Following MacDonald and Ricci (2003) the model uses the (growth of) real GDP at PPP per capita relative to main trading-partner countries (*lgdppcpppr)* as a proxy for the Balassa-Samuelson effect, and various measures of the real world prices of Ghana's main export commodities

[5] If a country experiences an increase in the productivity of the tradable sector (relative to its trading partners), its real exchange rate would tend to appreciate. For given prices of tradables, such stronger productivity would induce higher wages prices of nontradables, and, hence, an increase in the consumer price index relative to trading partners (MacDonald and Ricci, 2003).

[6] A positive terms of trade shock would either lead to nominal exchange rate appreciation, or would tend to increase domestic demand putting upward pressure on the price of nontradables, or both, resulting in an appreciation of the REER.

[7] The impact of the fiscal stance on the REER would depend on how an extra fiscal stimulus is spent on tradable and nontradable goods. If it mostly goes toward purchases of nontradables/tradables, it would tend to appreciate/depreciate the REER.

(*lrpr4_gh and other price variables*) as proxies for terms-of-trade shocks.[8] [9] Different subsets of these macroeconomic fundamentals have been found to be statistically significant determinants of real exchange rates in a number of African countries.[10]

13. **The expected signs of the different explanatory variables in the equation for the equilibrium real exchange rate are, according to MacDonald (1997) and MacDonald and Ricci (2003):**

$$\overline{lreer} = f(lgdppcpppr^{+}, rirr^{+}, lrpr4\_gh^{+}, nfy^{+}, fby^{+/-}, openy^{-}) \quad (4)$$

C. Data and Methodology

14. **Figure I.3 plots the evolution over time of the REER determinants included in equation (4).** They are the real interest rate differential to Ghana's trading partners, real GDP at PPP per capita relative to Ghana's main trading partners, trade openness (the sum of exports and imports of goods and non-factor services), the fiscal balance, net foreign assets, and real commodity prices (weighted average of cocoa beans, cocoa products, gold, and timber) (Figure I.3).

15. **Data patterns in the explanatory variables[11] that are worth highlighting are**:

- The volatility of the real interest rate differential relative to trading partners before 1998 mirrors a high inflationary period in Ghana. The inflation rate was high and volatile throughout 1980-2000, reflecting political instability, poor fiscal discipline, shortfalls in aid flows in the 1990s, and a collapse of the cedi in 1999/2000. In particular, a hike in inflation in 2000 was largely driven by the need to provide monetary finance for fiscal slippages and shortfalls in donor support, as well as triggered by the sharp fall in world cocoa prices. The decline in the real interest rate differential in the years following the 1999/2000 collapse of the cedi reflects the normalization of the economic climate in Ghana and the renewed confidence.

- The sharp decline of real GDP at PPP per capita with respect to main trading partners, which started in the early 1980s and was a result of: (i) political unrest in the 1980s;

[8] The real commodity prices were found to be significant determinants of the REER in other studies, see Cashin et al. (2004) and MacDonald and Ricci (2003).

[9] See Appendix I for definitions of the variables.

[10] South Africa: MacDonald and Ricci (2003); Algeria: Koranchelian (2005); Madagascar: Cady (2003); Botswana: Iimi (2006).

[11] Variables available only at annual frequency, such as GDP and commodity price measures, are interpolated into quarterly observations using the standard interpolation procedure in Eviews.

(ii) negative terms-of-trade shocks; (iii) high inflation resulting in macroeconomic instability in the late 1980s and through the 1990s; and (iv) to some extent, depreciation of the cedi in nominal terms. This was followed by a steady increase in real GDP after 2000 mainly because of improved macroeconomic stability.

- The continued increase in trade openness after 1983 because of growing exports of both traditional and nontraditional commodities, rising imports of investment goods, and, more recently the favorable external environment.

- Stronger fiscal performance since 2002, as measured by the fiscal balance.[12]

- An improvement in net foreign assets starting in 1988, though with some backsliding around 1999–2000 as a result of a severe terms-of-trade shock and macroeconomic stability.

- Finally, the weighted average of the real prices of Ghana's main export commodities—cocoa, gold, timber, and cocoa products—experienced a protracted decline in 1982-92; followed by a partial rebound through 1999; then a deterioration following the severe terms of trade shocks in late 1999–2000; and a later increase and stabilization in 2004–06.

16. **To test for the existence of a long-run relationship (cointegration) between the REER and its determinants discussed above,[13] the study employs the Johansen (1995) procedure.**[14] The sample period used in the study is from the first quarter of 1984 to the third quarter of 2006.[15]

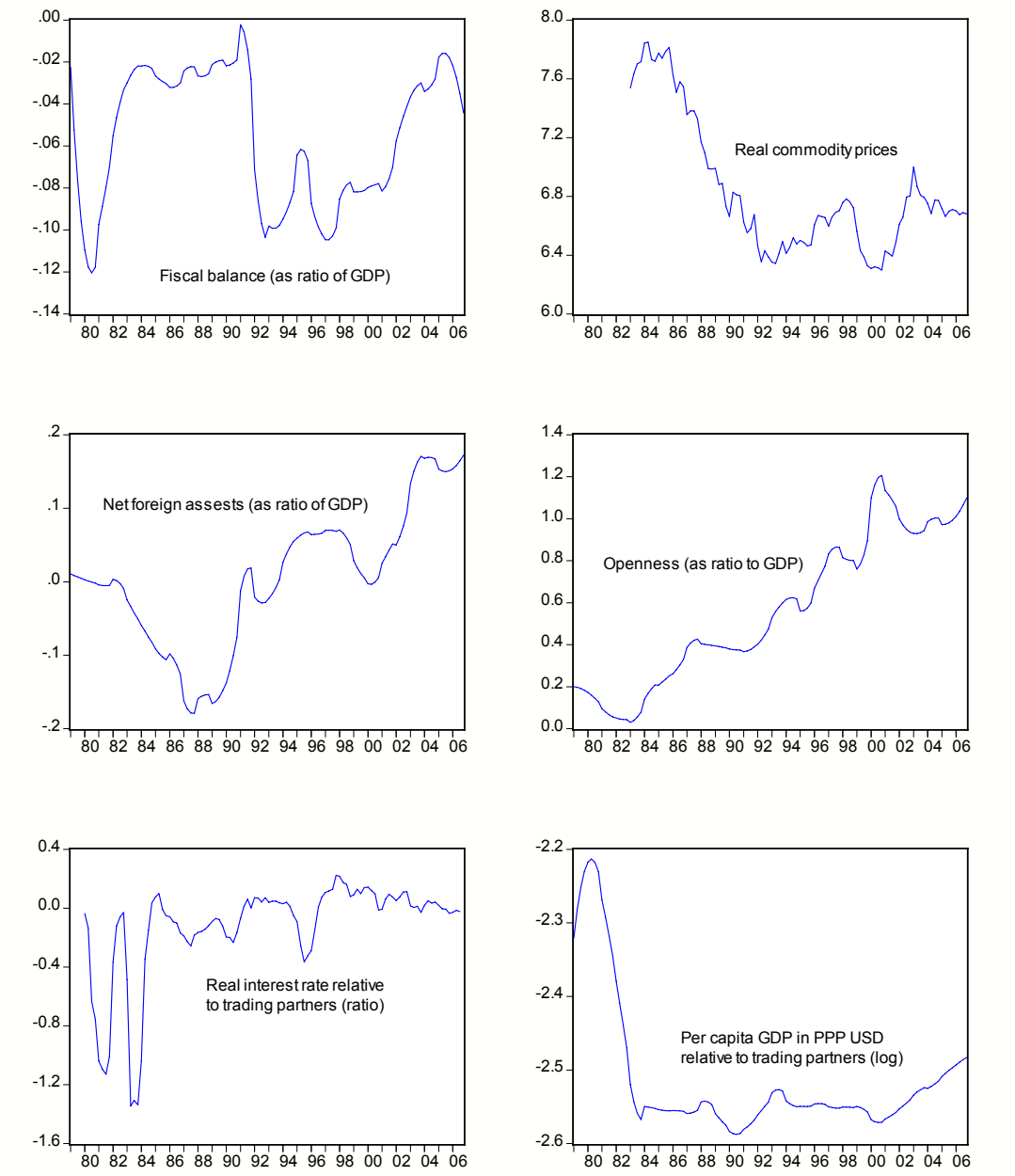
[12] Except for 2006 when the fiscal balance deteriorated due to a slippage in fiscal policy.

[13] See Appendix I for definitions of the variables.

[14] The Johansen (1995) maximum likelihood estimator corrects for autocorrelation and endogeneity parametrically using a vector-error correction mechanism (VECM) specification. See Appendix II for details on the econometric methodology.

[15] Variables available only at annual frequency, such as Ghana's GDP and commodity price measures, are interpolated into quarterly frequency.

Figure I.3. Ghana: Determinants of the Real Effective Exchange Rate, 1979–2006



Source: IMF, Information Notice System, International Financial Statistics, World Economic Outlook, Ghanaian authorities, DataStream, and IMF staff estimates.

D. Results

17. **This section presents the main results from the estimation.** Appendix III describes the derivation of the results and documents their robustness.

The Long-Run Relationship

18. **The exploratory stage of the regression analysis starts with the estimation of an unconstrained vector autoregression (VAR).** The VAR includes an intercept, trend, and five lags of the dependent and explanatory variables used in equation (4). Then the Johansen (1995) procedure is employed to test for the existence and number of cointegrating equations between the seven variables; the results show at least three in the initial set of dependent and explanatory variables.[16] Because the presence of more than one complicates identification of the equilibrium relationship between the REER and its fundamental determinants, we search for a combination of explanatory variables that includes the most important REER determinants while yielding just one cointegrating vector.[17] Once the preferred VECM specification is identified, *ad hoc* specification tests are performed by adding the explanatory variables dropped in previous rounds one at a time and test for their significance. For a robustness check, the paper also re-estimates the preferred VECM specification using different measures of the real world prices of Ghana's main export commodities.

19. **In the preferred specification the unconstrained VAR includes an intercept, trend, and five lags of the variables: *lreer*, *lgdppcrppp, rirr*, and the broadest measure of the real world prices of Ghana's main export commodities (*lrpr4_gh*) (Appendix Table III.2, model 1).**[18] The sample period is from the first quarter of 1983 to the third quarter of 2006. Results from the Johansen trace and maximum eigenvalue cointegration tests suggest that there is one cointegrating vector in the estimated system at the 99 percent level of confidence. In the vector error correction model (VECM) estimated with the Johansen (1995) procedure, the coefficients of the cointegrating vector are plausible in magnitude and statistically significant, and they have the expected signs.

20. **The VECM analysis of the determinants of the REER rate in Ghana points to the existence of a long-run relationship between the REER, per capita GDP in PPP U.S. dollars in Ghana relative to that in its main trading-partner countries,[19] the real interest rate differential with Ghana's main trading–partner countries, and the real**

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[16] The results are available from the authors upon request.

[17] Due to the small size of the sample, we do not attempt to carry out the analysis with multiple cointegrating vectors.

[18] All estimations are performed using STATA 9.2 and PcGive 10 econometric software packages.

[19] Hereafter, relative real GDP per capita.

world prices of Ghana's main export commodities (Appendix Table III.2, model 1). The results suggest the following:

- A 1 percentage point increase in the differential between the rate of growth of Ghana's relative real GDP per capita is associated with a 4.7 percentage point appreciation of the REER in the long run.

- A 1 percentage point increase in the differential between the real interest rate in Ghana and the weighted average real interest rate of its main trading partners is associated with a 1.1 percentage point appreciation of the REER in the long run.[20]

- A 1 percentage point increase in the weighted average real world price of Ghana's four main export commodities is associated with an 0.35 percentage point appreciation of the REER in the long run.

- The REER in Ghana exhibits a long-run tendency to depreciate by around 4.9 percentage points annually, independent of developments in the fundamentals discussed above (see below for an interpretation of this finding).

21. **The speed of adjustment of actual to equilibrium REER in Ghana is relatively fast compared to findings for other African countries.**[21] The estimate of the error-correction coefficient in the REER equation of the VECM based on the preferred regression specification suggests that in each quarter 14 percentage points of any misalignment between the actual and equilibrium REER is corrected (Appendix Table III.2, model 1). In other words, the mean lag of the adjustment is about 6 quarters.

22. **The preferred VECM specification passes a number of *ad hoc* specification tests.** The coefficients of the included explanatory variables remain stable when additional variables are added to the model (Appendix Table III.2, models 2 through 9).[17] None of the explanatory variables, dropped in previous rounds, enters significantly in the preferred model (Appendix Table III.2, models 2 through 4). At the same time, the coefficients of the dropped explanatory variables are plausible in magnitude and have signs consistent with theoretical considerations. Finally, using different measures of the real world prices of Ghana's main export commodities does not affect materially the results of the analysis (Appendix Table III.2, models 5 through 9).

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[20] Except when the net foreign assets of the banking system (*nfy*) is added to the model (Appendix Table III.2, Model 3), in which case the coefficient of real per capita income relative to main trading partners (*lgdppcpppr)* drops in value and becomes insignificant, signaling that the two variables are highly correlated.

[21] For example, MacDonald and Ricci (2003) report the statistically insignificant error-correction coefficient of (–0.08) for South Africa.

Equilibrium Real Exchange Rate

23. **The estimated long-run relationship between the REER and its determinants allows us to compute the equilibrium REER according to the preferred VECM specification.** In principle, this involves applying the long-run elasticities to the actual values of the macroeconomic fundamentals in a given period to obtain a consistent long-run equilibrium value for the REER. However, the explanatory variables may exhibit a substantial degree of short-term "noise" or business-cycle fluctuations (Figure I.3), whereas the long-run equilibrium REER should not do so. The Hodrick-Prescott (HP) filter (with the standard smoothing factor of 1600 for quarterly data) is used to smooth out the estimated equilibrium REER. The actual and smoothed-out equilibrium REER are plotted in Figure I.4.

24. **The negative time trend in the cointegrating vector, and therefore in the equilibrium REER in Ghana can be associated with a positive risk premium (ρ_t in equation 3).**[22] In other words, throughout most of the sample the nominal interest rate in Ghana remained above the level that would have equated it with the sum of the foreign interest rate and the expected depreciation of the domestic currency, the difference being the reward required by investors to tolerate the macroeconomic uncertainty endemic prior to the reforms of the mid-1990s. The trend in the equilibrium REER has been tapering off since 2002 (Figure I.4). This suggests that in the future, as the relative weight of the prereform observations in the sample declines, the time trend will tend to disappear.

25. **At the end of the third quarter of 2006 the actual REER appeared to be close to its equilibrium estimate (Figure I.4).**[23] Its steep depreciation in 1999–2000 had brought the REER significantly below its equilibrium value and the gradual appreciation thereafter could be viewed as a return to a level consistent with macroeconomic fundamentals. In the second part of 2005 the REER moved above its equilibrium values, possibly as a result of overshooting, but the gap has since narrowed.

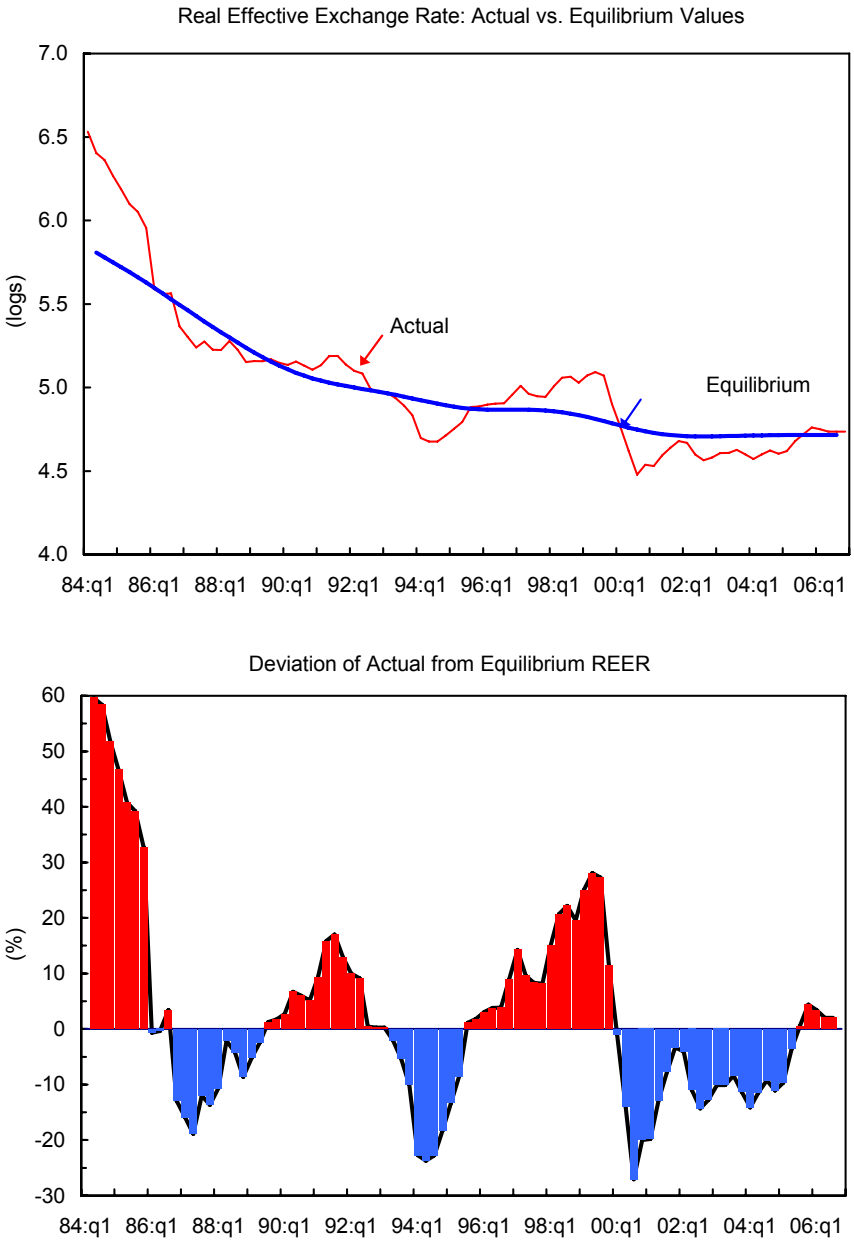
26. **The decline of the equilibrium level over the whole period is mainly due to a plunge in the real weighted-average commodity export prices, especially in the 1980s and early 1990s, and the associated sharp decline of the relative real GDP per capita early in the 1980s.** Since 2001 the appreciating influence of the steady growth of relative real per capita GDP on the equilibrium REER has been fully offset by the downward drift of

[22] In the regression model, the REER is based on a definition of the nominal effective exchange rate in terms of foreign currency units per unit of the domestic currency, whereas in equation (3) the REER is based on a definition of the nominal effective exchange rate in terms of domestic currency units per unit of foreign exchange. As a result, the coefficients in front of the explanatory variables that affect the REER in the short-run (i.e., the real interest rate relative to trading partners and the time-varying risk premium) in the estimated regression model translate into coefficients of the opposite sign in equation (3).

[23] Opoku-Afari (2007) reached a similar result using a dynamic VAR model in which the determinants of the REER include total factor productivity, terms of trade, capital flows, and trade openness.

the real interest rate differential and a zigzag pattern in the real prices of Ghana's export commodities.

Figure I.4. Ghana: Actual and Equilibrium Real Effective Exchange Rate, 1984–2006



Sources: IMF, Information Notice System (INS), International Financial Statistics (IFS), World Economic Outlook Database; Ghanaian authorities; Datastream; and IMF staff estimates.

27. **It is important to note that the estimates of the equilibrium REER in Ghana are not absolute, but are subject to statistical uncertainty and conditioned on the estimated regression model.** Small deviations of the REER from its estimated equilibrium values may well be statistically insignificant. Furthermore, estimation of alternative equilibrium REER models (such as the FEER) may lead to different conclusions regarding the evolution of the REER relative to its equilibrium values. This calls for some caution when using the results from this study and underlines the need for further research on the topic.

E. Conclusion

28. **According to our estimates, the main fundamental determinants of the REER in Ghana are the GDP at PPP per capita relative to Ghana's main trading partners, the real interest rate differential with those trading partners, and the weighted average real world prices of Ghana's main export commodities.** When temporary shocks cause the REER to deviate from its equilibrium level, it reverts fairly quickly to the equilibrium path (within two to three years) in the absence of further shocks.

29. **At the end of the third quarter of 2006 the actual REER appeared to be close to its estimated equilibrium level.** The steep REER depreciation in 1999–2000 brought it significantly below the estimated equilibrium value and the gradual appreciation thereafter could be viewed as a return to a level consistent with macroeconomic fundamentals. In the second part of 2005 the REER overshot its equilibrium values but the gap has since narrowed. Other measures of external competitiveness point in the same direction: indicators based on aggregate price indices (for tradables and nontradables) suggest a 10 to 15 percent worsening in external competitiveness after 2003. However, competitiveness indicators based on the market share of Ghana's exports in its most important trading partners exhibit different time patterns, which do not show a deterioration of competitiveness since 2000. Ghana's dependence on a few main commodity exports, combined with observed volatility of the world's commodity prices suggests that the government's efforts to diversify the country's export base will be important to maintain competitiveness.

REFERENCES

Cady, J., 2003, "The Equilibrium Real Exchange Rate of the Malagasy Franc: Estimation and Assessment," IMF Working Paper WP/03/28 (Washington: International Monetary Fund).

Cashin, P., L. Cespedes, and R. Sahay, 2004, "Commodity Currencies and the Rea Exchange Rates," *Journal of Development Economics*, Vol. 75 (October), No. 1, pp.239-68.

Clark, P. and R. MacDonald, 1998, "Exchange Rates and Economic Fundamentals: A Methodological Comparison of BEERs and FEERs," IMF Working Paper WP98/67 (Washington: International Monetary Fund).

Frankel, J. and A, Rose, 1995, "Empirical Research on Nominal Exchange Rates," in *Handbook of International Economics*, ed. by G. Grossman and K. Rogoff, (Amsterdam: Elsevier).

Iimi, A., 2006, "Exchange Rate Misalignment: An Application of the Behavioral Equilibrium Exchange Rate (BEER) to Botswana," IMF Working Paper WP/06/140 (Washington: International Monetary Fund).

Johansen, S., 1988, "Statistical Analysis of Cointegration Vectors", *Journal of Economic Dynamics and Control,* Vol. 2 (June-September), pp. 231-54.

_____, 1995, *Likelihood-based Inference in Cointegrated Vector Autoregressive Models* (Oxford, United Kingdom: Oxford University Press).

Johansen S. and K. Juselius, 1990, "Maximum Likelihood Estimation and Inference on Cointegration, with Application to the Demand for Money", *Oxford Bulletin of Economics and Statistics*, Vol. 52 (may), pp. 169-210.

Koranchelian, T., 2005, "The Equilibrium Real Exchange Rate in a Commodity Exporting Country: Algeria's Experience," IMF Working Paper WP/05/135 (Washington: International Monetary Fund).

Lipschitz, L. and D. McDonald, 1991, "Real Exchange Rates and Competitiveness—A Clarification of Concepts and Some Measurements for Europe," IMF Working Paper WP/91/25 (Washington: International Monetary Fund).

Loukoianova, E., 2007, "Empirical Estimation of Equilibrium Real Effective Exchange Rate for Sub-Saharan African Countries: A Survey," prepared for the IMF/COMESA seminar for senior officials on *"Exchange Rates, Regimes, and Computation: Policy and Operational Considerations for Developing Countries,"* Lusaka, Zambia, March 27-28, 2007.

MacDonald, R., 1997, "What Determines Real Exchange Rates? The Long and Short of It", IMF Working Paper WP/97/21 (Washington: International Monetary Fund).

_____, 1999, "Exchange Rate Behaviour: Are Fundamentals Important?" *The Economic Journal*, Vol. 109 (November), pp. 673–91.

_____, 1998, "Exchange Rates and Economic Fundamentals: A Methodological Comparison of BEERs and FEERs," IMF Working Paper WP/98/67 (Washington: International Monetary Fund).

_____ and L. Ricci, 2003, "Estimation of the Equilibrium Real Effective Exchange Rate for South Africa," IMF Working Paper WP/03/44 (Washington: International Monetary Fund).

Opoku-Afari, M., 2007, "Real Effective Exchange Rate Analysis for Ghana," Bank of Ghana, unpublished manuscript.

Taylor, Mark, 1995, "The Economics of Exchange Rates," *Journal of Economic Literature*, Vol. 33(1), March, pp. 13-47.

APPENDIX I. VARIABLES: DEFINITIONS AND SOURCES

The dataset consists of quarterly and annual data from January 1980 to September 2006 for Ghana and, where applicable, for its four main trading partners:

- ***lreer* - Real effective exchange rate (log)**. Source: International Monetary Fund, *Information Notice System (INS)*.

- ***rirr* - Real interest rate relative to trading partners (ratio).** Real rates equal nominal interest rates on 91-day treasury bills[24] minus inflation (over the last four quarters in the case of quarterly data). The weighted average real interest rate of Ghana's four main trading partners is obtained using the INS weights for the REER: European Union (Germany as a proxy, 51 percent), the United Kingdom (22 percent), United States (16 percent), and Japan (11 percent). Source: International Monetary Fund, *International Financial Statistics (IFS)*.

- ***lgdppcpppr* - Per capita GDP in PPP U.S. dollars relative to trading partners (log).** The weighted average per capita GDP in PPP U.S. dollars of Ghana's four main trading partners is obtained using the same weights as above. Source: International Monetary Fund, *World Economic Outlook Database*.

- ***lrpr4_gh* and other price variables - Real commodity prices (log).** Twelve different measures of commodity prices are constructed based on three methods of aggregating the main commodities exported by Ghana and two ways of deflating their prices. The aggregation methods include weighted averages of the prices in US dollars of the top four, three, and one exported commodities. The weights are the normalized shares of these commodities in Ghana's exports in each year of the sample. The table below shows the sample-average normalized weights of different commodities in Ghana's exports. The deflators used are the price deflator for G-7 country exports and the U.S. consumer price index. Two different series for cocoa prices are used: the spot world cocoa price and the cocoa price that COCOBOD locks in before the harvest for more than 90 percent of cocoa exported. For example, in the case of the broadest index, the combinations of different measures of the price of cocoa and deflators generate, respectively: *lrpr4, lrpr4_gh, lrpr4_uscpi, lrpr4_gh_uscpi*. Sources: Ghanaian authorities, DataStream, and *IFS.*

[24] In the case of Japan, we use the discount rate due to data unavailability.

Ghana: Normalized Sample-Average Weights of Main Export Commodities

Commodity	Weight(4)	Weight(3)	Weight(cocoa beans)
Cocoa beans	0.47	0.5	1.0
Gold	0.36	0.4	0.0
Timber	0.12	0.1	0.0
Cocoa products	0.05	0.0	0.0

- ***openy -*** Ratio of the sum of exports and imports of goods and nonfactor services to GDP. Sources: Ghanaian authorities and *IFS.*

- ***fby -*** Ratio of the fiscal balance to GDP. Source: International Monetary Fund, *International Financial Statistics (IFS)*.

- ***nfy -*** Ratio of end of period net foreign assets of the banking system (monetary authorities and commercial banks) to GDP. Sources: Ghanaian authorities and *IFS.*

APPENDIX II. ECONOMETRIC METHODOLOGY[25]

The study employs the Johansen (1995) maximum likelihood estimator to investigate the existence of a long-run, cointegrating, relationship between the real effective exchange rate and some macroeconomic variables, discussed above. This estimator corrects for autocorrelation and endogeneity parametrically using a vector error-correction mechanism (VECM) specification.[26]

The Johansen methodology can be described in the following way. Let us define a vector:

$$\mathbf{x}_t \equiv \left[lreers, rirr, lrgdppcr, lpr2comm4, openy, fbya, nfaspfy \right], \quad (4)$$

and assume that this vector has a VAR representation of the form:

$$\mathbf{x}_t = \eta + \sum_{i=1}^{p} \Pi_i \mathbf{x}_{t-1} + \varepsilon_t, \quad (5)$$

where η is a *(n x 1)* vector of deterministic variables, ε is a *(n x 1)* vector of white noise disturbances, with mean zero and covariance matrix Ξ, and Π_i is a *(n x n)* matrix of coefficients. Expression (2) may be reparameterised into the so-called vector error correction mechanism (VECM) as

$$\Delta\mathbf{x}_t = \eta + \sum_{i=1}^{p-1} \Phi_i \Delta\mathbf{x}_{t-i} + \Pi\mathbf{x}_{t-1} + \varepsilon_t, \quad (6)$$

where Δ denotes the first difference operator, Φ_i is a (n x n) coefficient matrix, $\Phi_i = -\sum_{j=i+1}^{p} \Pi_j$, and $\Pi = \sum_{i=1}^{p} \Pi_i - I$ is a *(n x n)* matrix, whose rank determines the number of cointegrating vectors. The presence of cointegration is indicated by the rank of matrix Π:

- If Π is of either full rank, *n*, or zero rank, no cointegration exists amongst the elements in the long-run relationship (in these instances, it would be appropriate to estimate the model in, respectively, levels or first differences).

- If Π has a rank $r<n$, then there exist *(n x r)* matrices α and β, such that $\Pi = \alpha\beta'$, where β is the matrix, whose columns are the linearly independent cointegrating vectors, and matrix α is interpreted as the adjustment matrix, indicating the speed

[25] This section follows MacDonald and Ricci (2003).

[26] There are alternative ways to address serial correlation and endogeneity in a cointegrating framework, for example, Phillips and Hansen (1990).

with which the system responds to last period's deviations from the cointegrating relationships.

The existence of cointegration amongst the variables contained in vector $\mathbf{x}_t$ can be determined by two tests proposed by Johansen, the trace test (TR) and the likelihood ratio test (LR). The TR statistics tests the hypothesis that there are at most *r* distinct cointegrating vectors:

$$TR = T\sum_{i=r+1}^{N} \ln\left(1-\hat{\lambda}_i\right), \qquad (7)$$

where $\hat{\lambda}_{r+1},\ldots,\hat{\lambda}_N$ are the *N-r* smallest squared canonical correlations between $\mathbf{x}_{t-k}$ and $\Delta\mathbf{x}_t$ series[27] corrected for the effect of the lagged differences of the $\mathbf{x}_t$ process.[28]

The LR statistic for testing that there exist at most *r* cointegrating vectors against *(r+1)* cointegrating vectors is defined as

$$LR = T\ln\left(1-\hat{\lambda}_{r+1}\right). \qquad (8)$$

Johansen (1995) shows that the TR and LR statistics have non-standard distributions under the null hypothesis. He does, however, provide approximate critical values for the statistics generated by Monte Carlo methods. These are the critical values used in this chapter.

One of the key advantages of the Johansen methodology in the current application is that the estimated coefficient – vector β - can be used to prove a measure of the equilibrium real exchange rate, and therefore, a quantification of the gap between the prevailing real exchange rate and its equilibrium level. The methodology also derives estimates of the speed at which the real exchange rate converges to its equilibrium level.

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[27] It is assumed that all the variables in vector $\mathbf{x}_t$ are integrated of order 1.

[28] For details on how to extract λ's, see Johansen (1988) and Johansen and Juselius (1990).

APPENDIX III. ECONOMETRIC RESULTS AND THEIR ROBUSTNESS

The starting point of the regression analysis is an unconstrained vector autoregression (VAR) that includes an intercept, trend, and five lags of the variables:[29] [30] log of real effective exchange rate (*lreer*), per capita GDP in PPP USD relative to trading partners (*lgdppcr_ppp),* real interest rate relative to trading partners (*rirr*), and the broadest measure of the real world prices of Ghana's main export commodities (*lrpr4_gh*). The sample period is the first quarter of 1984 to the third quarter of 2006.[31] We next implement the Johansen (1995) procedure to test for the existence and the number of cointegrating equations between the four variables. Results from the Johansen trace and maximum eigenvalue tests of cointegration suggest that there is one cointegrating vector in the estimated system at the 1 percent significance level (Appendix Table III.2). In the estimated vector error correction model (VECM), the coefficients of the cointegrating vector are plausible in magnitude, statistically significant, and have signs consistent with theoretical considerations Appendix Table III.2).

[29] Initial VAR analysis (not presented for brevity of exposition) showed that the VAR coefficients of all lag-six variables are statistically insignificant, and the statistic of the test of the marginal significance of lag six, conditional on keeping all other lags in the VAR, is F(16,183)=1.43 (0.13).

[30] All estimations are performed using STATA 9.2 and PcGive 10 econometric software packages.

[31] Variables available only at annual frequency, such as GDP and commodity price measures, are interpolated into quarterly.

Appendix Table III.1. Tests of the Order of Integration

Variable	ADF Specification			Null Hypothesis	
				I(1)	I(2)
	p	c	t	ADF Statistic	
lreer	4	1	1	-3.46	-3.83 *
	3	1	0	-3.3 *	-3.83 **
lgdppcr_ppp	4	1	1	-2.54	-2.97
	2	1	1	-2.59	-3.67 *
rirr	4	1	1	-4.28 **	…
	4	0	0	-4.27 **	…
lrcbeans_gh	4	1	1	-2.14	-4.32 **
	0	1	0	-2.15	-10.86 **
lrcbeans_uscp	4	1	1	-2.11	-4.25 **
	0	0	0	-1.36	-10.26 **
lrpr3_gh	4	1	1	-1.84	-4.04 *
	4	1	0	-2.55	-3.7 **
lrpr3_gh_uscpi	4	1	1	-1.7	-3.86 *
	4	1	0	-2.16	-3.63 **
lrpr4_gh	4	1	1	-1.86	-3.98 *
	4	1	0	-2.49	-3.67 **
lrpr4_gh_uscpi	4	1	1	-1.73	-3.82 *
	4	1	0	-2.14	-3.6 **

Notes: The augmented Dickey-Fuller (ADF) test for I(*j*) against I(*j-1*) is provided by the t-statistic on $\hat{\beta}$ in: $\Delta^j = c + \mu t + \beta \Delta^{j-1} x_{t-1} + \sum_{i=1}^{p} \gamma_i \Delta^j x_{t-i} + u_t$, where $\Delta^0 x_t = x_t$, $\Delta^1 x_t = x_t - x_{t-1}$, and $\Delta^2 x_t = \Delta^1 x_t - \Delta^1 x_{t-1}$.

In Appendix Table III.1, for each tested hypothesis, we present two values of the ADF statistic. The base model, estimated in each case over the period 1984:Q2-2006:Q3, includes a constant, trend, and five lags of the dependent variable in levels. For each variable, the second model includes only the statistically significant regressors from the base specification.

Significance levels: ^ at 10% level, * at 5% level, ** at 1% level.

… – not applicable.

Appendix Table III.2. Selected Results of VECM

	Preferred VECM	Specification tests on preferred VECM							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Unrestricted VAR / VECM specifications				
Intercept [1]	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y
Trend [2]	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y	Y / Y
Lags	5 / 4	5 / 4	5 / 4	5 / 4	5 / 4	5 / 4	5 / 4	5 / 4	5 / 4
					Number of cointegrating vectors				
Trace statistic									
H0 (p=0)	76.1 **	113.6 **	101.9 **	99.6 **	77.5 **	74.6 **	74.2 **	75.9 **	72.7 **
H0 (p<=1)	34.9	63.5 *	59.3 *	59.7	34.8	35.0	33.4	33.4	33.6
H0 (p<=2)	14.6	39.4	34.5	33.6	14.9	14.6	14.2	14.6	14.3
H0 (p<=3)	6.0	19.0	12.7	13.4	6.0	5.0	5.3	5.4	5.4
Max eigenvalue statistic									
H0 (p=0)	41.2 **	50.1 **	42.6 **	39.9 *	42.7 **	39.6 **	40.9 **	42.4 **	39.1 **
H0 (p<=1)	20.3	24.1	24.8	26.1	19.9	20.4	19.2	18.9	19.3
H0 (p<=2)	8.6	20.4	21.8	20.2	9.0	9.6	9.0	9.2	8.9
H0 (p<=3)	6.0	12.2	9.0	8.3	6.0	5.0	5.3	5.4	5.4
					Cointegrating vector				
lreer	1	1	1	1	1	1	1	1	1
lgdppcpppr	-4.68 *	-3.67 ^	-1.13	-4.59 ^	-4.48 *	-5.16 *	-3.84	-3.62	-4.25 ^
	(2.21)	(2.18)	(2.52)	(2.43)	(2.15)	(2.25)	(2.49)	(2.43)	(2.53)
rirr	-1.11 **	-1.48 **	-0.86 **	-1.00 **	-1.10 **	-0.95 **	-1.24 **	-1.25 **	-1.02 **
	(0.32)	(0.36)	(0.29)	(0.31)	(0.31)	(0.32)	(0.36)	(0.35)	(0.35)
lrpr4_gh	-0.35 **	-0.49 **	-0.39 **	-0.31 **					
	(0.10)	(0.13)	(0.10)	(0.10)					
fby		-1.91							
		(1.57)							
nfy			-1.00						
			(0.84)						
openy				0.17					
				(0.42)					
lrpr3_gh					-0.34 **				
					(0.10)				
lrcbeans_gh						-0.37 **			
						(0.12)			
lrpr4_gh_uscpi							-0.35 **		
							(0.12)		
lrpr3_gh_uscpi								-0.35 **	
								(0.11)	
lrprcbeans_uscpi									-0.38 *
									(0.15)
Trend	0.012 **	0.01 **	0.01 **	0.009	0.011 **	0.012 **	0.009 **	0.009 **	0.009 **
	(0.002)	(0.003)	(0.003)	(0.006)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Intercept	-15.11	-11.60	-5.82	-15.13	-14.65	-16.00	-12.76	-12.23	-13.37
					Error-correction coefficient				
lreer equation of VECM	-0.141 **	-0.10 **	-0.16 **	-0.12 **	-0.143 **	-0.141 **	-0.132 **	-0.133 **	-0.135 **
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)
Log likelihood of VECM	805.1	1172.5	1120.4	1032.6	807.2	791.1	796.4	797.7	786.8
Number of observations	90	90	90	90	90	90	90	90	90
Sample					1984:Q2-2006:Q3				

Source: Authors' estimates.

Notes: Standard errors in parentheses.

Significance levels: ^ at 10% level, * at 5% level, ** at 1% level.

[1] Unrestricted in VECM.

[2] Restricted to coIntegration space in VECM.

II. STRUCTURAL FISCAL ISSUES[1]

A. Introduction

1. **Ghana's economic performance has improved since 2000 as a result of sound macroeconomic policies and a favorable external environment**. Real GDP growth has averaged about 5 percent a year for the last five years. Although inflation is still relatively high (slightly below 10 percent at the end of April 2007), it has been reduced by more than half since the early 2000s. The primary fiscal balance was consistently positive until 2006, when it turned negative. Meanwhile, the sustainability of external debt was much improved when Ghana reached the HIPC completion point and received MDRI debt relief.

2. **Though there has been progress toward achieving the Millennium Development Goals (MDGs), there are areas of concern**. Growth has led to an improvement in social indicators, so that the goal of reducing the poverty rate by half before 2015 is now within reach. However, a deterioration in some health indicators—in particular the under-5 and infant mortality rates—suggests that additional resources and efficient spending will be required to reach those MDGs.

3. **In view of the need to scale up productive spending to promote growth and reduce poverty, Ghana faces major medium-term challenges if fiscal sustainability is to be preserved.** This paper discusses achievements and remaining challenges and priorities in the areas of public financial management, wage policy and civil service reform, tax administration, and tax policy (Table II.1).

B. Public Financial management

Achievements over the last Decade

4. **Under the ESAF (1995-98) and the first PRGF (1999-2002), progress on addressing long-standing weaknesses in public financial management (PFM) was mixed**. On the positive side, the Medium-Term Expenditure Framework (MTEF) was introduced in 1999 to improve the quality and sectoral allocation of public spending. On the negative side, inadequate payroll management made it difficult to track wages and salaries for the civil service and subvented agencies, so there were recurrent overruns in the government wage bill. Significant delays in preparing budgets[2] also made it hard to control expenditures, and lack of basic systems of commitment control meant that domestic arrears were building up continuously. These structural weaknesses in PFM culminated in a breakdown of budget control as the 2000 elections neared.

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[1] Prepared by Bernardin Akitoby (FAD).

[2] For 2006, for the first time, the budget was presented on time.

5. **With improved governance and strong donor support, PFM reforms gained momentum under the last PRGF (2003-06), with tangible results.** Regulation of public finances was strengthened by the enactment of several laws, among them the Financial Administration, Internal Audit, and Public Procurement Acts. Steps are being taken to ensure that the Public Procurement Act is fully implemented with use of better procurement methods and publication of tender notices.[3]

6. **Expenditure control and the timeliness of fiscal reporting are also getting better**. Since the 2000 spending spree, functional systems for cash planning, commitment control, and fiscal reporting have been installed, with extensive technical assistance from FAD. Moreover, internal audit units have been established in all ministries, departments, and agencies (MDAs), and external oversight of budget execution has improved through timely submission of Auditor-General reports to Parliament and clearance of the backlog of outstanding reports. Since August 2005 monthly reports on budget execution have generally been completed within six weeks, although work is needed to reduce the discrepancy between above- and below-line data and fully cover externally financed projects.

7. **The commitment control and cash management systems have been enhanced by the continuing treasury reform**. The review of government accounts has already led to a reduction in the number of active accounts from 5,700 to 2,052; and a decentralized payment system has been introduced to speed up transfer of funds to ministries, regional administrations, and district assemblies.[4] This new payment system is expected to help streamline treasury management and facilitate fiscal decentralization.

8. **Deployment of computer systems is strengthening PFM capacity**. In all eight pilot MDAs the computerized budget and public expenditure management system (BPEMS) has been set up, three out of six modules are fully functional, and the last three modules are ready for deployment. By year-end the BPEMS will be rolled out to other MDAs in Accra and the three regional capitals. The new computerized payroll management system (IPPD2) has also been deployed and subvented agencies are being integrated into it.

9. **External assessments now recognize that Ghana's PFM system has substantially improved since the 2000 breakdown.** The HIPC Assessment and Action Plan follow-up in 2004 judged 7 of the 16 benchmarks to have been met, compared with only 1 of 15 in the previous assessment (Figure II.1). Similarly, the 2004 assessment of fiscal transparency practices in Ghana—comparing them against the requirements of the IMF *Code of Good Practices on Fiscal Transparency*—concluded that the country already meets the standards

[3] The 2007 External Review of Public Financial Management, led by the World Bank, will focus on Ghana's public procurement practices to support the government's efforts to make the use of public funds effective, efficient, and transparent.

[4] The 2006 PEFA points out the risks to expenditure control associated with a decentralized payment system. It also stresses the need to ensure that the decentralized payment system does not reduce the Government's ability to conduct efficient treasury management.

of the fiscal transparency[5] code in several areas.[6] The 2006 external review of the PFM system, using the new Public Expenditure and Financial Accountability (PEFA) diagnostics, also confirms that Ghana's PFM system is performing at an average standard.

Challenges and Priorities[7]

10. **Capacity to manage government finances efficiently needs to be further enhanced.** In view of the need to scale up productive spending to achieve growth and poverty-reduction objectives, strengthening public financial management capacity in controlling, monitoring, and evaluating the effectiveness of government spending should continue to be a high priority.

11. **To further reform PFM, the government has drawn up a three-year public financial management plan, with the support of development partners**. Using the recent PEFA diagnostics, the new PFM plan has prioritized and sequenced the reform agenda. It also strives to better identify actions that can produce results quickly while still pursuing those that will take longer to come to fruition. To move from the conception to the implementation stage, work is underway to cost various activities with a view to identifying funding gaps.

12. **The two major PFM challenges facing Ghana are to improve the efficiency of public spending and strengthen the oversight of fiscal risks stemming from state-owned enterprises (SOEs)**.

Improving the Efficiency of Public Spending

13. **Total spending and capital spending are high in Ghana relative to comparator countries** (Figure II.2). There is a risk that the projected acceleration in growth, a key element of the government's agenda, may not materialize if the productivity of the government investment is significantly lower than envisaged because of lower than expected returns on projects, poor investment allocation and efficiency, or implementation difficulties.

14. **Priority should therefore be given to making spending more efficient** by undertaking public expenditure tracking surveys (PETS); better aligning the annual budget with the Ghana Poverty Reduction Strategy II (GPRS II); improving evaluation of

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[5] Ghana has volunteered to participate in the Extractive Industries Transparency Initiative (EITI). This will further enhance fiscal transparency, given the importance of revenues from the mining sector, which accounts for about 10 percent of the government's revenue.

[6] These include (i) the responsibilities of the different branches of government are clearly defined; (ii) a transparent and fairly comprehensive legal and administrative framework for budget preparation and execution has been put in place; and (iii) the annual budget is based on a comprehensive and consistent quantitative macroeconomic framework.

[7] These priorities are those identified in the 2006 PEFA.

investments and projects; and strengthening the legal and regulatory framework for public/private partnerships (PPPs).

15. **A PETS is needed to evaluate spending efficiency and identify ways to improve service delivery**. No comprehensive survey of resources has been conducted for the last three years. Thus, the efficiency of service delivery cannot be properly monitored, and funding constraints may not be identified. As the 2006 PEFA review recommended, the government in 2007 will be carrying out a PETS in the education and health sectors.

16. **GPRS II and the annual budget should be better aligned by strengthening the MTEF.** The PEFA review found an apparent disconnect between the MTEF and budget implementation; when budgets are implemented, there is no mechanism to link a large number of activities[8] to resources. Although the MTEF has been simplified to adapt it to the limited capacity of MDAs, to make the budget more credible its capacity needs to be increased to reflect the costs of current and new policies and programs.

17. **Improving investment and project evaluation is critical for ensuring value for money.** Large government projects that are planned have been rigorously vetted by the Capital Market Committee (CMC), a body composed of central bank and Ministry of Finance officials. A new "Value for Money" unit in the Ministry of Finance and Economic Planning is expected to support the CMC's work. This unit should strive to uphold the following principles (drawn from experience in other countries):

- Public investment projects should not pose risks to the country's debt sustainability, and they need to be considered in the context of a debt sustainability analysis (DSA).
- Increases in public investment should be concentrated first on high-priority, high-return projects in economic sectors where bottlenecks have been clearly identified.
- Complementarities between spending on infrastructure and noninfrastructure need to be taken into account when increasing public investment or changing spending priorities.
- Investing in the rehabilitation and upkeep of infrastructure usually has higher returns than investing in new projects.[9]
- The likely future recurrent costs of operation and maintenance should be taken into account in assessing the appropriateness of new investments.

18. **Strengthening the legal and regulatory framework for PPPs is equally important in obtaining value for money**. The framework for PPPs should explicitly take into account

[8] The number of activities has recently been reduced from more than 17,000 to 45 standard activities.

[9] Even countries with a long tradition of planning for public investment tend to give a higher priority to new projects, often for political reasons.

certain key principles,[10] including (i) using a public sector comparator to determine whether the best private sector bid for PPP contracts offers the government value for money; (ii) giving foreign partners access to PPP projects that is equal to domestic partner access; (ii) disclosing PPP contracts; (iii) upholding the basic principle of risk sharing that each risk should be borne by the party that can manage it best; and (iv) ensuring that any fiscal risks and contingent liabilities stemming from PPPs are disclosed and properly accounted for in the budget.

Improving Oversight of Fiscal Risks from SOEs

19. **Inadequate monitoring of SOE operations can pose significant fiscal risks and may undermine the effectiveness of fiscal policy.** SOEs that consistently run losses or accumulate excessive debt often end up being bailed out by the government (their main or sole shareholder). Because SOEs are thus a potential source of fiscal risk, it is important that governments systematically monitor their operations and report to the public with enough detail that the risks can be properly evaluated.

20. **SOEs thus need careful monitoring**. To foster accountability, the State Enterprises Commission (SEC) should closely monitor performance contracts signed by wholly state-owned enterprises. A quarterly consolidated report should be prepared, and a comprehensive database on SOEs should be set up promptly. It would also be useful to begin systematically to compile and disseminate statistics on SOE operations according to *GFSM 2001* standards.

21. **In the near term, the authorities should give priority to the four largest wholly state-owned enterprises** that account for the bulk of quasi-fiscal activities and pose substantial fiscal risks.[11] Because the financial situation of these four SOEs critically depends on pricing, **reform of utility pricing should be pursued vigorously** to allow for a move to full cost recovery in the near future.

22. **Transparency requirements—in the form of observance of codes of good governance—need to be enforced.** To make the financial relations between the government and SOEs more transparent, it would be best to avoid netting operations in the settlement of debts. Moreover, the government should require that the financial statements of large SOEs be audited by reputable private firms that adhere to international standards.

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[10] More discussion of PPP fundamentals can be found in B. Akitoby, R. Hemming, and G. Schwartz (2007), "Public Investment and Public-Private Partnerships," *IMF Economic Issues* No. 40, Washington, DC.

[11] These are the Volta River Authority (VRA), Electricity Company of Ghana (ECG), Tema Oil refinery (TOR), and Ghana Water Company Ltd (GWCL). For further details, see Mali Chivakul and Robert C. York (2006), "Implications of Quasi-Fiscal Activities in Ghana," IMF Working Paper No. 06/24, Washington, DC.

C. Wage Policy and Civil Service Reform

Background

23. **Comprehensive restructuring of the civil service is a long-standing issue that has yet to be tackled despite repeated public sector reform plans**. Civil service reform has been on the government's agenda under the National Institutional Reform Program (NIRP) since 1994. The cabinet approved in December 1997 a strategy for public service reform over 10 years, but this has not been pursued. In 1999 a new public sector wage policy based on a 22-level grade structure was introduced; the wage bill increased but the public sector did not become more efficient. In October 2005 the government again approved a civil service reform plan to design a new human resource policy, review the organization and structure of the civil service, and address wage policy and payroll management deficiencies. Steps are now being taken to review the wage policy, restructure subvented agencies, reform work conditions, and review the business model of critical MDAs.

24. **With across-the-board wage increases and rising employment the wage bill has increased dramatically to beyond that of comparator countries** (Figures II.3–4). It grew by about 4½ percentage points of GDP for 2001–06 and claims an increasing share of domestic revenue and total spending. The question arises: how sustainable are these wage outlays, particularly when donors' support, at around 7 percent of GDP annually, starts to decline?

25. **Despite the excessive wage bill, skilled public workers appear to earn less than they would in the private sector,** which makes it difficult to recruit and retain them. For example, as it decentralizes the payment system, the government has not been able to recruit enough qualified accountants. Low retention of skilled accountants has also delayed creation of a comprehensive database on SOEs at the SEC. It has been reported that the public-private wage differential is up to 400 percent for qualified accountants.

Causes and Implications of the Excessive Wage Bill

26. **The high government wage bill reflects structural lapses in recruitment and wage policy**. In the past, repeated wage overruns stemmed from serious weaknesses in payroll management and recruitment in subvented agencies. For example in 2002 there were large wage bill overruns relative to the budget. Control over the wage bill was lost because staffing and wage demands occurred outside the budget and thus were not subject to budgetary constraints and trade-offs among competing spending needs.

27. **The rising wage bill may undermine progress in education and health by crowding out pro-poor** nonwage operating spending (e.g., education materials and basic medical supplies).

28. **An excessive wage bill also makes the budget more rigid and more vulnerable to shocks, as necessary adjustment becomes difficult.**[12] The consolidated budget already contains numerous protected items and inflexibility due to the earmarking of tax revenues for statutory funds. The high wage bill adds to fiscal rigidity, given the strong resistance of trade unions to wage adjustments.

Policy Options

29. **In the 2007 budget the government announced its intention to implement civil service reform** (Table II.2). The main objectives would be to link public sector pay to productivity, position, and qualification; maintain the competitiveness of public sector incomes relative to the private sector; and determine the optimal number of workers needed to efficiently deliver public services, particularly in subvented organizations. The reform will have three main components: short-tem measures to contain the wage bill, wage policy reform, and employment reform.

Short-term measures to contain the wage bill

30. **A number of short-term measures could be implemented quickly to contain the wage bill and reduce the size of the civil service**, among them (i) combining attrition with a selective hiring freeze; (ii) centralizing recruitment; (iii) performing regular audits of the new payroll system to maintain its integrity; and (iv) avoiding across-the-board salary increases.

Wage policy reform

31. **As part of this reform, a new pay system is being implemented in two phases**: First, in 2006, the government removed distortions in the Ghana Universal Salary Structure (GUSS) that led to large wage increases. Next, in the second half of 2007, an assessment of job content and the consequential placement of all public sector employees will take place. The resulting pay increase will be completed in 2008.

32. **A newly created *Fair Wage Commission* is expected to take a systematic approach to wage setting.** The current approach is mostly driven by union demands for wage increases, sometimes outside the budget process. It will be important to replace this ad hoc approach with a systematic approach based on key indicators (e.g., budget constraint, expected inflation, priority objectives, and productivity growth). The wage-setting framework should be linked to the budgetary process in order to improve budget preparation and execution.

33. The wage reform would benefit from commitment to the following principles:

[12] The experience of other countries suggests that an unsustainable wage bill often contributes to fiscal crisis: Côte-d'Ivoire (1993-2000); Lebanon (1998-2002); South Africa (1993-2001); and Nigeria (1990-2000).

- **The pay scale should be decompressed gradually to facilitate recruitment and retention of skilled personnel**. In reforming the pay structure, the government needs to be mindful of how decompression will affect the average wage and the wage bill.

- **To the extent possible, private sector wage comparators should be used in setting public wages for highly skilled personne**l, but the exercise must take into account all aspects of compensation (including in-kind and nonmonetary benefits) and the greater job security in the public sector. International evidence suggests that public wages would still be competitive at about 80–90 percent of the private sector average[13].

- **In-kind benefits and allowances should gradually be merged into the pay scale**. This would improve budgetary transparency and decision making while contributing to fairness in government compensation across sectors. Moreover, it would broaden the income and social security tax base.

- **A tighter link between pay and performance will give workers an incentive to improve efficiency and productivity**. Wage policy should be based on transparent rules and objective criteria for promotion.

Employment reform

34. **The government plans a functional review of the civil service followed by a plan and a schedule for right-sizing**. A comprehensive functional review would help rationalize government employment. With development partners assistance, the government also intends to step up the restructuring of subvented agencies, which are deemed to be overstaffed. Subvented agencies that are no longer relevant to the government's objectives would be eliminated; and some agencies would be partially or fully commercialized. Savings from reductions of government employment could be used to gradually decompress salary scales and incorporate allowances in monetary pay.

35. **A number of factors will likely contribute to the success of this reform after many earlier failures**. In particular, the new payroll system will help gain control over the number of civil servants. Also, the government will strive to avoid shortcomings in past attempts at civil service reform. These include (i) the inability to tackle system wide issues, such as public sector pay, rightsizing of public-sector agencies, and human resource development; (ii) capacity constraint at managerial and professional levels; (iii) fragmented and uncoordinated public sector modernization programs.

36. **Experience in other countries suggests that civil service reform should be part of the medium-term plan.** Structural weaknesses in the civil service are best addressed over the medium term, even if that means lower savings in the short term. Integrating civil service

[13] See Schiavo-Campo, Salvatore, 1998, "Government Employment and Pay: The Global and Regional Evidence," *Public Administration and Development*, Vol. 18, pp. 457–78.

reform into a larger context helps to clearly identify the costs of reform and ensure that they are not merely shifted from wages and salaries to another budget item.

D. Tax Administration

Achievements

37. **Under Fund-supported programs, the government moved effectively to reform tax administration**. It created a Central Revenue Authority (CRA), set up a large-taxpayers' unit (LTU), introduced a single taxpayer identification number (TIN), an automated customs system, and it scaled back exemptions.

38. **With the help of FAD technical assistance, in 1998 the Central Revenue Authority (CRA) was established** to improve coordination among various tax agencies. Its main responsibilities are to administer the TIN system; monitor tax collections and the audit activities of the revenue agencies; encourage effective cooperation among the agencies; design and implement uniform personnel policies; and put in place an effective internal audit system.

39. **The Large Taxpayers' Unit has strengthened tax administration.** The LTU started full operation in April 2004, administering the accounts of more than 350 large taxpayers on a unified basis. Adoption of a single TIN[14] and creation of a national tax audit team have enhanced compliance. Customs administration is also being modernized through automation and improved control of bonded warehouses.

40. **Tax exemptions were reformed under the ESAF in 1997, but they have recently risen**. After a review of the legal basis for customs exemptions, the government in 1997 withdrew unjustified exemptions and vested in the Ministry of Finance sole authority to solicit the approval of parliament, made mandatory, for granting any tax and customs exemptions. Monitoring of remaining exemptions was reinforced, and abuse of duty-free imports under public and donor-funded projects substantially reduced. However, since this major review, revenue loss from exemptions has begun to rise again. The 2007 budget estimates that import exemptions alone resulted in revenue loss of about 2 percent of GDP in 2006.

Challenges and Priorities

41. **Tax processes need to be further modernized to improve efficiency and collections**. All manual processes should be computerized, and the three separate tax systems (income tax, VAT, and customs and excises) should be linked. The latter would help address tax evasion that takes place through underregistration, underdeclaration of turnover, and inflated claims for VAT refunds. Reform of the penalty system and strict enforcement would improve collections and recovery of tax arrears (the latter was estimated at about 0.5 percent of GDP in 2006).

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[14] To better identify taxpayers, a TIN system bill was approved in July 2002.

42. **A risk-based auditing system should support tax administration**. Although there are annual programs for tax audits, the recent PEFA assessment finds that only about 25 percent are carried out and there is no risk-based selection of cases for audit. An effective audit program will make taxpayers aware that not complying with tax laws will result in sanctions. Taxpayer perception of the probability of being audited strongly influences their compliance. Since risk-based auditing does not seek to audit all taxpayers, scarce resources should be targeted at the larger taxpayers and those most likely to be evading their tax liabilities.

43. **Customs operations should be further modernized to detect undervaluation of imports**. This can be done by (i) strengthening the customs valuation process and the post-clearance audit; (ii) introducing more comprehensive audits; (iii) ensuring that inspectors are properly trained; and (iv) creating an antismuggling program. Other measures are needed to minimize abuses of bonded warehouses, the free zone facility, the transit regime, and permits granted to MDAs to clear goods from customs without first paying duties.

44. **Tax exemptions should again be thoroughly reviewed and drastically reduced** as they have risen since the 1997 review. The 2007 budget plans a thorough review exemptions in 2007 to reduce their scope and eliminate abuses.

45. **The government is taking the following initiatives to improve tax administration and curb tax evasion**:

- Expand computerization of VAT and customs operations.
- Step up purchase tests and physical surveillance of VAT businesses.
- Intensify the operations of the Small Taxpayers Bureau and the Tax Stamp program.
- Establish a unit to monitor the 5 per cent withholding tax.
- Strengthen customs valuation by introducing an electronic transactions price database.

E. Tax Policy

Achievements

46. **Ghana's tax policy has been overhauled in the last decade**. The VAT has been introduced, petroleum taxation and tariffs reformed, and the income tax rationalized. The efficiency and buoyancy of the tax system have increased, and the tax structure is shifting toward taxation of consumption. As a result, the tax revenue-to-GDP ratio is above the average for African countries (Figure II.5).

47. **Indirect taxation became more efficient with the introduction of the VAT under the ESAF**. After a failed attempt in 1995, a broad-based VAT was successfully introduced in

late 1998, with a single positive rate of 10 percent, exemptions in line with standard practice, and an effective refund mechanism. In 2000 the VAT rate was increased to 12.5 percent and in 2004 was again raised by 2½ percentage points to finance the new national health insurance. Another important reform of consumption tax was the extension in 1997 of the sales tax on services to cover a range of professional services.

48. **Taxation of petroleum products has been reformed**. In addition to the specific excise duty, an ad valorem excise duty of 15 percent was imposed on petroleum products so that changes in the international oil price and the exchange rate would be automatically passed through to retail prices. In February 2005 an additional levy on gasoline was added to cover the cost of mitigating measures for vulnerable households. Since August 2006 the authorities have moved from ad valorem to specific taxation on petroleum products.

49. **The tariff on international trade has been simplified**. In 1998 under the EASF, a new tariff range of 0, 5, 10, and 25 percent was introduced to reduce tariff dispersion and treat imports more uniformly. Particular attention was given to limiting as much as possible the number of items that were zero-rated or exempt. To further reduce dispersion, the top rate was later reduced to 20 percent. Currently, Ghana maintains a common tariff based on the Harmonized System of Customs Classification that has four ad valorem rates. As for exports, Ghana continues to tax cocoa and timber exports[15], at a rate determined by the Minister of Finance.

50. **The income tax system has been rationalized.** Under the EASF, measures were taken to improve incentives for private savings and investment by adjusting tax brackets for inflation and harmonizing the withholding tax on dividends and interest. Later, under the second PRGF-supported program, to spur investment the government reduced the corporate income tax rate from 32.5 percent in 2004 to 25 percent in 2006. At the same time the top personal income tax rate and the rates for low-to medium-income earners were also lowered.

Challenges and Priorities

51. **The most important challenge in tax policy is broadening the income tax base.** The 2007 budget notes that of 5 million potential taxpayers, only 1 million are paying income taxes. Moreover, while public sector employees pay taxes, only a small proportion of private sector employees do. Efforts to broaden the tax base have also been constrained by the predominant role of the informal sector in generating employment.

52. **The 2007 budget introduces innovative methods to widen the tax net to the informal sector.** The government intends to put in place a system to assess and collect income tax using the value of vehicles registered, because most tax evaders in the informal sector do register their vehicles. To expand the VAT net to cover the informal retail sector, the government will impose a flat VAT rate at 3 percent of sales value without recourse to input VAT claims.

[15] The government is contemplating the reform of export taxation.

53. **A comprehensive review of excise duties is planned for 2007**. The review will aim to rationalize duties while discouraging tax evasion and improving enforcement and administration. In line with international best practices, the excise regime will move from ad valorem to specific taxation. The revenue impact of this reform is expected to be neutral.

F. Conclusion

54. Since the breakdown of budget control in late 2000, Ghana's fiscal institutions have improved markedly, with tangible achievements in PFM. However the recent fiscal slippages in 2006 highlight the need to accelerate the reforms. In the area of PFM, the two major reform priorities are to improve the efficiency of public spending and strengthen the oversight of fiscal risks stemming from state-owned enterprises (SOEs). In the area of expenditure policy, decisive and timely implementation of wage and employment reforms would be critical. In the area of revenue mobilization, tax and customs administration need to be further modernized to improve efficiency, while sustained efforts are required to broaden the tax base, notably by reducing tax exemptions and widening the tax net to the informal sector. All these challenges need to be addressed in a timely manner if the country is to meet the MDGs, while preserving fiscal sustainability.

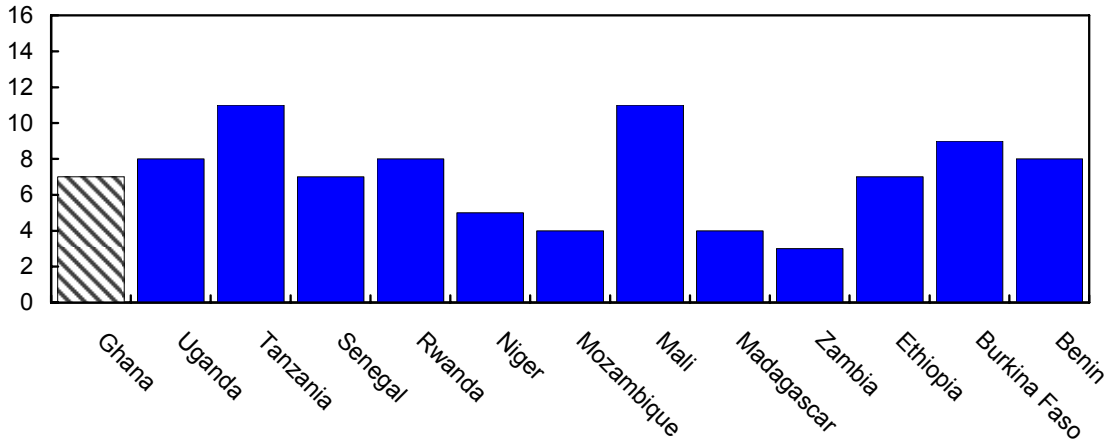
Table II.1. Ghana: Structural Fiscal Reform Priorities

Area	Measures	Priority	Timing	Comments
Public Financial management	Improve the efficiency of public spending.	High	Short-term	Key actions include undertaking PETS and improving project evaluation
	Better align poverty reduction strategy paper, medium-term expenditure framework, and the annual budget.	High / medium	Short-term	The costs of current and new programs should be reflected in the budget.
	Improve oversight of fiscal risks from SOEs	High	Short-term	The SEC should closely monitor performance contracts, prepare a quarterly report, and establish a comprehensive database on SOEs. Priority should be given to the four largest wholly state-owned enterprises.
Expenditure policy	Formulate and implement civil service reform plan.	High	Short- to medium-term	See Table II.2 for details.
Tax administration	Modernize tax processes and establish a risk-based auditing system.	High	Short- to medium-term	Manual processes should be computerized, and the three separate tax systems should be linked.
	Modernize customs operations	High	Short- to medium-term	Customs valuation and post-clearance audit need to be strengthened.
	Review tax exemptions and reduce them drastically.			A review of tax exemptions is planned for 2007.
Tax policy	Broaden the tax base	Medium	Medium-term	The 2007 budget introduces innovative methods to widen the tax net to the informal sector.
	Rationalize excise duties	Medium	Short- to medium-term	A comprehensive review of excise duties is planned for 2007.

Table II.2. Wage Policy and Public Sector Reform Schedule

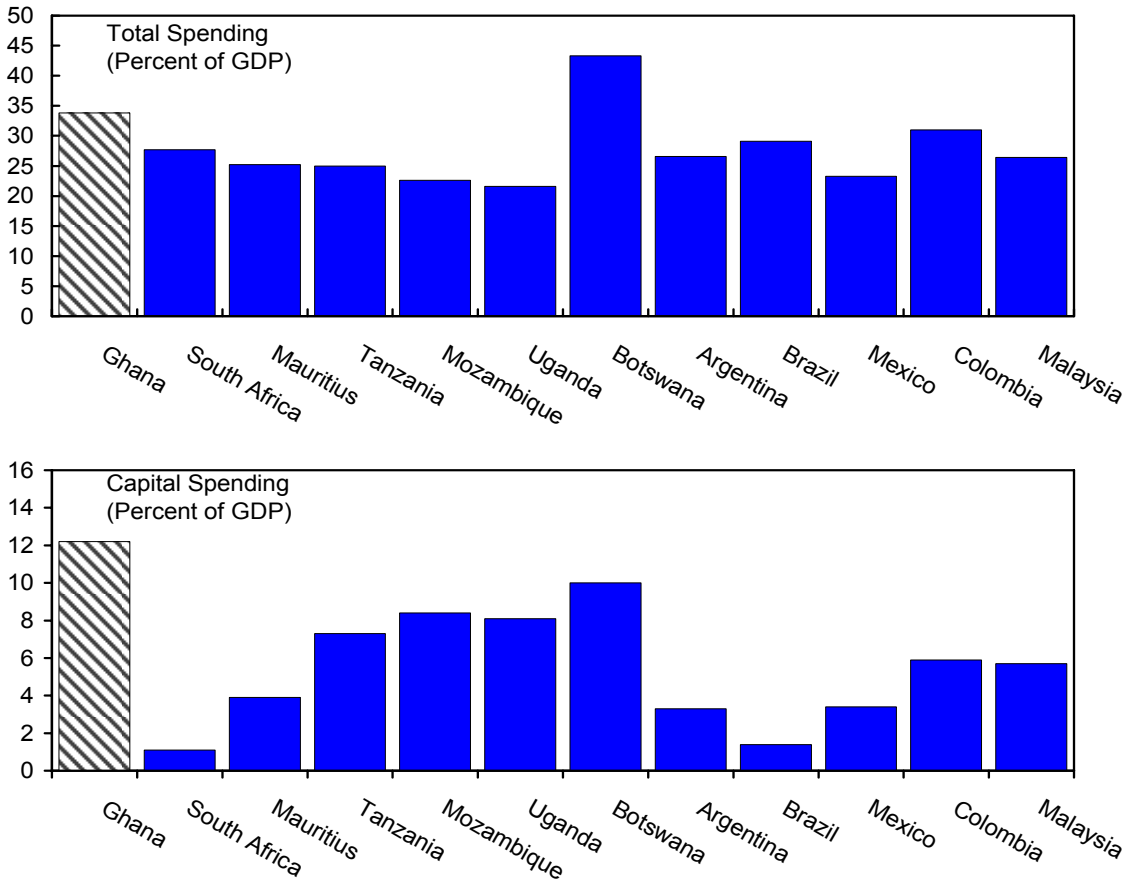
Reforms	Timeline
Comprehensive Pay Reform	
• Phase 1. Remove distortions in GUSS	2006 (completed)
• Phase 2. Carry out job content and evaluation analysis	2007
• Phase 3. Final salary increase	In the context of the 2008 budget
• Monetize noncash benefits	2007-08
• Reform the payroll system	2007 (ongoing)
Employment Reform	
• Impose a selective hiring freeze	2007
• Establish a systematic approach to setting wages, based on agreed indicators (e.g., budget constraint, expected inflation, productivity growth, priority objectives)	2007
• Undertake a functional review	2007–08
• Right-size the public sector, starting with reform of subvented agencies	2007–11

Figure II.1. Quality of PEM System, 2006
(Benchmarks met, out of 16)



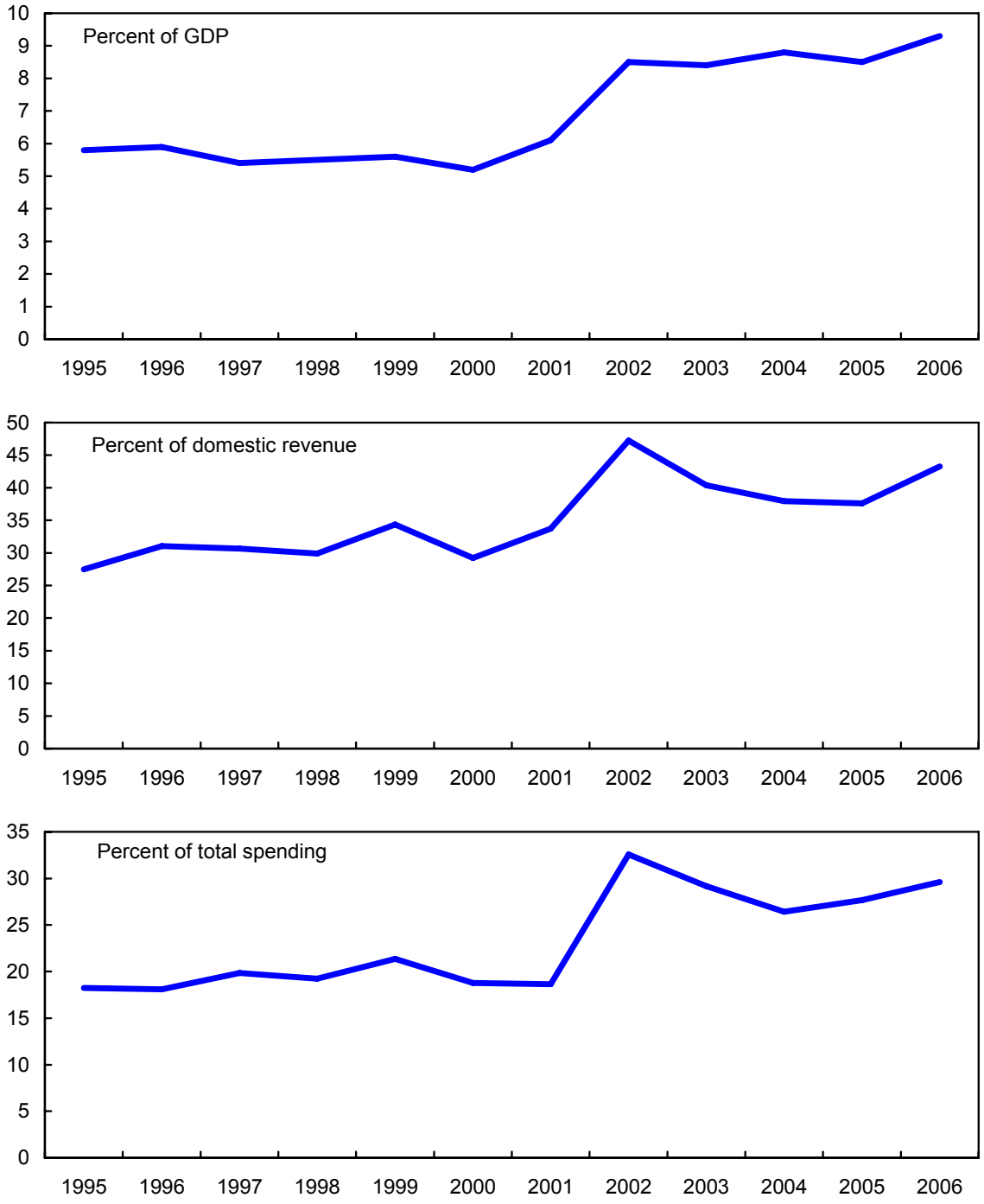
Source: IMF.

Figure II.2. Government Spending in Selected Countries, 2006



Source: Ghanaian authorities and IMF.

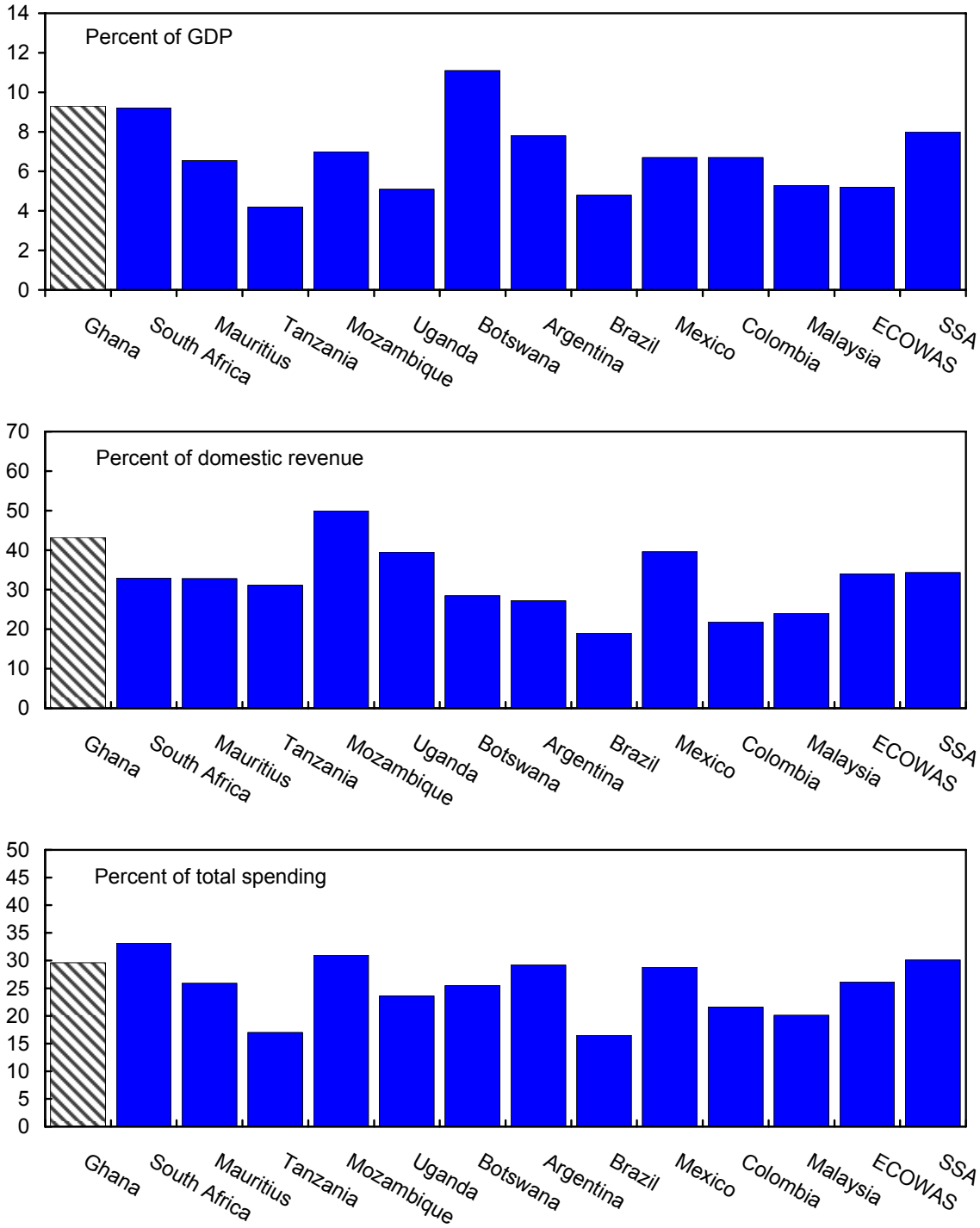
Figure II.3. Ghana: Trends in Wage Bill, 1995–06[1]



Source: Ghanaian authorities and IMF.

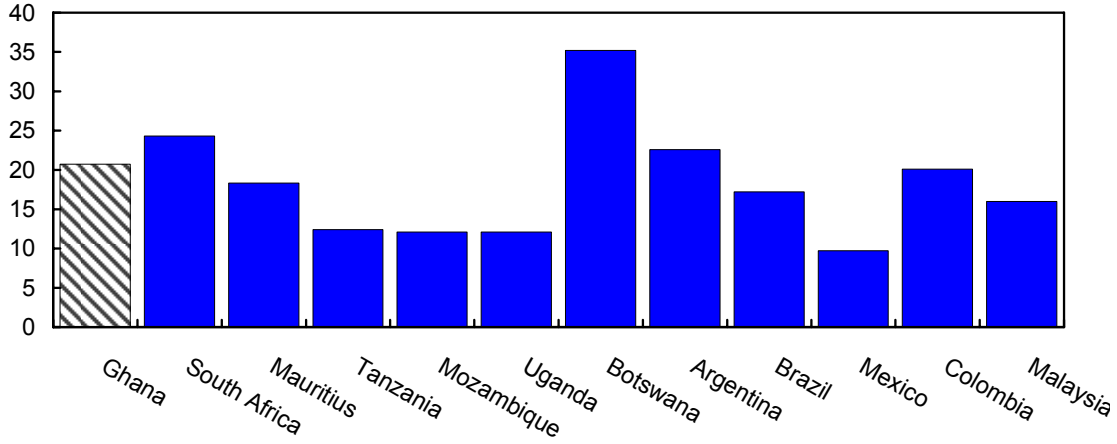
[1]Excludes wage-related benefits and allowances.

Figure II.4. Wage Bill in Selected Countries, 2006



Source: Ghanaian authorities and IMF.

Figure II.5. Tax Revenue for Selected Countries, 2006
(Percent of GDP)



Source: Ghanaian authorities and IMF.

III. Financial System and Capital Market Development in Ghana[1]

A. Introduction

1. **Ghana's financial system has been undergoing a major transformation during the past few years.** While the financial system is relatively small, ongoing structural reforms and gradual liberalization of the sector have paved the way for a rapid financial deepening since 2004 (see Chapter V). The banking system is profitable and reasonably sound, and competition has been increasing in recent years as more foreign banks are moving in. The nonbanking sector—the insurance, social security, and pension funds—is also growing, albeit from a very low base. The financial infrastructure, such as payment and settlements systems and automated trading, is also being strengthened. The regulatory and supervisory environment is broadly adequate, but new challenges will require continued vigilance and improvements. The authorities introduced a Financial Sector Strategic Plan (FINSSIP) in 2003, which provides for the medium-term direction of financial sector reform. The FINSSIP's emphasis is on regulatory and judicial reform, institutional capacity building, protection of private property rights, and competition. The authorities are presently preparing a financial sector strategy note (FSSN) jointly with Fund staff that will take stock of progress thus far and provide an updated assessment of key priorities. In particular, it will consider issues related to the development of domestic capital markets (bond, equity, and money markets) and assess banking sector systemic risks.

2. **In this paper, we review recent developments in the financial sector and supervision in Ghana, and identify an updated reform agenda.** Section B reviews the financial sector's structure and trends. The performance and supervision of the banking sector, capital markets and nonbank financial institutions are analyzed in Sections C, D, and E, respectively. Section F concludes.

B. Structure and Trends

3. **Ghana's financial system is dominated by the banking sector.** At the end of 2005, banks' assets amounted 37 percent of GDP and accounted for two-thirds of the financial system's total assets (Table III.1). The largest commercial bank—Ghana Commercial Bank (GCB)—is 35 percent owned directly by the government; additional ownership by state-owned entities increase the de facto government ownership to over 50 percent. A planned increase of the capital of the GCB, in which the government will not take part, is expected to lower the government stake in the bank. The other two largest banks are majority foreign-owned. Since 2005, five new regional banks have been licensed in Ghana.

4. **Nonbank financial institutions (NBFIs) play a limited role in Ghana's financial system.** The largest NBFI is the state pension fund (Social Security and National Insurance

[1] Prepared by Oduetse A. Motshidisi and Plamen Iossifov. Arnold McIntyre and DeLisle Worrell provided selected inputs.

Trust, SSNIT), which at the end of 2005 accounted for 18 percent of financial system assets. The networks of credit unions and rural banks rival that of bank branches in terms of number of offices, but their share in financial system assets is small. Other NBFIs include insurance companies, discount houses, and mortgage finance companies.

5. **The other financial markets, in order of size, are the stock market, the government bonds market, and the interbank money market.** At present, there are 33 listed companies on the Ghana stock exchange with a market capitalization of 95 percent of GDP at the end of 2006. However, this measure exaggerates the importance of the stock market in the economy, as one global company with headquarters in South Africa—AngloGold Ashanti Ltd.—accounts for 70 percent of the stock market capitalization. The end-2006 capitalization of the Ghana S&P/IFC Global Frontier Market Index, which includes only locally domiciled companies that are among the most actively traded securities in the market, was just 4 percent of GDP. The end-2006 gross domestic government debt, including non-tradable obligations, was 20 percent of GDP, and the outstanding interbank borrowing at the end of 2006 was less than 2 percent of GDP.

Table III.1. Ghana: Financial System Structure, end-2005

	Number of		Financial Sector Assets	
	Institutions	Branches	In percent of financial system assets	In percent of GDP
Banking sector	18	374	66.7	36.5
Commercial banks	7	223	29.6	16.2
Large commercial banks	3	193	26.2	14.3
Ghana Commercial Bank (GCB)	1	135	11.0	6.0
Foreign-owned banks	2	58	15.2	8.3
Small commercial banks	4	30	3.4	1.9
Development banks	3	78	11.9	6.5
Merchant banks	2	6	2.3	1.3
Universal Banks	6	67	22.8	12.5
Rural banks	121	353	4.3	2.3
Insurance companies	25	48	22.0	12.0
Insurance companies	23	48	21.0	11.5
Social Security and National Insurance Trust	1	48	17.5	9.6
Other insurance companies	22	0	3.5	1.9
Reinsurance companies	2	0	1.0	0.5
Other nonbank financial institutions	309	14	7.1	3.9
Building societies	2	9	0.0	0.0
Credit unions	273	...	1.1	0.6
Discount houses	2	...	1.3	0.7
Finance companies	14	...	1.6	0.9
Leasing companies	5	...	0.7	0.4
Mortgage finance	1	5	1.3	0.7
Savings and loans	12	...	0.9	0.5
Total financial sector	473	789	100.0	54.8

Sources: Bank of Ghana and IMF staff calculations.

6. **The population's access to financial services remains low.** Ghana ranks low in financial access with 1.4 bank branches per 100,000 inhabitants in 2004, down from 3.2 in 1998 before the banking sector was rationalized (Aryeetey and Machiko, 1998). This compares with an average of 5.6 in middle-income Sub-Saharan Africa countries (Beck, Demirguc-Kunt, and Martinez Peria, 2005; Claesssens, 2005). Only 5 percent of Ghanaians have a formal bank account.

7. **Ghana's financial system and markets was at a broadly at a similar stage of development as other low-income countries in Sub-Saharan Africa** and ranked lower than middle-income countries in SSA on a number of measures of financial deepening, such as the ratios to GDP of M2, private sector credit, and bank deposits. However, Ghana is catching up rapidly, thanks to the progress made since 2004 (Table III.2).

Table III.2. Ghana: Average Indicators of Financial Development Relative to Peers, 2000-04
(In percent)

	Sub-Saharan Africa				Other
	Low Income	Middle Income excl. South Africa	Ghana (2000-04)	Ghana (2006)	Middle Income
Bank deposits/GDP	18.0	29.2	17.3	26.9	39.4
Private sector credit/GDP	13.3	21.0	11.2	17.4	40.3
M2/GDP[1]	26.9	32.1	30.0	35.7	94.2

Source: IMF, *Regional Economic Outlook - Sub-Saharan Africa,* 2006, and International Financial Statistics.

[1]Includes foreign currency deposits.

C. Banking Sector

Capital adequacy

8. **The banking sector as a whole appears to be well capitalized.** At the end of 2006, the aggregate regulatory capital to risk-weighted assets ratio (RCAR) was around 16 percent against a minimum requirement of 10 percent (Table III.3). However, the financial soundness indicators reported by the Bank of Ghana appears to overestimate capital adequacy, as current year profits are allowed in the calculation of regulatory capital.[2] But even correcting for this, the aggregate capital adequacy ratio was above the statutory minimum in recent years; in 2006, for example, it exceeded 12 percent.

[2] The Basel I capital accord does not list current year profits among the balance sheet items that can be counted as regulatory capital.

Table III.3. Ghana: Financial Soundness Indicators, 2003-06

(In percent, end-of-period, unless specified)

	2003	2004	2005	2006
Capital adequacy				
Regulatory capital to risk-weighted assets ratio	9.3	13.9	16.2	15.8
Regulatory tier 1 capital to risk-weighted assets ratio	6.1	11.8	12.0	...
Asset quality				
Nonperforming loans to total gross loans	18.3	16.3	13.0	7.9
Loan loss provisions to nonperforming loans	83.8	84.4	65.5	93.5
Earnings and profitability				
Return on assets (average)	6.2	5.8	4.6	4.3
Return on equity (average)	32.7	33.7	23.6	24.2
Interest margin to gross income	63.2	62.9	64.0	64.5
Noninterest expenses to gross income	50.0	50.6	58.2	...
Interest spread[1]	23.1	20.3	19.3	18.3
Liquidity				
Core liquid assets to total assets ratio	29.0	25.4	20.7	23.5
Broad liquid assets to total assets ratio	57.0	53.5	47.0	46.3
Core liquid assets to short-term liabilities ratio	40.8	34.6	42.8	31.0
Broad liquid assets to short-term liabilities ratio	80.2	72.8	97.4	61.0
Exposure to foreign exchange risk				
Share of foreign currency deposits in total deposits	30.8	29.3	26.3	28.1
Share of foreign liabilities in total liabilities	4.0	2.8	2.4	4.0

Source: Bank of Ghana.

[1] Average lending rate minus average (saving and demand) deposit rate.

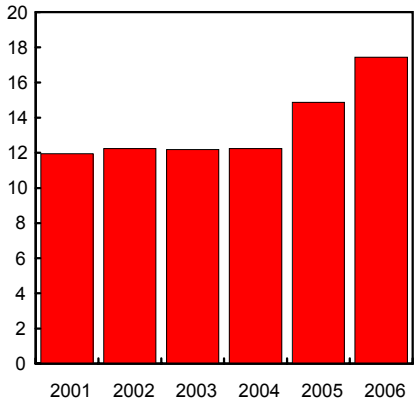
Asset quality

9. **Asset quality has markedly improved in recent years.** The share of nonperforming loans (NPLs) in the aggregate bank credit portfolio has declined to 8 percent in 2006 from as high as 18 percent in 2003. Moreover, existing NPLs are almost fully covered by provisions (Table III.3).

10. **The decline in the aggregate NPL ratio was due to both better loan recovery and rapid credit growth with most of the new loans remaining performing to date.** Bank credit to the private sector has grown at an average rate of 36 percent over the last five years (43 percent in 2006). The gradual macroeconomic stabilization over the period has allowed the growth by over 2 percentage points of the ratio of private sector credit to GDP in 2005 and 2006 (Figure III.1). Most of the new credits are given to the services, trade, construction, commerce, and manufacturing sectors of the economy. In 2006, manufacturing accounted for 23.6 percent of lending, followed by services with 21.0 percent, commerce with 18.4 percent, and construction and quarrying with a combined share of 19.3 percent. Small businesses have not yet fully benefited from the availability of credit. A recent assessment of Ghana's investment climate found that restrictions on access and cost of capital were more severe for local firms in Ghana than in, for instance, Kenya and Tanzania (Teal, 2005).

Figure III.1. Ghana: Private Sector Credit by Deposit Money Banks, 2001-06

(In percent of GDP)

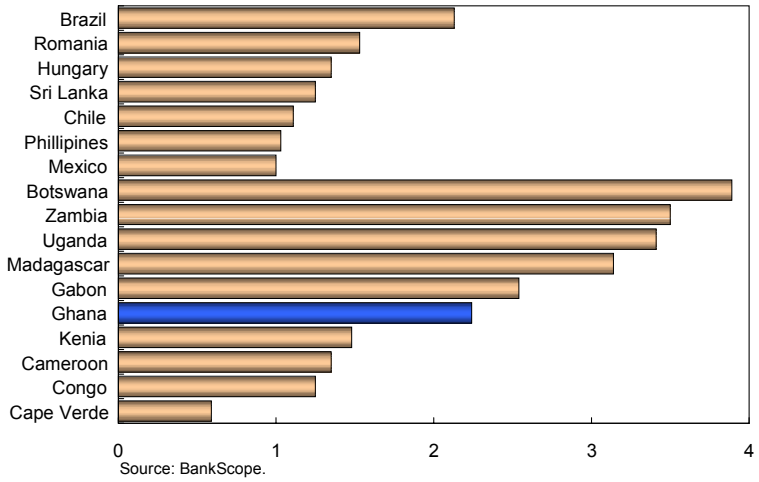


Source: Ghanaian authorities and IMF staff estimates.

Profitability

11. **Banking sector earnings are normalizing.** Increased competition and declining risk-premiums in the stable macroeconomic environment have lowered banks' return on assets and interest rate spreads. Average return on assets has declined from 6.2 percent in 2003 to 4.3 percent in 2006, bringing Ghana closer to the SSA average (Figure III.2). Banks' returns on equity have declined faster, reflecting the build up of shareholders' capital over the period. Interest rate spreads have been declining recently, but, at over 18 percent in 2006, they remain quite high (Table III.3). The elimination of the secondary reserve requirement in mid-2006 and increasing competitive pressures in the banking sector have contributed to some decline in interest rate spreads. But spreads are still high, relating to inefficiencies in banking operations, not fully sufficient competition, inadequate collateral sources for some firms and remaining weaknesses in the legal environment, as well lack of a credit information base on borrowers that heightens the riskiness of lending for banks. The latter will be addressed by the establishment of a credit bureau, as authorized in the recently passed Credit Reporting Law.

Figure III.2. Banking Sector Profitability (RoA), 2005



Source: BankScope.

12. **Persistently high overhead costs signal inefficiency.** The ratio of overhead costs to total assets in Ghana has remained in the range of 7-9 percent since 2001, compared to an average of about 6 percent in SSA countries and even lower in other middle-income countries (Table III.4). On this measure the situation does not seem to be improving; a recent Bank of Ghana (BoG) Monetary Policy Committee report stated that all measures of operational efficiency had improved except for cost to income and cost to total assets.

Table III.4. Ghana: Bank Overhead Costs to Total Assets Relative to Peers, 2001-05

(In percent)

	2001	2002	2003	2004	2005
Ghana	8.5	7.0	8.4	7.9	8.8
Sub-Saharan Africa	6.3	6.4	6.4	6.5	5.9
Low income countries	6.0	6.0	5.9	6.2	5.0
Lower middle income countries	5.5	5.7	6.1	5.2	5.0
Upper middle income countries	4.9	5.3	4.7	4.4	3.8

Source: Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine, 2000, "A New Database on Financial Development and Structure," *World Bank Economic Review*, 14, 597-605.

Liquidity

13. **The banking sector appears to be liquid.** The ratio of broad liquid assets to short-term liabilities has hovered above 70 percent in 2003-2005. In August 2006, the BoG eliminated the secondary reserve requirement for deposit money banks, which further freed up funds.

Risks, opportunities, and reform agenda

14. **The supervision of the financial system has improved significantly in recent years.** According to its self-assessment, the BoG has implemented the recommendations of the 2003 Financial Sector Assessment Program (FSAP) update. The BoG continues to upgrade the supervisory skills of its staff and the quality of the onsite and offsite supervision, and it is planning to move toward risk-based supervision and the more risk-sensitive Basel II regulatory system in the not too distant future. Since 2004, the BoG publishes a Financial Stability Report (currently on a bi-monthly schedule) that presents developments in the aggregated balance sheet and income statement of the banking system. The analysis makes use of aggregate financial soundness indicators. BoG staff is enhancing stress-testing on groups of banks and individual banks, with support by IMF staff. The BoG plans to include stress-test analysis on groups of banks in its future Financial Stability Reports and perform stress-tests on individual banks as part of its internal operations.

15. **A number of measures have been taken to contain the main risks facing the Ghanaian banking sector.** The 2003 FSAP Update highlighted in particular the high exposure of one systemically important bank to the Tema Oil Refinery (TOR) and the sizable share of non-performing loans in bank portfolios. Banks' ability to withstand possible future deterioration of asset quality has been enhanced by the 2006 increase in the minimum capital requirement for banks, which was met by all banks. In addition, the risks stemming from the high exposure to the TOR have been reduced by the securitization of the loan by the

government. Moreover, following the planned divestiture of TOR, high exposure by the aforementioned bank may be further reduced. Measures taken by the government to invigorate the secondary government bond market would give banks a lower-cost option than the rediscount window for accessing liquidity.

16. **The passage of the Credit Reporting Law and the recent elimination of the secondary reserve requirements are expected to spur banking activity.** Since the elimination of the secondary reserve requirements in August 2006, some banks have reduced their minimum deposit requirements, making financial services more affordable to the public. The new Credit Reporting Law requires all banks to submit credit details to a reporting bureau, which is now being set up and is expected to begin operations before the end of 2007. Enhanced information flow is expected to lead to better and faster credit assessment and extension of lending to other sectors, especially small and medium enterprises. In the medium term, a system for rating corporate loan applicants would further enhance transparency and lower lending risks. Further improvements to the legal system to enhance protection and enforcement of creditor rights will help to deepen confidence in the system.

17. **Other financial reforms, underway or planned, to deepen the financial system and keep it stable are new prudential regulations, an upgrade of the payments system, and reinforcement of BoG supervisory capabilities.** New, more risk sensitive prudential regulations will be needed in the context of the ongoing rapid financial deepening. Additional reforms of the payments system are also needed. Among reforms underway or being considered are linking rural banks through a wide area network, technologies to make all ATMs interoperable and facilitate "smart card' use, electronic processing of bulk payments, changes in the treatment of large value payments, and legislation with respect to bankruptcy and data protection.

18. **Despite the entry of new banks, competition in the banking sector can be further enhanced.** Following the licensing of five new regional banks, the authorities have shifted the focus of their licensing strategy to target larger, internationally reputable banks that could enhance know-how and cost efficiency.

D. Capital Markets

Structure and trends

19. **The primary government bond market is organized around a system of primary dealers and functions relatively well.** Financial institutions are selected to participate in the primary auction conducted by the central bank. Auctions are held weekly on a uniform price format. The announcement to the market is comprehensive, based on the financing requirement target of the Government, including any Treasury bills the BoG has issued for monetary policy purposes. Treasury bills are now issued with 91 day, 182 day, and 1-year maturities. In December 2006, the government issued a five-year bond in domestic currency, which was met with heightened interest by investors. The issue was strongly oversubscribed with around 80 percent of the securities bought by foreign investors, following the gradual liberalization of the capital account.

20. **However, the secondary government bond market is illiquid and inactive.** This is due to the fact that most of the government debt, not held by the central bank, is bought by commercial banks, which hold the bonds until maturity, due to the dearth of alternative low-risk investments (Table III.5). Although the medium-term bonds are listed on the Ghana Stock Exchange, secondary trading is virtually nonexistent. Increased foreign participation in long-maturity bonds, through tighter pricing spreads and other market practices, could help stimulate the secondary market.

Table III.5. Ghana: Ownership Structure of Outstanding Government Debt, 2001-05
(In percent)

	2001	2002	2003	2004	2005
Central bank	26.8	24.4	19.7	35.3	35.8
Commercial banks	39.3	41.7	38.6	39.8	51.6
Nonbank sector	33.9	33.9	41.6	24.9	12.6
Foreign investors	0.0	0.0	0.0	0.0	0.0

Source: IMF staff and Ghanaian authorities.

21. **The development of the corporate debt market has been slow due to numerous market imperfections.** The absence of a proper yield curve has negatively affected the ability of corporate issuers to borrow in the domestic market. The debt portion of the capital structure of the corporations tends to be short-term, exposing them to a funding mismatch when long-term capital expenditure is financed by short-term bonds (Yartey 2006). Progress in this area was made in December 2006, when the government issued a five-year government bond with an yield of 14.5 percent. In addition, the authorities are considering market and institutional reforms to increase secondary market trading. It may be particularly necessary to review the policy on commissions, so that the exchange can have the flexibility to charge different rates based on the issuer's financial and business profile.

22. **Although the stock market has been a source of financing for corporations, it is still small and illiquid**. Trading is discontinuous with total value traded below 1 percent of GDP and a turnover below 4 percent (Table III.6). The principal limitation on the growth of the exchange is the shortage of new private issues, including from privatization. There are sizeable corporations that have chosen not to access funds through the stock exchange, because of high commissions and underdeveloped settlement and accounting processes.

Opportunities and reform agenda

23. **With regulatory reforms of the Ghana Stock Exchange largely in place, the challenge now is to broaden the investor base.** Under the Financial Sector Strategic Plan (FINSSIP), the authorities have committed to building capacity, using outreach programs to raise public awareness, and training users of the stock market on the role it can play in economic development. Because the state pension fund will continue to be the dominant player on the exchange, much will depend on how it seeks to diversify its portfolio.

Table III.6. Ghana: Stock Market Trading Activity Relative to Peers, 2001-05

(In percent)

	2001	2002	2003	2004	2005
Stock market turnover ratio [1]					
Ghana	2.6	1.8	4.2	3.2	2.2
Sub-Saharan Africa	11.8	7.6	7.8	7.1	7.4
Low income	72.1	68.2	54.4	48.3	48.6
Lower middle income	22.8	17.2	17.3	19.4	23.6
Upper middle income	21.6	25.1	24.5	25.6	29.7
Stock market total value traded as percent of GDP					
Ghana	0.3	0.2	0.6	0.7	0.4
Sub-Saharan Africa	5.7	6.4	6.6	6.7	7.9
Low income	5.3	5.6	9.4	9.1	12.7
Lower middle income	4.0	4.0	5.6	7.6	12.6
Upper middle income	7.7	9.4	9.4	11.4	14.2

Source: Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine, 2000, "A New Database on Financial Development and Structure," *World Bank Economic Review*, 14, 597-605.

[1] Ratio of the value of total shares traded to average real market capitalization.

24. **The authorities place high priority on upgrading debt management capacity as Ghana enters the international bond market and the domestic bond market grows.** It will be necessary to use a consistent strategy to coordinate domestic and foreign bond issues, using a risk management formula that keeps debt sustainable. The proceeds of foreign bond issues are to be assigned to projects that are expected to have a high rate of social return. Among reforms planned are introduction of a predictable bond auction calendar, rationalization of bond issues and maturities to provide benchmarks for the market, reform of the system of primary dealers to make the market more efficient, and enhancement of communications with the investor community. Again, the challenge is to diversify the investor base, which can be done by issuing a variety of instruments suitable for different investors, after analyzing investor needs as part of a well-defined debt management strategy. Over the medium term, the impact of high public sector borrowing may need to be reconsidered in order to encourage the banking sector to lend more widely.

25. **The development of capital markets can be further stimulated by relaxing the remaining capital controls.** In 2006, the Foreign Exchange Act eased certain capital controls. Both residents and nonresidents can freely acquire capital market instruments, except that if banks wish to acquire more than 10 percent of an issue, they must have prior approval from the BoG. To issue bonds in the local market, nonresidents must also have approval from both the BoG and the Securities and Exchange Commission. At the same time, there are still many restrictions on nonresident activity in the money market. Nonresidents can only invest freely in instruments with maturity of 3-year or longer with all other money market transactions being either prohibited or requiring the BOG approval. Ghana's gradual approach to capital account liberalization benefits from earlier experience of other countries—long-term flows, especially foreign direct investment, are liberalized first, to be followed by short-term flows.

E. Nonbank Financial Institutions

26. **There is significant scope for expanding the activities of nonbank financial institutions** (Table III.7). In the past, the development of the sector was to some extent held back by the lack of suitable investment opportunities in the domestic market. SNNIT and the insurance funds are the largest nonbank investors in the bond market. The lengthening of government bond maturities would benefit them immensely by allowing for a better matching of the maturity of their assets and liabilities.

27. **Significant reforms at the state pension fund (SSNIT) have minimized the governance-related vulnerabilities identified in the 2003 FSAP Update.** There is scope for the SSNIT to improve returns by outsourcing the investment management of some of its assets. To that end a private company has been appointed to invest certain assets, in partnership with local companies.

Table III.7. Structure of Nonbank Financial Institutions, 2004

	Insurance Companies		Pension Funds		Other NBFIs	
	Assets as Percent of		Assets as Percent of		Assets as Percent of	
	Total Financial Assets	GDP	Total Financial Assets	GDP	Total Financial Assets	GDP
Ghana	2.0	1.1	15.1	8.1	6.0	3.2
Botswana	1.6	1.5	17.4	16.1	34.3	31.7
Ethiopia	1.5	1.4	1.5	1.4	3.0	2.9
Gabon	7.1	1.9	…	1.1	4.9	1.3
Kenya	8.2	6.8	…	13.2	15.0	12.6
Nigeria	2.1	…	0.6	…	8.1	…
Rwanda	4.3	1.5	20.6	7.1	7.1	2.4
Seychelles	2.1	3.4	5.0	8.3	5.8	9.6
Tanzania	4.0	1.0	13.0	4.0	…	…
Uganda	…	0.8	…	2.5	…	0.3
Zambia	3.5	1.6	16.7	7.0	23.1	9.7
Zimbabwe	3.6	4.1	2.0	2.3	10.2	11.4

Source: IMF, *Financial Sector Profiles.*

28. **Regulation of other financial institutions has also been strengthened since 2005 by the passage of several laws, including the Insurance Act.** These laws have brought the legislative basis of supervision and assessment of financial risks in line with international standards. The National Insurance Commission (NIC) has been provided with the resources to acquire the equipment it needs to fulfill its responsibilities.

F. Conclusion

29. **Ghana's recent financial deepening has supported economic growth, and the financial sector is well placed for further rapid development**. Supportive laws and institutions are now in place and a stable economy offers a good foundation. The growth of long-term savings will provide assets to match with long-term investment instruments.

30. **Ghana's financial system is rapidly evolving.** While the system is relatively small, continuing structural reforms and liberalization have allowed for rapid financial deepening. The banking system is profitable and sound; competition has been increasing in recent years as more foreign banks move in. The nonbanking sector, like the insurance, social security, and pension funds, is also growing, but from a low base. The financial infrastructure, such as payment and settlements systems and automated trading, is being built as part of the financial sector development plan.

31. **A well-functioning capital market could diversify sources of funding for the economy and also reinforce financial stability**. Currently, banks are the main source of credit, but as the economy becomes more sophisticated, it will be necessary to build up other parts of the financial sector to reduce the risk of banking sector overexposure and systemic risk during economic downturns. As pension and other institutional funds grow, they will need longer-term assets to match their liabilities. A well-developed capital market could also meet those needs, as well as providing a cheaper source of funding, which would ultimately spur economic growth.

References

Aryeetey, Ernest, and Nissanke Machiko, 1998, *Financial Integration and Development: Liberalization and* Reform *in Sub Saharan Africa* (London and New York: Routledge)

Beck, Thorsten, Asli Demirguc-Kunt, and Maria Soledad Martinez Peria, 2005, "Reaching Out: Access to and Use of Banking Services Across Countries" (unpublished; Washington: World Bank)

Burger, John D., and Francis E. Warnock, 2006, "Local Currency Bond Markets," *IMF Staff Papers*, Vol. 53, pp. 133-146 (Washington: International Monetary Fund)

Claessens, Stijn, 2005, "Access to Financial Services: A Review of the Issues and Public Policy Objectives," Policy Research Working Paper No. 3589 (Washington: World Bank)

IMF, 2005, *Financial Sector Profiles*, African Department, unpublished manuscript, (Washington, DC: International Monetary Fund)

———, 2006, *Regional Economic Outlook,* April, (Washington, DC: International Monetary Fund)

Teal, Francis, 2005, "Ghana: Investment Climate" (Washington: World Bank)

Yartey, Charles, 2006, "The Stock Market and the Financing of Corporate Growth in Africa, The Case of Ghana," Working Paper No. 06/201, (Washington: International Monetary Fund)

IV. GROWTH CONSTRAINTS IN GHANA[1]

A. Introduction

1. **The stated goals of the government of Ghana are to accelerate growth to the 8 percent range in the medium term and reach middle-income status by 2015**. Central to the strategy are large infrastructure projects, more efficient use of public resources, and expanded and diversified exports. The government, together with the World Bank and the IMF, has identified specific growth-critical areas: infrastructure, financial development, trade, efficiency of government spending, the business environment, and labor markets. This chapter starts from the premise that these are constraints to growth in Ghana.[2] The objective is to shed some light on how they constrain growth in order to gain insight on which channels and indicators to monitor to gauge how well the constraints are being ameliorated.[3]

2. **Methodology is somewhat challenging**: single-country growth regressions are problematic because of data limitations. Another possible approach is to apply a cross-country empirical growth regression to forecast growth in Ghana, or measure the required contributions from various growth determinants to reach particular growth rates. That is fraught with difficulties because the models have robustness problems.[4] A simplistic approach is adopted here: (i) examination of some aggregate and disaggregate data that are relevant to the main channels through which these factors may constrain growth; and (ii) comparisons of Ghana to subgroups in sub-Saharan Africa (SSA), such as the countries that have achieved the highest growth rates over the last decade.

3. **This chapter is organized as follows**: it begins with information on past sources of growth, cross-country comparisons of long-run growth, and a discussion of the accuracy of IMF short-run growth projections (Section B). Next, Section C discusses identified growth constraints. Finally, subject to a number of caveats, a recent growth acceleration model is applied to illustrate how relieving these and other constraints could affect an acceleration in growth (Section D).

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[1] Prepared by Catherine Pattillo.

[2] Work on a 2007 World Bank Country Economic Memorandum (CEM) identifies four policy challenges that are binding constraints to growth in Ghana: strengthening macroeconomic stability, improving productivity and innovation, closing the infrastructure gap, and strengthening the investment climate (Bogetić et al, 2007).

[3] Labor markets and the business environment are not covered here because the World Bank CEM work has only recently begun to analyze them.

[4] Ghosh et al. (2005) suggest that cross-country growth models may help improve the performance of IMF growth projections, drawing on work suggesting that the projection accuracy of a model outperformed desk projections. However, these models have not yet been adopted in the IMF.

B. Background: Historical Growth Record

Ghana's Relative Long-run Growth Performance

4. **Since the early 1990s Ghana has been one of the stronger, though not one of the top, growth performers in SSA**. Based on the distribution of real GDP per capita growth rates, Ghana was in the top third for SSA for the decade ending 2006 and for 2000–06, ranking 12 and 16 out of 42 countries for those periods (Table IV.1).

5. **While cross-country regressions may not be suitable for growth projections, they can be useful for assessing historical long-run growth in an individual country**. Here the two models used may be less susceptible to problems identified in the literature: one uses only exogenous growth determinants, and the second is based on advanced econometric robustness analysis.

6. **Ghana also did relatively well in the 1990s.** In a growth benchmarking analysis comparing actual growth outcomes with those predicted by a cross-country regression based on exogenous opportunity variables, Ghana was one of the top ten "growth surprises" for 1990–2000 (Pattillo, Gupta, and Carey (PGC), 2006).[5]

7. **Ghana's long-run growth was lower than that of countries in other developing country regions because its policies were weaker and there was less factor accumulation**. Cross-country growth regressions can address the question of what Ghana's long-run growth could have been if policies or factor accumulation rates had been at the same level as in other developing country regions or the average for SSA. A model using robustness analysis[6] suggests that Ghana's growth in 1960–2000 was substantially lower than in East Asia (for example) partly for policy reasons but even more so because of lower factor accumulation rates (Table IV.2). While the growth shortfall due to poor policy lessened

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[5] As suggested in recent literature, opportunities for growth vary among SSA countries (depending on availability of natural resource, location, and other exogenous characteristics) while subsequent political and policy choices will affect actual growth. Benchmarking analysis quantifies this relationship by comparing actual and "expected" growth, which is derived from an estimated global relationship between growth and a set of factors beyond the country's control. In Pattillo, Gupta, and Carey (2006), this set includes variables that capture country location, exposure to trade, growth in trade partners and terms of trade, income in 1960, and historic mortality rates for European settlers (proxying institutions that countries inherited from colonial powers and possibly also capturing health conditions).

[6] Recent papers use a new Bayesian technique to address uncertainty about which explanatory variables belong in the model and to address endogeneity of these variables (Sala-i-Martin, Doppelhofer and Miller, 2004; Tsangarides, 2005). Using a world sample, an extension of the latter found that, in addition to initial conditions, the following variables were robustly correlated with growth: factor accumulation (investment and education); policy variables (inflation, fiscal balance, government consumption, black market premium); and fixed geographical and exogenous factors (percentage of land in the tropics, arable land, and terms of trade growth). Ghana's foregone growth relative to other regions is estimated using data and coefficients from Tsangarides (2005).

somewhat in the 1990s, that due to lower factor accumulation increased. Compared to SSA generally, however, if its factor accumulation and the policy variables in this model had been at the average for SSA countries in the 1990s, Ghana's growth would have been slightly lower.

Sources of Growth

8. **Government investment and exports have contributed to recent growth, although the contribution of exports is low compared to other countries**. Investment—particularly government investment—has been a significant engine of growth since 2001, in contrast to the 1992–2000 period when average annual real growth was negative (Table IV.3). The contribution to growth of exports and government investment in 2001–06 was approximately the same, though the contribution of exports fell from the previous period. Background work for the World Bank Country Economic Memorandum (CEM) shows that the contribution of exports to total GDP growth in Ghana has been the lowest among rapidly growing comparator countries (Bogetić et al, 2007).

9. **Investment to GDP ratios are high in Ghana compared to other SSA countries, but export growth is low.** Ghana's investment ratios have been historically higher than the average for SSA countries and similar to or higher than the fastest-growing SSA countries (Figure IV.1). Since 2003 the investment ratio has increased rapidly. Consistently, imported capital goods (from trade data) also began increasing in 2003 (Figure IV.2). Growth rates of total exports (goods and services) in Ghana have been low compared to other SSA countries; in 2000–06 Ghana ranked 30 out of 42 countries (Table IV.1).

10. **Sectoral growth has been broad-based and structural change limited.** Growth rates of agriculture and industry accelerated in 2001–06, while the growth rate of services declined slightly, although services still made a larger contribution to growth than industry, given their larger share in value-added (Table IV.4). Sizable increases were registered in the agriculture subsectors of livestock and cocoa, and smaller gains were posted for manufacturing and construction. However, there has been only limited structural change in Ghana's economy over the last decade: the share of agriculture fell slightly, that of services increased, and industry's share held constant.

11. **Growth in total factor productivity is now strongly contributing to economic growth**. Ghana's sources of real GDP growth can be decomposed into the contributions of factor accumulation—including that from human capital—and the residual attributable to total factor productivity (TFP). While the contribution of TFP growth to real GDP growth was negative during both the 1980s and 1990s, a major turnaround occurred in 2001–06 as policy improved (Table IV.5).[7] Bogetić et al. (2007) find that a large proportion of recent

[7] While the exact magnitude of the TFP contribution changes, these estimates are robust to alternative assumptions for the production function parameters.

TFP growth came from the agriculture sector and can be attributed to productivity increases mainly in cocoa, but also in some grain, cereal, and fiber crops.[8]

Growth Projections

12. **For 2003–06 IMF projections tended to underpredict Ghana's growth.** While one-year program forecasts for the previous two PRGF-supported programs (1996–2002) were consistently overoptimistic, real GDP growth was underpredicted in each year of the 2003–06 PRGF program (Table IV.6). Two- and three-year forecasts also tended to underpredict growth. While growth forecasts in PRGF countries are generally too optimistic, Ghana's September current year and one-year WEO forecasts also underpredicted real GDP growth for 2001–05, according to a report evaluating WEO forecasts (Timmerman, 2005) (Table IV.7).

C. Growth Constraints

Infrastructure

13. **Recently, high-profile efforts like the UN Millennium Project (2005) have pointed to the severe infrastructure shortage in Africa as a major obstacle to growth**. While results are mixed, studies of infrastructure in developing countries have tended to find a positive, significant contribution to output and growth from good-quality infrastructure. The impact is strongest in the telecoms sector, followed by roads and electricity; the evidence on access to water or sanitation is more complex, as these have longer term effects on growth that feed through improved health and education outcomes (Estache, 2006).

14. **Infrastructure is becoming an ever greater constraint on growth in Ghana.** Based on indicators before 2000, Ghana ranked relatively well in SSA, and infrastructure problems were not the biggest complaint in business surveys in the 1990s. However, for a number of reasons—most strikingly the 2006 energy crisis—infrastructure is emerging as one of the biggest challenges for growth. Infrastructure spending is not increasing fast enough and the needs are massive; cost recovery pricing in the utilities is becoming more difficult in the current environment (political cycle, energy shortages, increasing marginal costs); and infrastructure has been identified as a major constraint to increasing nontraditional agricultural exports.

15. **Given comparatively better infrastructure indicators (based on data up to 2000), cross-country regressions suggest lower growth benefits of infrastructure in Ghana compared to SSA averages**. In one leading study (100 developing countries, using data from 1970–2000), Calderon and Serven (2004) found that high scores on an infrastructure index measuring stocks and quality of telecommunications (number of main telephone lines),

[8] This may raise some concerns about the sustainability of TFP improvements if they were strongly related to particular reforms in the cocoa sector that are ending.

power (electricity-generating capacity), and transport (length of the road network) had a positive effect on growth. Because Ghana's index of infrastructure stocks and quality was higher than the average for SSA, according to this model the long-run growth benefits from increasing infrastructure are somewhat smaller than for SSA overall. In SSA a one-standard-deviation increase in infrastructure stocks (or quality) would raise the long-run growth rate by 2.7 (0.4) percentage points; the comparable estimates are 0.6 (0.5) for Ghana. One-standard-deviation increases in infrastructure stock imply sizable increases in investment—a seven-fold increase in the number of main telephone lines, though more modest increases in power-generating capacity and road density.

16. **There are significant gaps in infrastructure supply, quality, and reliability in Ghana.** On roads and coverage of the electricity network Ghana benchmarks relatively well, but access to improved water and sanitation, fixed telephone lines, and Internet use lag regional and low-income country (LIC) standards (Table IV.8). Demand, supply, and planning problems in the energy sector brought on an energy crisis in 2006. Inefficiency in the sector was one warning sign: transmission and distribution losses in Ghana are higher than both SSA and LIC averages.[9] Intermittent supply and inability to extend supply to new customers plague urban water delivery. In telecommunications, while mobile telephone use has been growing at exponential rates since 2003, the number of fixed lines has hardly grown at all.

17. **Business users see infrastructure deficiencies as a big problem.** A 2006 survey by the Association of Ghana Industries found that the quality of power supply came 4th of 13 challenges to doing business in Ghana; not surprisingly, the 2006 load-shedding program in response to the energy crisis was the most severe obstacle. International surveys for the *Global Competitiveness Report* in 2004 ranked the quality of Ghana's infrastructure 66th of 104 countries, below regional leaders like South Africa, Mauritius, and Botswana (Bogetić, et al, 2007).

Infrastructure financing and growth

18. **Government spending on infrastructure in Ghana is increasing slowly, and private participation is low.** While infrastructure spending has been increasing since 2002, the ratios to GDP and to total spending in 2006 are still lower than those for 1999–2000 (Table IV.9). Private participation in infrastructure projects as a share of GDP was lower in Ghana during 2000-05 than the SSA average or than in countries at similar stages of development, such as Kenya, Mozambique, and Uganda (Table IV.10).

[9] System loss held constant at about 25 percent for 2001-05—high by regional standards. Electricity Company of Ghana (ECG) is currently installing prepaid meters and setting up a revenue protection unit to reduce system loss. Cross-country evidence on the relationship between infrastructure quality and growth suggests that these measures will be growth-enhancing.

19. **In a model scenario with several-fold increases in infrastructure spending, growth accelerates sharply.** The World Bank estimates infrastructure spending needs of about 10–12 percent of GDP, for the next 10 years or so. (Estache and Vagliasindi, 2007)[10] The World Bank is also developing a Maquette for MDG Simulations (MAMS) general equilibrium model for Ghana, to assess the prospects for growth and improvement in human development indicators under various scenarios, including a strategy with removal of infrastructure gaps and a full MDG achievement strategy (Bogetić et al., 2007). In the scenario focused on relieving infrastructure bottlenecks, growth accelerates sharply from an average of around 7 percent during 2004-15 to around 7.5 percent. The additional growth is driven by productivity spillovers from infrastructure service provision to the rest of the economy.

Sustainability—cost recovery in the utilities

20. **Cost-recovery pricing in the utilities is facing challenges that have implications for the ability of the utilities to maintain and upgrade services and for fiscal sustainability**. To meet growing power demand, the government-owned Volta River Authority (VRA), the main energy producer, has been transitioning from mainly hydro generation to a more costly hydrothermal mix. With world oil prices high, for several years Public Utilities Regulatory Commission (PURC) bulk supply tariffs (for sale to large customers like the Electricity Company of Ghana [ECG]) have not enabled VRA to recover costs as thermal generation increases. The utility tariff system has been effectively suspended since November 2006, after gazetted tariff increases, planned for May 2006, were not passed on to customers. Moreover, mines enjoy energy prices that are below the PURC tariffs and VALCO, the aluminum smelter that is a large power user, has a special contract guaranteeing it low-cost power. The financial situation of VRA and ECG deteriorated as a result. In November 2006 the PURC also discontinued the quarterly automatic tariff adjustment, switching to a system where the utility companies apply for adjustments as needed.

21. **The authorities have recently announced plans to reinstate the suspended tariff increases by August 2007, and have committed to move toward full cost recovery, with a full tariff review**. The closing of VALCO announced in March 2007 will also free up significant amounts of energy for the rest of the economy and should help VRA's financial position. While these are encouraging developments, utility tariff regulation will need to be carefully monitored to ensure that the system is sustainable and the utilities are financially sound in the long run.

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[10] Estache and Vagliasindi (2007) estimates budgeted infrastructure spending in Ghana at about 1 percent of GDP in 2005; Table IV.9 shows slightly less, perhaps due to differences in coverage, as on operation and maintenance expenditure. Briceño, Andrade and Cavalcanti (2004) estimated that achieving infrastructure related MDG targets as specified in the Ghana Poverty Reduction Strategy would cost 8 percent of GDP for the period 2004-08. Estimates of meeting MDG infrastructure targets for SSA countries are being updated during a World Bank Infrastructure Flagship study.

Energy crisis: short-run bottleneck to growth in 2007

22. **Both rapidly implementable supply options and investment in generation, transmission, and distribution for the medium term are necessary if the energy crisis is not to impinge on growth in 2007 and beyond**. Mining, where energy accounts for 20 to 40 percent of operating costs, and some manufacturing subsectors are important exporters. Electricity demand is expected to increase in 2007–08 with the opening of several new mines. Power supply must be restored to precrisis levels and increased to meet rising demands so that the contribution to growth of these exporters is not choked off. The good job the government is doing with load management, and self-provisioning by most mining operators and some manufacturing and service establishments have helped keep growth resilient to the crisis so far. The government has also been augmenting supply through major investments and reduced exports to neighboring countries, as well as new thermal generation investment that will allow for tapping gas from the West African Gas Pipeline (WAGP), scheduled for completion in late 2007.

Increasing nontraditional agricultural exports

23. **Infrastructure is identified as an important constraint to agricultural productivity, particularly for nontraditional exports that have potential for rapid growth**. Accordingly, over one-third of the Millennium Challenge Account (MCA) budget of US$547 million will be allocated to the transport component, primarily feeder and trunk roads. Further MCA infrastructure investments include outlays in energy and water, with a large irrigation component. Internal rates of return on these are expected to be high; and the project as a whole is expected to increase medium-term growth.

24. **Finally, future monitoring of channels through which infrastructure affects growth requires benchmarking data, which are currently not available in Ghana**. Infrastructure is expected to contribute to economic growth through complementarities that foster higher private sector investment and increase productivity, and through support for higher trade.[11] These channels are difficult to monitor in Ghana because expenditure-based national accounts are not complete, and there has been no Investment Climate Assessment (ICA) to benchmark the role of indirect costs from infrastructure deficiencies, although the ICA will be completed soon.[12]

[11] Agénor and Moreno-Dodson (2006) suggest new channels, including reduction of investment adjustment costs, better durability of private capital, and lower cost health and education services, that contribute to long-run growth.

[12] The World Bank is conducting an ICA in Ghana in 2007. Eiffert, Gelb, and Ramachandran (2005) used ICA data to show that for many SSA countries, while firm productivity is low relative to say, China, when TFP net of indirect costs is measured, the shortfall is even greater. Costs associated with infrastructure deficiencies are the largest share of indirect costs. In some countries high infrastructure costs account for more of the

(continued)

Financial Development

25. **Considerable theoretical and empirical literature demonstrates the relationship between financial development and growth**. Empirical studies confirm that countries with better-functioning financial systems grow faster, and the result does not seem be driven by reverse causality (Levine, 2004). In this section we look at channels through which financial development contributes to growth, and indicators for monitoring to get a sense of whether the sector's contribution to growth in Ghana is increasing.

Financial depth indicators

26. **Financial depth in Ghana is very low.** Financial depth in LICs in SSA is the lowest in the world gauged by such common indicators as the ratio of broad money and private sector credit to GDP. Ghana's M2/GDP ratio, while now slightly higher than in low-income SSA generally, is still much lower than in other subgroups in SSA, such as the non-CFA countries, middle-income countries, or the fastest growers of the 1990s. That is also true for private sector credit to GDP; even with the very rapid growth in recent years, Ghana's ratios are still below the fastest growers, and SSA overall (Figures IV.4 and IV.5).

Macroeconomic environment

27. **Financial development may not have contributed much to growth in Ghana in the past, given the high inflation.** Cross-country evidence suggests that the strength of the financial development–growth nexus depends on inflation, and that the positive effect of finance on growth ceases when inflation is high. One study estimates the threshold at between 13 and 25 percent (Rousseau and Wachtel, 2002). This is consistent with evidence on SSA showing that among the countries with relatively strong financial development indicators, those that grew faster had achieved greater macroeconomic stability; that is, they had much lower budget deficits (including grants) and lower inflation (Gulde et al., 2006).

28. **High inflation in Ghana up until recently may also have slowed financial deepening.** In addition to constraining the growth effect of financial development, high inflation has been shown to have a direct negative effect on financial development (Boyd, Levine, and Smith, 2001; Detragiache, Gupta, and Tressel, 2005). Cross-country regressions following the paper by Detragiache and colleagues and adding more SSA countries to the sample confirmed the negative effect of inflation, along with corruption and banking sector concentration, on financial depth (Gulde et al., 2006).

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productivity shortfalls that hinder competitiveness than traditional gross TFP (high wages and other direct costs relative to factory floor productivity). Benchmarking Ghana on these measures will be important.

Channels of influence

29. **Lack of credit hinders investment and growth in manufacturing in Ghana.** The link between finance and growth has been shown to operate by overcoming external financing constraints that otherwise hinder company expansion. While aggregate data are not available, finance is the constraint most commonly identified by firms of all sizes, but especially small- and medium-sized enterprises (SMEs; Teal, 2005, based on 2002 data).[13] The much higher rate of return on capital, measured as profits relative to capital stock value, for SMEs in Ghana relative to some other SSA countries further supports the idea that the financial climate is more adverse for SMEs in Ghana (Teal, 2005). Ghanaian firms use less bank financing for investment than firms surveyed in the ICAs (2002–05) in six other SSA countries (Teal and others, 2006).

30. **Abor and Biekpe (2006) found that financing contributed to the growth of nontraditional exporting firms in Ghana**. The growth-inhibiting effects of credit constraints may be stronger when these bind dynamic sectors with strong growth potential, such as nontraditional exporters.

31. **Credit constraints are also a problem in agriculture**. In the MCA project budget, 15 percent is allocated to rural finance. Based on detailed plot-level survey data in southern Ghana, Udry and Anagol (2006) find very large marginal returns not only to cultivation of pineapples (60 percent), an important nontraditional export, but also to other crops in these districts. They conclude that financial market imperfections that impede higher flows of capital to the informal sector are likely to explain why more capital does not flow to these high-return investments in Ghana.

32. **Is Ghana's financial system channeling resources to the most productive uses?** Financial sector development contributes to growth both by relieving the constraints to firm investment and growth (evidenced by aggregate private sector credit indicators) and by making resource allocation more efficient so that credit is channeled to sectors and firms with the highest risk-adjusted returns. There is also some cross-country evidence that financial liberalization increases the efficiency of investment (Abiad, Oomes and Ueda, 2004).

33. **This channel of influence on the finance-growth link has not been evaluated for Ghana**. However, some of the evidence (rates of return for SMEs and some agricultural subsectors) suggest some weaknesses in the financial sector's ability to channel credit to its most productive uses. Data on bank allocation of loans also show a relatively low share going to agriculture and high shares to the financial, trade, and services areas of the service sector, which may not be fully consistent with the returns and growth potential of different sectors (Table IV.11).

[13] The upcoming ICA will also provide more recent data on credit constraints at the firm level.

34. **Given Ghana's high and increasing remittance inflows, their growth impact could be magnified by policies that encourage banking them**. The evidence on the direct link between remittances and growth is mixed, but remittances could have an indirect effect on growth by spurring financial development. This idea is behind the argument that banking remittances will help multiply their developmental impact. It could pave the way for low-income households to gain access to other financial products and services (savings and credit), serving directly as a steady stream of loan collateral, as well as adding to bank resources for loans if deposits increase, which could in turn increase aggregate credit. Cross-country evidence has found that remittances have a positive impact on bank deposits and credit to GDP (Aggarwal, Demirgüc-Kunt, and Martinez Peria, 2006; Gupta, Pattillo, and Wagh, 2007).

Trade

35. **The link between growth and trade-related indicators—liberalization, openness, and trade volumes—has been well-documented in the literature**.[14] Breaking into the global market for manufactured exports has been the foundation of growth in many developing countries; strong growth in manufactured exports was also associated with growth accelerations in PRGF countries (IMF, 2005).

36. **Manufactured exports and their share in GDP have not grown as much in Ghana as in other coastal SSA countries**—the group with the highest potential given lower transport costs—or in the fastest-growing SSA countries (Figure IV.6). Critical ingredients for manufactured exports, which are transaction-intensive, are a stable policy environment, a supportive business climate, good infrastructure, and relative prices that reflect opportunity costs. A few points on the last area can be noted here:

37. **Wages that are in line with productivity are important to the competitiveness of manufacturing exports in Ghana.** Large firms in SSA have a much higher propensity to export. In Ghana the number of large firms was approximately constant between the 1987 and 2004 industrial census: new large firms are not emerging. The export profitability of large firms may be lower because they pay substantially higher wages than small firms—wages that do not reflect labor skill differences (Teal, 2005). Labor costs relative to productivity are important to competitiveness,[15] which suggests that attention may be needed both to impediments to labor market flexibility and to lowering the cost of doing business to support productivity gains. To the extent that high government wages are linked to wages in

[14] This note does not cover factors related to trade policy that could constrain growth; future work related to this is planned.

[15] Based on data from the mid-1990s Teal (1999) showed that real wages in Ghana's large firms, adjusted for productivity differences, were higher than those in comparable firms in Mauritius, a successful manufacturing exporter country.

large manufacturing firms, government wage policy may affect competitiveness, manufactured exports, and thus growth.

38. **While data inadequacies make it impossible to draw a full picture, there are indications that the relative price of investment goods in Ghana has been increasing in recent years**. The high cost of investment goods compared to consumption goods has been identified as a robust growth determinant with a sizable negative impact on SSA growth (Artadi and Sala-i-Martin, 2003). Cross-country datasets use the Penn World Tables PPP data. While Ghana's investment price ratio was lower than that of other SSA comparator groups previously, this was reversed in the 1990s (Figure IV.7). This may be because of high land or construction costs, possibly relating to the structure of these markets. However, given weaknesses in national accounts data that underlie investment deflators at PPP, these data should be viewed cautiously.

39. **The costs of trading across borders seem low, but it is not clear how nationally representative this Doing Business indicator is**. According to the World Bank's *Doing Business Report,* the cost of trading across borders in Ghana compares favorably with the rest of SSA and on some indicators is close to OECD averages (Table IV.13). World Bank (2007) points to the scope for reducing the time required for exporting and importing goods by finishing installation of computer-based custom inspection procedures. Nonstandardized trade-related regulations and weaknesses in trade facilitation and administration are also an issue. The limitations of Doing Business indicators as nationally representative should be kept in mind. In this category, for example, to make data comparable across countries, the survey assumes that businesses have more than 200 employees, export more than 10 percent of sales, and the traded goods do not require refrigeration and fall into specified product categories. The universe of transactions for which these conditions apply in Ghana may be relatively small.

Efficiency of Public Investment

40. **While empirical studies on the impact of public investment on growth have mixed results, evidence of a positive impact is more robust for developing countries**. There is also a budding literature suggesting that the efficiency with which public capital is utilized positively effects growth, with some studies suggesting that how public capital is financed and utilized is as important for growth as the quantity accumulated (Aschauer, 2000).

41. **Increasing the efficiency of public spending to strengthen growth prospects is a priority of the Ghanaian authorities.** Government investment to GDP is high in Ghana compared to other SSA countries, but its efficiency, measured by the incremental output capital ratio (IOCR) is low. Compared with high-performing SSA and Asian countries,

Ghana's IOCR is among the lowest (Bogetić et al., 2007).[16] The government has a plan to scale up investment in order to accelerate growth. However, this growth may not materialize if the investments are significantly less productive than expected, whether because of lower returns on projects, problems with investment allocation and efficiency, or implementation difficulties. The IMF and other development partners are working with the government on ways to increase the efficiency of public expenditure, such as establishing a value-for-money unit to evaluate public investment projects, undertaking public expenditure tracking (PETS) surveys, reforming PFM, and tightening the links between the MTEF and budget implementation.

42. **Ghana's public investment project evaluation, planning, budgeting, and execution need upgrading.** One indicator of the quality of investment budgeting is the ratio of investment budgeted by sector relative to actual investment spending. Here, the budget data shows large differences between ministries in the ratios of actual to budgeted investment expenditure. For many of the ministries with the largest investment budgets, the actual spending ratio is less than half (Table IV.14).

43. **Baseline data are needed to assess areas where planning, budgeting, and execution could be improved to maximize the contribution of public investment to growth**. This would help answer such questions as: Is the composition of public investment optimal for growth? Are capital and recurrent expenditures properly balanced? Are investment budgets linked to MTEF and GPRSII priorities? Could procedures and project execution rates be improved?

The following types of data would be necessary for such an assessment:

- Sectoral allocation of investment[17]
- Investment expenditure by different levels of government (ministries and departments, subvented agencies, local governments)
- Alignment of investment budget and GPRSII priority areas
- MTEF investment plan and relation to annual investment budgets
- Investment allocations relative to operation and maintenance costs by project
- Investment project execution rates—by sector (for donor and domestically financed)
- Investment expenditure execution procedures (for donor and domestically financed)
- Investment expenditures by SOEs.

[16] These findings should be interpreted with caution given the gaps in national accounts data by demand component, including investment.

[17] This would also allow categorization by type of investment expected to affect economic growth in the short term, and investment spending that would have a medium-to-longer-term effect (see Clemens et al., 2004).

Institutions

44. The government of Ghana has not identified institutions as a growth-critical area. However, the literature shows that strong institutions are vital for long-term growth. Ghana also needs strong institutions to make sustainable policy reforms in other growth-constraining areas. This section will compare Ghana to other SSA countries on measures of basic institutions—laws, rules, and practices that govern property rights; freedom to do business; and the sanctity of contracts.[18]

45. Spurring large improvements in basic institutions can take a long time and—because causation operates in both directions—may be difficult without sustained growth. A recent IMF study of PRGF-eligible countries found that some were able to achieve sustained growth[19] with institutions that at first were quite weak. Institutional measures for Ghana and some other promising SSA reformers are not unfavorable relative to where those countries were when they began their growth acceleration (IMF, 2005, and Johnson, Ostry, and Subramanian, 2007).[20]

Economic institutions

46. **Ghana's economic governance indicators are strong for SSA, but this is not a high standard, and recently control of corruption has been worsening**. On the World Governance Indicators (World Bank, 2006), on four economic institutions measures (control of corruption, government effectiveness, regulatory quality, and rule of law), Ghana ranks substantially higher than the SSA average, but SSA has much lower governance indicators than the rest of the world (Figure IV.8). For 2003–05, three of the four indicators improved, but control of corruption worsened. Ghana is striving for middle-income status—which argues for comparison to countries beyond SSA. Relative to all countries in the world, or all countries with competitive elections, Ghana's International Country Risk Guide (ICRG) economic governance indicators are average or below (Keefer, 2007).

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[18] The government, however, and outsiders like the Fund and development partners, only work directly with narrow institutions (regulatory agencies, central bank, ministries, etc.) and there is limited evidence on the link between the two, and how effective improvements in narrow institutions are in the face of generally weak basic institutions.

[19] Defined as growth of at least 3.5 percent per capita for seven years, after an acceleration of at least 2 percentage points per capita.

[20] IMF (2005) also found that growth accelerations in these PRGF countries were associated with rapid export growth (particularly of manufactures) supported by trade liberalization, avoidance of exchange rate overvaluation, macrostability, and good education levels. The paper suggests that these areas indicate policy levers for PRGF programs to support sustained growth that could lead to the virtuous circle where growth spurs improvements in institutions that lay the foundation for higher long-run growth. Section D will discuss another growth acceleration model.

47. **Ghana does very well on the institutions component of the Country Policy and Institutional Assessment (CPIA)**. The CPIA is used in determining debt sustainability thresholds and IDA aid allocations. Public sector management and institutions is one of its four main components.[21] For this component in 2005, Ghana had higher rankings on each of the subcomponents than SSA and the average for all IDA countries, although equal or slightly lower than the average for the "strong performers," i.e., those in the top quintile of CPIA scores (Figure IV.9).

48. **Economic institutions have been improving over time but are still below those of the fastest growers in SSA.** Ghana's ICRG economic risk index was below the SSA average until 2003, although it had been also been above in earlier periods; still in 2005 the indicator was below that for the fastest-growing SSA countries (Figure IV.10).

49. **Land rights issues are complex and may be a constraint to growth.** Ghana does relatively well compared to SSA on the World Bank's *Doing Business* indicators. However, the *Doing Business* indicators do not do a good job of measuring land property rights—particularly in rural areas, which are the primary source of economic activity in Ghana and other SSA countries. Ghana ranks slightly worse than other SSA countries and the fastest growers on urban and rural land property rights and frequency of land-related conflicts (Figure IV.11). Land rights that are not secure can especially hinder agricultural investment. Goldstein and Udry (2006) show that the relationship of landholders to traditional leaders in Ghana significantly affects agricultural investment and productivity, which hints at productivity and investment losses related to the operation of land markets.

Political institutions

50. **On political institutions, Ghana compares very favorably with SSA on all the major indicators,** both those for the most recent period (voice and accountability and political stability in the World Bank's World Governance indicators) and those measuring longer periods. Ghana's rankings began surpassing SSA averages in the early 1990s for the ICRG political risk indicator; in the mid- and late 1990s for the World Bank's Database of Political Institutions (DPI) executive and legislative indexes of political competitiveness; and about 2000 for the Polity Project's general political rights indictor (Figure IV.12).

51. **Improvements in political institutions are linked to those in economic institutions in Ghana.** While the quality of economic institutions is correlated with the quality of political institutions, the linkage between changes in political and economic institutions in SSA generally is tentative (Johnson, Ostry, and Subramanian, 2005; PGC, 2006). For Ghana, however, the correlations are stronger and persist into the most recent period, reflecting continued improvement in both political and economic institutions.

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[21] The other three main components are economic management, structural policies, and policies for social inclusion/equity.

52. **Thus, on these broad measures of economic institutions, Ghana compares favorably to SSA generally, though not always to the fastest-growing SSA countries; and of course the indicators are much more positive in the rest of the world**. Corruption indicators in Ghana are moving in the wrong direction, and land rights is a questionable area. However, institutional quality in Ghana does not seem to be a critical constraint that would choke off the possibility of a growth acceleration that would help further improve institutions.

D. Growth Acceleration

53. Using long-run econometric growth models to try and quantify growth impacts of policy changes in Ghana, as noted, is an exercise fraught with difficulties. Here we use a different type of model—a growth acceleration model—though it is subject to similar robustness problems as long-horizon growth regressions. The advantage is that the method is geared squarely at addressing the basic policy question: how likely is it that Ghana will experience a growth acceleration that is sustained for a period of time? Following a methodology introduced by Hausman, Pritchett and Rodrik (2004; HPR), PGC (2006) estimate a growth acceleration model for SSA countries. The results highlight the roles of trade, investment, productivity, and policy and institutional soundness in supporting growth acceleration (see paper for details on the methodology).

54. **There are disadvantages to this approach that should be noted.** Robustness is a problem; this is a new literature and the models have not been tested through extensive applications. In addition, like similar models, the PGC model has very limited explanatory power—the correlates explain only a small fraction of the variation during an acceleration, and in-sample predictive power is low. Given these caveats, the discussion below simply illustrates the method and the type of analysis that could be pursued as the performance of the model improves.[22]

55. **To apply the model to Ghana we apply projected paths for selected macroeconomic variables to the coefficients** estimated from the probit regression model in PGC (2006). Using data for SSA countries from 1980–2004, this regression explains the probability of a given year being an acceleration year, meaning a year that is part of a five-year interval in which per capita growth was at least 2 percent and was 2 percent higher than the previous five-year interval, with growth in the latter interval being positive.

56. **Data from the Ghana macro framework provided the projected paths for the (time-varying) endogenous variables in the model**: changes in the real effective exchange rate, investment, terms of trade, NPV of debt to exports, budget deficit, and inflation. Assumptions must be made about two other important variables: TFP growth and a measure

[22] Another interesting approach is taken by Berg, Ostry and Zettelmeyer (2006), who analyze the determinants of the length of growth accelerations.

of institutional and policy quality, the ICRG country risk indicator. For the latter, we use the ICRG's 1-year and 5-year ahead "best case" assessments; for TFP growth we develop two scenarios: high TFP growth (0.5 percent higher for each future year) and low TFP growth.

57. **This exercise yields paths for the projected probabilities of a year being in growth acceleration for 2006–20.** The estimated model does not explaining the timing of an acceleration—the probability that an acceleration would start in a given year—but rather the probability of a year being part of an acceleration episode. The estimates provide the change in the probability of an acceleration year for small changes in the right-hand-side variables.

58. **A number of different scenarios were analyzed:** (1) using all coefficients in the model, whether or not they were significant, and low TFP growth; (2) all coefficients, high TFP growth; (3) excluding the budget balance and inflation variables from the model (since they are not statistically significant in the regression), low TFP growth; (4) excluding nonsignificant variables, high TFP growth.

59. **The four scenarios yield roughly similar predicted paths, with differences in the magnitudes of projected changes in the probability of an acceleration year.** The probabilities are flat in 2007, increase marginally until about 2010–11, and then decline but remain positive through 2020. In 2011, the peak year, the additional probabilities range from about 3 to 5 percentage points, which is sizable given the relatively low overall probability of accelerations in the sample. The ICRG institutions/risk indicator, the budget balance and TFP growth are important contributors to the increased probability, as is investment. One important divergence between the different paths arises from whether the inflation and budget balance variables are included. The path for inflation and the budget deficit (slow decline in inflation, improving deficit) increases the probabilities of being in an acceleration period. The scenario with the highest probabilities is the one that includes these variables and assumes high TFP growth.

E. Conclusion

60. **This chapter has examined areas identified earlier as growth-critical in Ghana and shown how they constrain growth**: infrastructure, financial sector development, some aspects of trade, and the efficiency of public investment. More recently, in the 2007 Ghana CEM being prepared by the World Bank, four challenges to accelerating growth in Ghana have been highlighted (overlapping, to some degree, with the areas covered in this chapter): strengthening macroeconomic stability, improving productivity and innovation, closing the infrastructure gap, and strengthening the investment climate.

61. **The chapter also selectively reviewed Ghana's historical growth record and past sources of growth.** Since 2000 Ghana's economy has been growing strongly, and since 2002 growth has significantly exceeded the historical trend. A growth acceleration model is used to illustrate scenarios for some of the variables related to growth constraints that could affect the likelihood of a significant and sustained growth acceleration in Ghana.

62. **A number of questions remain unanswered**: Why has the contribution of exports to growth been relatively low? Why has the private sector not taken more of a lead in the growth process? and How efficient is current public sector investment? The evidence reviewed here supports the emphasis the authorities have been placing on large public investments in infrastructure to raise growth potential. However, it will be equally important to increase TFP growth by making public spending more efficient, and to sustain macro-critical reforms, such as PFM, financial sector, and investment climate reforms.

References

Abiad, Abdul, Nienke Oomes, and Kenichi Ueda, 2004, "The Quality Effect: Does Financial Liberalization Improve the Allocation of Capital?" IMF Working Paper 04/112 (Washington: International Monetary Fund).

Abor, Joshua, and Nicholas Biekpe, 2006, "How Are SMEs Financed? Evidence from the Ghanaian Nontraditional Export Sector," *Environment and Planning C: Government and Policy,* vol. 24, no. 1,

Agénor, Pierre-Richard, and Blanca Moreno-Dodson, 2006, "Public Infrastructure and Growth: New Channels and Policy Implications," Policy Research Working Paper 4064 (Washington: World Bank).

Aggarwal, Reena, Sail Demirgüç-Kunt, and Maria Soledad Martinez Peria, 2006, "Do Workers' Remittances Promote Financial Development?" Policy Research Working Paper 3957 (Washington: World Bank).

Artadi, Elsa, and Xavier Sala-i-Martin, 2003, "The Economic Tragedy of XXth Century: Growth in Africa," NBER Working Paper No. 9865 (Cambridge, Massachusetts: National Bureau of Economic Research).

Aschauer, David Alan, 2000 "Public Capital and Economic Growth: Issues of Quantity, Finance, and Efficiency," *Economic Development and Cultural Change*, Vol. 48, No. 2, pp. 391-406.

Barth, James R., Gerard Caprio, Jr., and Ross Levine, 2004, " Bank Regulation and Supervision: What Works Best?" *Journal of Financial Intermediation*, vol. 13 (April), pp. 205-48.

Berg, Andy, Jonathan D. Ostry, and Jeromin Zettelmeyer, 2006, "What Makes Growth Sustained?" (photocopy) (Washington: International Monetary Fund).

Bogetić, Željko, Maurizio Bussolo, Xiao Ye, Denis Medvedev, Quentin Wodon, and Daniel Boakye, 2007, "Ghana's Growth Story," paper presented at the Ghana CEM workshop on accelerated and shared growth, May 2-3, 2007 in Accra, Ghana (Washington: World Bank)

Boyd, John H., Ross Levine, and Bruce D. Smith, 2001, "The Impact of Inflation on Financial Sector Performance," *Journal of Monetary Economics,* vol. 47, no. 2, pp. 221-48.

Briceño, Cecilia, Marcelo Andrade, and Carlos Cavalcanti, 2004, "Infrastructure Gaps in Ghana," (photocopy), (Washington: World Bank).

Calderon, Cesar, and Luis Servén, 2004, "The Effects of Infrastructure Development on Growth and Income Distribution," Policy Research Working Paper No. 3400 (Washington: World Bank).

Center for Global Development, 2006, "Building Africa's Development Bank: Six Recommendations for the AfDB and its Shareholders" (Washington: CGD).

Clemens, Michael, Steven Radelet, and Rikhil Bhavnani, 2004, "Counting Chickens When They Hatch: The Short-Term Effect of Aid on Growth," Working Paper No. 44 (Washington: Center for Global Development).

Detragiache, Enrica, Poonam Gupta, and Thierry Tressel, 2005, "Finance in Lower-Income Countries: An Empirical Exploration," IMF Working Paper No. 167 (Washington: IMF).

Eifert, Benn, Alan Gelb, and Vijaya Ramachandran, 2005, "Business Environment and Comparative Advantage in Africa: Evidence from the Investment Climate Data," Working Paper No. 56 (Washington: Center for Global Development).

Estache, Antonio, 2006, "Africa's Infrastructure: Challenges and Opportunities," paper presented at the seminar, Realizing the Potential for Profitable Investment in Africa, organized by the IMF Institute and the Joint Africa Institute, Tunis, Tunisia, February 28–March 1, 2006.

Estache, Antonio and Maria Vagliasindi, 2007, "Infrastructure for Accelerated Growth in Ghana: Investments, Policies, and Institutions," paper presented at the Ghana CEM workshop on accelerated and shared growth, May 2-3, 2007 in Accra, Ghana (Washington: World Bank)

Ghosh, Atish, Charis Christofides, Jun Kim, Laura Papi, Uma Ramakrishnan, Alun Thomas, and Juan Zalduendo, 2005, "The Design of IMF-Supported Programs," IMF Occasional Paper No. 241 (Washington: International Monetary Fund).

Goldstein, Markus and Christopher Udry, 2005 "The Profits of Power: Land Rights and Agricultural Investment in Ghana" Economic Growth Center, Working Papers (photocopy), (New Haven: Yale University)

Gulde, Anne-Marie, Catherine Pattillo, and Jakob Christensen, with Kevin Carey and Smita Wagh, 2006, "Sub-Saharan Africa: Financial Sector Challenges" (Washington: International Monetary Fund).

Gupta, Sanjeev, Catherine Pattillo, and Smita Wagh, 2007, "Impact of Remittances on Poverty and Financial Development in Sub-Saharan Africa," IMF Working Paper 07/38 (Washington: International Monetary Fund).

Hausmann, Ricardo, Lant Pritchett, and Dani Rodrik, 2004, "Growth Accelerations," NBER Working Paper No. 10566 (Cambridge, Massachusetts: National Bureau of Economic Research).

International Monetary Fund, 2005, "Can PRGF Policy Levers Improve Institutions and Lead to Sustained Growth?," Available at http://www.imf.org/external/np/pp/eng/2005/080805/.htm.

Johnson, Simon, Jonathan D. Ostry, and Arvind Subramanian, 2007, "The Prospects for Sustained Growth in Africa: Benchmarking the Constraints," IMF Working Paper 07/52 (Washington: International Monetary Fund).

Kaufmann, Daniel, Aart Kraay, and Masimo Mastruzzi, "Governance Matters V: Aggregate and Individual Governance Indicators for 1996–2005" (Washington: World Bank).

Keefer, Phillip, 2007, "The Resilience of Clientelism and The Political Economy of Growth-Supporting Policies in Ghana", paper presented at the Ghana CEM workshop on accelerated and shared growth, May 2-3, 2007 in Accra, Ghana (Washington: World Bank)

Levine, Ross, 2004, " Finance and Growth: Theory and Evidence," NBER Working Paper No. 10766 (Cambridge, Massachusetts: National Bureau of Economic Research).

Pattillo, Catherine, Sanjeev Gupta and Kevin Carey, 2006, "Sustaining and Accelerating Pro-Poor Growth in Africa," IMF Special Issues Paper (Washington: International Monetary Fund).

Rousseau, Peter, and Paul Wachtel, 2002, "Inflation Thresholds and the Finance-Growth Nexus" *Journal of International Money and Finance*, November 2002, Vol. 21, No. 6, pp.777-93.

Sala-i-Martin, Xavier, Gernot Doppelhofer and Ronald I. Miller, 2004 , "Determinants of Long-Term Growth: A Bayesian Averaging of Classical Estimates (BACE) Approach," *American Economic Review*, Vol. 94 (September), pp. 813-35.

Teal, Francis, 1999 "Why Can Mauritius Export Manufactures and Ghana Not?" *World Economy*, vol. 22, No. 7, pp. 981-93.

_____, 2005, "Ghana: Manufacturing Survey 1996–2002" (photocopy; Oxford: University of Oxford).

Teal, Francis, James Habyarimana, Papa Thiam, Ginger Turner, 2006, "Ghana: An Analysis of Firm Productivity." (mimeo), (Washington: World Bank, Africa Private Sector Group).

Timmerman, Alan, 2005 "An Evaluation of the World Economic Outlook Forecasts," (photocopy).

Tsangarides, Charalambos G., 2005, "Growth Empirics Under Model Uncertainty: Is Africa Different?" IMF Working Paper 05/18 (Washington: International Monetary Fund).

Udry, Christopher, and Santosh Anagol, 2006, "The Return to Capital in Ghana," *American Economic Review*, Vol. 96, No. 2, pp. 388 ff.

UN Millennium Project, 2005, *Investing in Development: A practical Plan to Achieve the Millennium Development Goals* (New York).

World Bank, 2007 “Draft Program Document for A Proposed Credit to the Republic of Ghana for a Proposed Fifth Poverty Reduction Support Credit” (photocopy).

Table IV.1. Ghana: Real GDP per Capita Growth and Export Growth per Performance Classification, 1996-2006[1]

	Real Per Capita GDP Growth 1996–2006		Real Per Capita GDP Growth 2000–2006		Growth of Total Exports 2000–2006	
1	Equatorial Guinea	30.6	Equatorial Guinea	18.2	Chad	65.3
2	Mozambique	6.1	Sierra Leone	8.7	Equatorial Guinea	43.7
3	Botswana	6.1	Chad	7.3	Angola	34.0
4	Angola	5.8	Angola	6.9	Nigeria	28.7
5	Chad	5.0	Botswana	5.7	Zambia	24.7
6	Cape Verde	4.6	Mozambique	5.5	Mozambique	24.3
7	Burkina Faso	3.5	Tanzania	3.8	Sierra Leone	24.0
8	Mauritius	3.4	Cape Verde	3.5	Congo, Republic of	23.8
9	Tanzania	3.0	Mauritius	3.0	Cape Verde	16.2
10	Mali	2.8	Namibia	2.9	Lesotho	16.0
11	Uganda	2.5	Nigeria	2.8	Gabon	15.9
12	Ghana	2.2	South Africa	2.7	Swaziland	15.6
13	Namibia	2.0	Burkina Faso	2.7	Mali	15.5
14	Ethiopia	2.0	Zambia	2.5	Tanzania	15.5
15	South Africa	2.0	Mali	2.5	Congo, Dem. Rep. of	15.3
16	Gambia, The	1.8	Ghana	2.4	Burkina Faso	14.7
17	Senegal	1.8	Ethiopia	2.3	Rwanda	13.1
18	Nigeria	1.8	Congo, Republic of	2.1	Guinea-Bissau	13.0
19	Rwanda	1.6	Uganda	2.0	Ethiopia	12.9
20	Zambia	1.5	São Tomé & Príncipe	2.0	Cameroon	12.5
21	Benin	1.4	Senegal	1.8	South Africa	12.1
22	Cameroon	1.3	Gambia, The	1.6	Burundi	11.8
23	Malawi	1.1	Rwanda	1.5	Kenya	11.3
24	São Tomé & Príncipe	1.1	Kenya	1.3	Madagascar	10.9
25	Congo, Republic of	1.0	Benin	1.0	Seychelles	10.7
26	Swaziland	1.0	Swaziland	1.0	Togo	10.7
27	Guinea	1.0	Cameroon	0.9	Côte d'Ivoire	10.6
28	Kenya	0.9	Lesotho	0.5	Niger	10.5
29	Seychelles	0.8	Niger	0.3	Botswana	9.9
30	Lesotho	0.6	Madagascar	0.3	Ghana	9.0
31	Sierra Leone	0.5	Comoros	0.2	Namibia	8.4
32	Niger	0.4	Malawi	0.2	Uganda	8.0
33	Madagascar	0.4	Guinea	0.1	Senegal	7.9
34	Comoros	0.1	Congo, Dem. Rep. of	-0.4	Mauritius	5.6
35	Côte d'Ivoire	-0.3	Burundi	-0.5	Comoros	5.6
36	Togo	-0.7	Togo	-0.9	Benin	5.3
37	Burundi	-1.1	Gabon	-1.2	São Tomé & Príncipe	4.7
38	Central African Rep.	-1.2	Guinea-Bissau	-1.5	Guinea	4.6
39	Gabon	-1.3	Côte d'Ivoire	-1.8	Gambia, The	4.6
40	Congo, Dem. Rep. of	-2.2	Central African Rep.	-1.8	Malawi	3.3
41	Zimbabwe	-3.1	Seychelles	-2.6	Central African Rep.	-0.7
42	Guinea-Bissau	-3.5	Zimbabwe	-5.7	Zimbabwe	-2.0

Source: IMF and Economic Trends in Africa Database.

[1]Data not available for Eritrea and Liberia.

Table IV.2. Ghana: Foregone Growth in Ghana Relative to Other Regions

Robust Growth Determinant Estimated from a World Sample	Coefficient	Foregone Annual Growth: World	World 1990s	East Asia / Pacific	East Asia / Pacific 1990s	Africa	Africa 1990s
		(Percent)					
1 Log (inflation)	-0.0088	-0.09	0.08	-0.19	-0.07	-0.11	0.07
2 Fiscal balance (to GDP)	0.7031	-1.43	-0.31	-3.64	-2.36	-0.34	1.03
3 Log (investment to GDP)	0.0950	-3.30	-6.39	-8.06	-12.59	1.41	-1.80
4 Log (government consumption to GDP)	-0.0289	-0.48	-1.10	-1.24	-2.15	-0.11	-0.56
5 Log (initial income)	-0.1678	19.17	21.47	20.66	29.47	4.57	3.46
6 Percentage of land in tropics	-0.1454	-6.52	-7.20	-7.29	-7.24	-1.08	-1.10
7 Terms of trade (growth)	0.0251	6.21	-0.01	6.24	0.00	6.19	-0.03
8 Black market premium	-0.0015	-0.27	0.04	-0.32	0.01	-0.26	0.04
9 Log (overall schooling)	0.0556	-2.12	-1.41	-4.15	-3.29	2.09	2.15
10 Log (arable land)	-0.0188	0.15	-0.03	-2.77	-2.87	0.64	0.24
Foregone Ghana growth "total"		11.31	5.13	-0.77	-1.10	13.00	3.49
Foregone Ghana growth due to policy (variables 1,2,4,8)		-2.28	-1.30	-5.39	-4.58	-0.82	0.58
Foregone Ghana growth due to accumulation (variables 3,9)		-5.42	-7.81	-12.21	-15.88	3.50	0.35

Source: Tsangarides (2005); Pattillo, Gupta and Carey (2006).

Notes: Draws on an expanded model specification. Bayesian model averaging techniques are applied using a panel data system, and generalized method of moments (GMM) estimator.

Table IV.3. Ghana: Composition and Growth of Gross Domestic Product by Category, 1980–2006

	1984–91	1992–00	2001–06	2006 Est.	1984–91	1992–00	2001–06	2006 Est.
	(Annual percentage change, 2000 constant prices)				(Contribution to growth)			
Exports (GNFS)[1]	13.8	10.4	4.0	11.6	3.1	3.8	1.6	5.0
Imports (GNFS)[1]	10.9	10.2	8.7	11.6	4.1	5.2	6.0	8.9
Total expenditure								
Consumption	0.6	7.6	6.3	5.1	0.7	6.2	6.2	5.1
Investment	46.0	-0.6	13.9	15.3	5.7	-0.4	3.5	5.1
Public	28.4	-0.3	19.7	12.8	2.0	0.0	1.3	1.6
Private	91.8	3.4	12.7	17.1	4.3	-0.5	2.5	3.9
	(Percent of GDP, at current prices)							
GDP at market prices	100.0	100.0	100.0	100.0				
Agriculture	40.5	37.0	36.7	37.8				
Industry	22.9	24.9	25.1	25.2				
Services	25.7	27.7	29.0	28.7				
Exports (GNFS)[1]	14.0	29.5	40.3	38.2				
Imports (GNFS)[1]	19.2	43.4	59.4	62.3				
Total expenditure								
Consumption	90.7	90.8	93.0	93.9				
Investment	14.3	22.8	26.0	30.2				
Public	6.5	11.8	10.7	12.2				
Private	7.8	11.0	15.3	18.0				

Source: Ghanaian authorities and IMF staff estimates.

[1]GNFS denotes "goods and nonfactor services."

Table IV.4. Ghana: Composition and Growth of Gross Domestic Product by Sector, 1980–2006

	1984–91	1992–00	2001–06	2006 Est.	1984–91	1992–00	2001–06	2006 Est.
	(Annual percentage change, 1993 constant prices)				(Contribution to growth)			
Agriculture	3.0	3.2	5.2	5.7	1.4	1.2	1.9	2.1
Agriculture and livestock	3.4	2.7	4.8	6.0	1.1	0.7	1.2	1.4
Cocoa production and marketing	3.0	6.4	11.1	8.7	0.1	0.2	0.4	0.4
Forestry and logging	1.8	6.7	4.7	2.6	0.1	0.2	0.2	0.1
Fishing	2.9	1.3	2.7	3.6	0.2	0.1	0.1	0.1
Industry	8.3	4.5	5.4	7.3	1.9	1.1	1.3	1.8
Mining and quarrying	8.2	5.5	3.3	3.0	0.4	0.3	0.2	0.2
Manufacturing	8.8	3.5	4.5	4.2	0.8	0.3	0.4	0.4
Electricity and water	11.8	5.6	8.6	23.0	0.2	0.1	0.2	0.6
Construction	5.9	5.7	6.8	8.2	0.4	0.4	0.5	0.7
Services	7.4	6.3	5.5	6.5	1.7	1.7	1.6	2.0
Transport storage and communication	9.7	5.8	6.2	7.2	0.3	0.3	0.3	0.4
Wholesale and retail trade, restaurants and hotels	10.9	7.0	6.5	7.5	0.5	0.4	0.5	0.5
Finance, insurance, real estate and business services	6.0	4.8	5.9	7.6	0.2	0.2	0.3	0.3
Government services	6.1	5.4	4.6	5.7	0.6	0.6	0.5	0.6
Community, social and personal services	14.3	4.5	4.6	4.3	0.2	0.1	0.1	0.1
Produce of private non-profit services	7.0	4.2	3.5	4.5	0.1	0.0	0.0	0.0
Indirect taxes	4.4	1.8	4.6	4.5	0.5	0.2	0.4	0.4
GDP at market prices (from above)	5.4	4.4	5.3	6.2	5.4	4.4	5.3	6.2

Source: Ghanaian authorities and IMF staff estimates.

Table IV.5a. Ghana: Sources of Real GDP Growth, 1960–2005[1] (by decade)

		Contribution of:			
	Real GDP growth	Physical Capital	Human Capital	Labor	TFP
1960s	2.6	-1.6	0.5	1.7	2.0
1970s	1.2	-1.2	0.5	1.7	0.0
1980s	2.0	2.7	0.2	1.9	-3.0
1990s	4.5	4.9	0.2	1.6	-2.2
2000-2005	4.9	1.9	0.2	1.5	1.2
1960-2005	2.8	1.3	0.3	1.7	-0.6

Source: IMF World Economic Outlook 2006; World Bank World Development Indicators; Bosworth and Collins (2003), and IMF staff estimates.

[1]Alpha = 0.4, delta = 0.06, return to schooling = 0.07, capital output ratio = 2.0.

Table IV.5b. Ghana: Sources of Real GDP Growth, 1960–2005[1]

(Annual percentage change)

	Contribution of:				
	Real GDP Growth	Physical Capital	Human Capital	Labor	TFP
1960–1982	1.2	-1.4	0.5	1.8	0.1
1983–1992	4.5	5.6	0.2	1.8	-3.2
1993–2000	4.2	3.1	0.2	1.5	-0.6
2001–2005	5.1	2.0	0.2	1.5	1.3
1960–2005	2.9	1.3	0.3	1.7	-0.6

Source: IMF World Economic Outlook 2006; World Bank World Development Indicators; Bosworth and Collins (2003), and IMF staff estimates.

[1]Alpha = 0.4, delta = 0.06, return to schooling = 0.07, capital output ratio = 2.0.

Table IV.6. Ghana: Program Projections and Outturns

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Real GDP (annual percentage change)											
Projection	5.0	5.5	5.6	5.5	4.0	4.5	5.0	5.0	5.0	5.0	5.8
Actual	4.6	4.2	4.7	4.4	3.7	4.2	4.5	5.2	5.6	5.9	6.2
Real GDP per capita (annual percentage change)											
Projection	1.9	2.4	2.5	2.4	1.3	1.8	2.4	2.4	2.4	2.4	2.4
Actual	2.0	1.6	2.1	1.8	1.2	1.6	1.9	2.6	3.0	3.2	3.6

Note: Projection refers to the projection made in the staff report of the previous year.
Source: IMF staff reports.

Table IV.7. Ghana: WEO Forecasting Accuracy, 1991–2005

	Ghana	SSA		Ghana	SSA
Real GDP (annual change in percent)			Real GDP (annual change in percent)		
April Current-Year Forecast			Sept. Current-Year Forecast		
1991–2005	-0.65	-1.04	1991–2005	-0.29	-0.9
2001–2005	-0.05	-0.43	2001–2005	0.28	-0.21
April Next-Year Forecast			Sept. Next-Year Forecast		
1991–2005	-0.89	-1.1	1991–2005	-0.69	-1.48
2001–2005	-0.40	-1.01	2001–2005	0.21	-1.12

Source: Timmerman Report (2005).

Explanatory Notes:
1. Forecast errors are defined as actual minus projection.
2. If forecasts are accurate, forecast errors on average are zero, otherwise, forecasts are biased. A negative bias indicates a tendency toward systematic over-prediction and a positive bias indicates a tendency toward under-prediction.

Table IV.8. Ghana: Benchmarking Infrastructure Access, (Latest Observations), 2000–2006

		Year	Ghana	LIC*	Sub-Saharan Africa
Energy	Households Reporting Access to Electricity (% of households)	2005	35	34.7	27.2
	Households Reporting Access to Modern Cooking Fuels (% of households)	2004	9.3	11.7	13
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
Roads	National network in good condition (% national network)	2006	45	..	31
	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	62000		
	Good traffic by railways (in 1000 passengers/km)	2005	220		
	Maritime traffic: good loaded (in 1000 tonnes)	2005	12161.6		
	Air freight traffic: good loaded (in 1000 tonnes)	2005	44		
	Rural Access (Percentage 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: Estache and Vagliasindi (2007).

Table IV.9. Ghana: Functional Classification of Infrastructure Expenditures, 1999-2006

	1999	2000	2001	2002	2003	2004	2005	2006
				(Percent of GDP)				
Ministry of Works and Housing	0.18	0.18	0.09	0.13	0.09	0.10	0.14	0.09
Ministry of Roads and Transport	0.59	0.46	0.29	0.16	0.28	0.37	0.38	0.52
Ghana Postal Service		0.02	0.01					
Ministry of Communication		0.16	0.09	0.02	0.04	0.03	0.02	0.03
Total	0.77	0.82	0.48	0.31	0.40	0.50	0.54	0.64
				(Percent of total expenditure)[1]				
Ministry of Works and Housing	1.63	1.68	0.79	1.08	0.75	0.79	1.09	0.74
Ministry of Roads and Transport	5.22	4.28	2.65	1.27	2.43	2.87	2.93	4.23
Ghana Postal Service		0.16	0.05					
Ministry of Communication		1.48	0.85	0.20	0.31	0.21	0.17	0.23
Total	6.85	7.60	4.34	2.55	3.49	3.87	4.19	5.20

Sources: Ghanaian authorities.

[1]Refers to total discretionary expenditure.

Table IV.10a. Ghana: Private Participation in Infrastructure, 1990–2005

	1990–94	1995–99	2000–04	2005
		(Total number of projects)		
Ghana	2	8	3	1
Kenya	0	9	1	0
Mozambique	1	6	8	0
Nigeria	1	4	11	3
South Africa	6	10	11	2
Tanzania	2	8	5	2
Uganda	1	3	4	2
Zambia	0	3	2	0
SSA	27	119	111	16
		(Percent of GDP)		
Ghana	0.1	2.4	0.9	0.5
Kenya	0.0	0.7	1.5	2.2
Mozambique	0.0	3.0	7.4	0.2
Nigeria	0.0	0.0	2.0	2.9
South Africa	0.1	0.6	0.8	0.5
Tanzania	0.0	0.7	1.5	1.0
Uganda	0.0	0.4	1.1	2.3
Zambia	0.0	2.0	0.8	1.0
SSA	0.0	0.6	1.0	0.9

Source: World Bank, Private Participation in Infrastructure Projects Database.

Table IV.10b. Ghana: Private Participation in Infrastructure by Total Projects, 1990–2005

	1990–94	1995–1999	2000–2004	2005	1990–94	1995–1999	2000–2004	2005
	(Total number of projects)				(US$ millions)			
Ghana	2	8	3	1	20	867	299	52
SSA	27	119	111	16	738	10,548	19,337	5,439
Fast Growers	13	54	58	10	570	6,489	14,629	4,321
World	706	1457	939	159	119,267	405,752	348,622	95,792

Source: World Bank, Private Participation in Infrastructure Projects Database.

Table IV.11. Ghana: Sectoral Distribution of Loans, 1999–2006

	1999	2000	2001	2002	2003	2004	2005	2006
	(Percent of total loans)							
Primary	17.6	15.6	13.6	13.1	12.3	10.4	10.4	9.2
Agriculture	11.8	9.5	9.6	9.4	9.4	7.6	6.7	5.4
Mining and quarrying	5.8	6.1	4.0	3.7	2.9	2.8	3.7	3.8
Secondary	38.0	42.7	30.1	33.8	30.0	29.9	26.6	30.0
Manufacturing	24.9	29.1	19.3	21.1	20.7	21.4	19.1	18.5
Construction	8.9	7.1	6.8	7.8	5.0	6.4	5.7	7.9
Electricity, energy and water	4.2	6.5	4.0	4.9	4.4	2.0	1.8	3.6
Tertiary	35.2	31.4	47.4	37.6	43.5	48.1	50.9	52.3
Communications & transportation	2.7	3.3	3.5	4.0	4.7	6.0	4.0	3.1
Distribution								
Financial	15.7	10.2	28.4	12.8	20.4	20.6	22.4	22.6
Trade	7.6	6.7	6.0	9.5	9.6	10.2	9.8	8.2
Services	9.3	11.2	9.4	11.3	8.8	11.2	14.7	18.4
Others	8.0	8.7	8.2	13.2	11.3	11.4	11.0	7.6

Source: Ghanaian authorities and IMF staff calculations.

Table IV.12. Ghana: External Oversight of Banking Systems, 2003

	Ghana	Sub-Saharan Africa	Income (excluding SSA)	Sub-Saharan Low-Income	Other Low-Income (Excluding SSA)
Financial statement transparency	4.0	4.6	4.4	4.7	4.4
Accounting practices	1.0	0.9	0.8	0.9	0.9
External ratings and credit monitoring	1.0	1.0	1.6	1.0	1.6
Private monitoring index	6.0	7.4	7.0	7.4	6.4
External governance index	11.0	13.3	12.4	13.5	12.6

Source: World Bank and IMF staff calculations from indices in Barth, Caprio, and Levine (2006).

Table IV.13. Ghana: The Cost of Trading Across Borders, 2006

Indicator	Ghana	Regional Average	OECD Average
Documents required for export (number)	5.0	8.2	4.8
Time for export (days)	21.0	40.0	10.5
Cost to export (US$ per container)	822	1,561	811
Documents for import (number)	9.0	12.2	5.9
Time for import (days)	42.0	51.5	12.2
Cost to import (US$ per container)	842	1,947	883

Source: World Bank (2006), *Doing Business Database.*

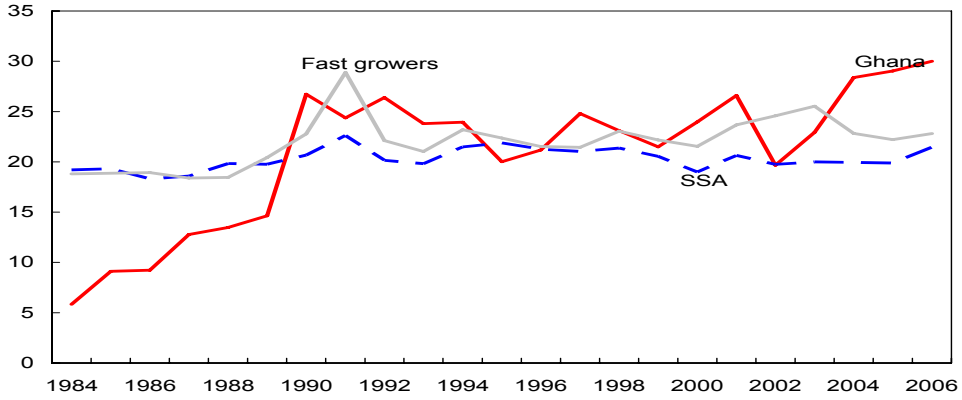
Table IV.14. Ghana: Investment by Ministerial Breakdown, 2003–2005

	2003			2004			2005		
	(Billions of Cedis unless otherwise specified)								
	Budget	Actual	Percent	Budget	Actual	Percent	Budget	Actual	Percent
Ministry of Roads & Transport	132.4	117.4	88.7	250.4	220.1	87.9	343.7	266.8	77.6
Public Safety	39.1	28.5	72.8	87.1	44.4	50.9	168.2	82.5	49.1
Office of Government Machinery	7.9	7.0	88.7	87.1	48.2	55.3	142.2	37.6	26.4
Ministry of Food & Agriculture	5.1	0.1	1.7	18.2	10.0	55.3	97.3	26.5	27.2
Ministry of Foreign Affairs	16.0	3.5	22.2	55.0	2.3	4.3	86.7	47.3	54.6
Ministry of Health	16.6	29.5	177.6	24.5	7.8	31.8	53.6	27.8	51.8
Ministry of Justice	2.6	3.1	119.8	5.4	2.4	45.3	50.9	9.3	18.3
Ministry of Works & Housing	21.9	20.3	92.7	55.9	37.3	66.8	44.8	81.3	181.6
Ministry of Finance	18.4	4.5	24.2	26.5	32.8	123.6	44.4	53.2	120.0
Ministry of Education	20.8	12.7	61.1	50.0	26.6	53.1	41.2	37.2	90.4

Source: Ghanaian authorities.

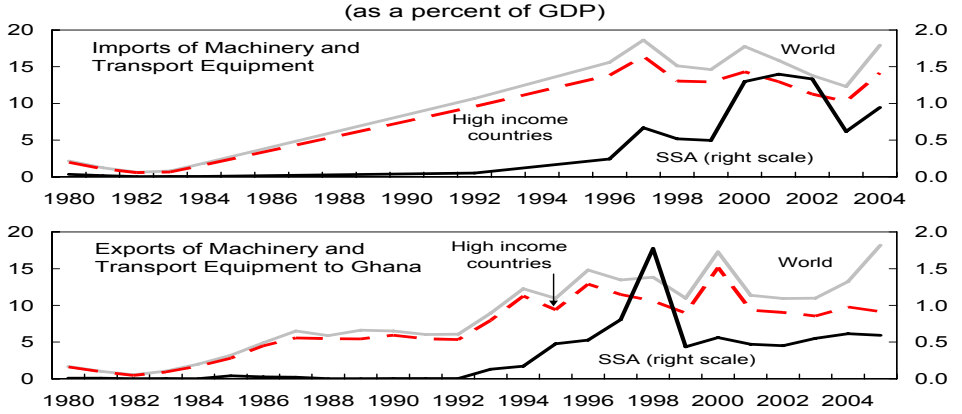
Note: Only includes ministries with the highest budgeted investment for 2005.

Figure IV.1. Ghana: Total Investment as a Ratio of GDP, 1984–2006



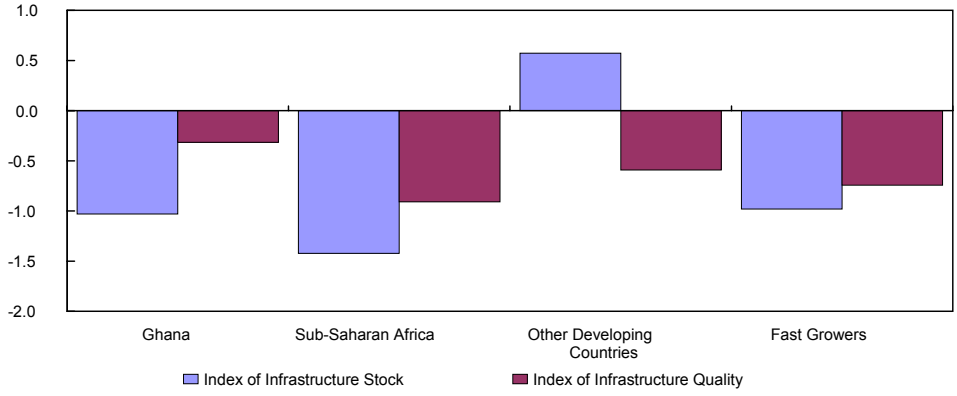
Source: IMF Economic Trends in Africa Database.
Note: Sample excludes Equatorial Guinea.

Figure IV.2. Ghana: Machinery and Transport Equipment, 1980–2005
(as a percent of GDP)



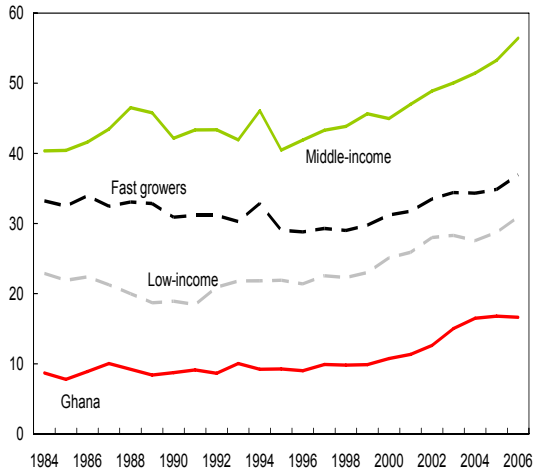
Source: World Bank, World Integrated Trade Solution and World Economic Outlook.

Figure IV .3 . Ghana : Infrastructure Stock and Quality Indices , 1995 – 2000



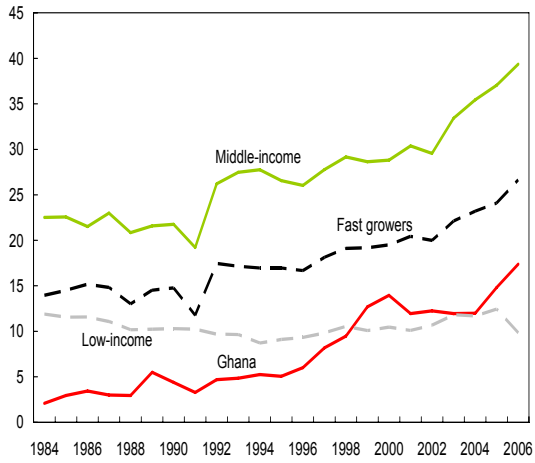
Source: Calderon and Serven (2004).
Note: The indices are an average of 1995-2000 infrastructure stock and infrastructure quality index.

Figure IV.4. Ghana: M2 as a Percent of GDP, 1984–2006



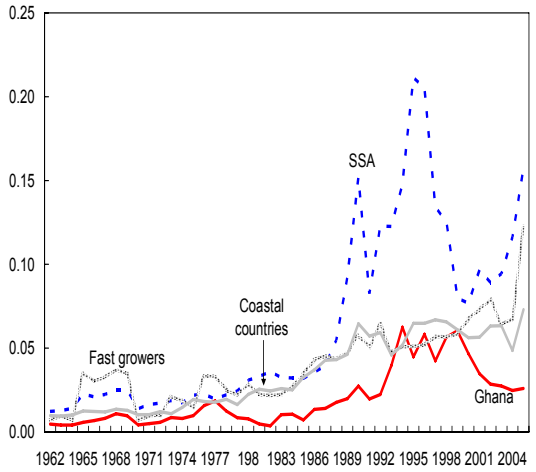
Source: IMF World Economic Outlook.
Note: Sample excludes Equatorial Guinea.

Figure IV.5. Ghana: Private Sector Credit as a Percent of GDP, 1984–2006



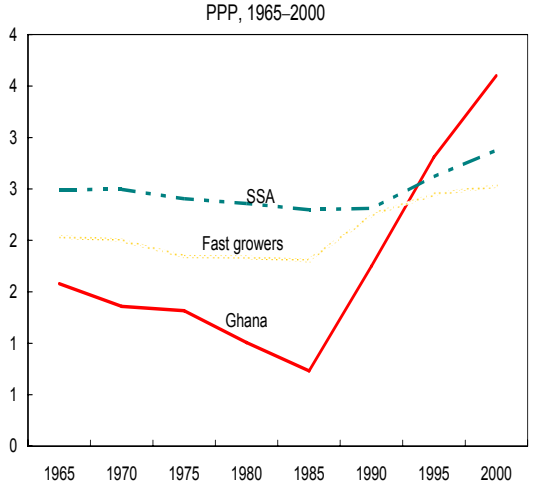
Source: IMF World Economic Outlook.
Note: Sample excludes Equatorial Guinea.

Figure IV.6. Ghana: Manufacturing Exports to the World as a Share of GDP, 1962–2005



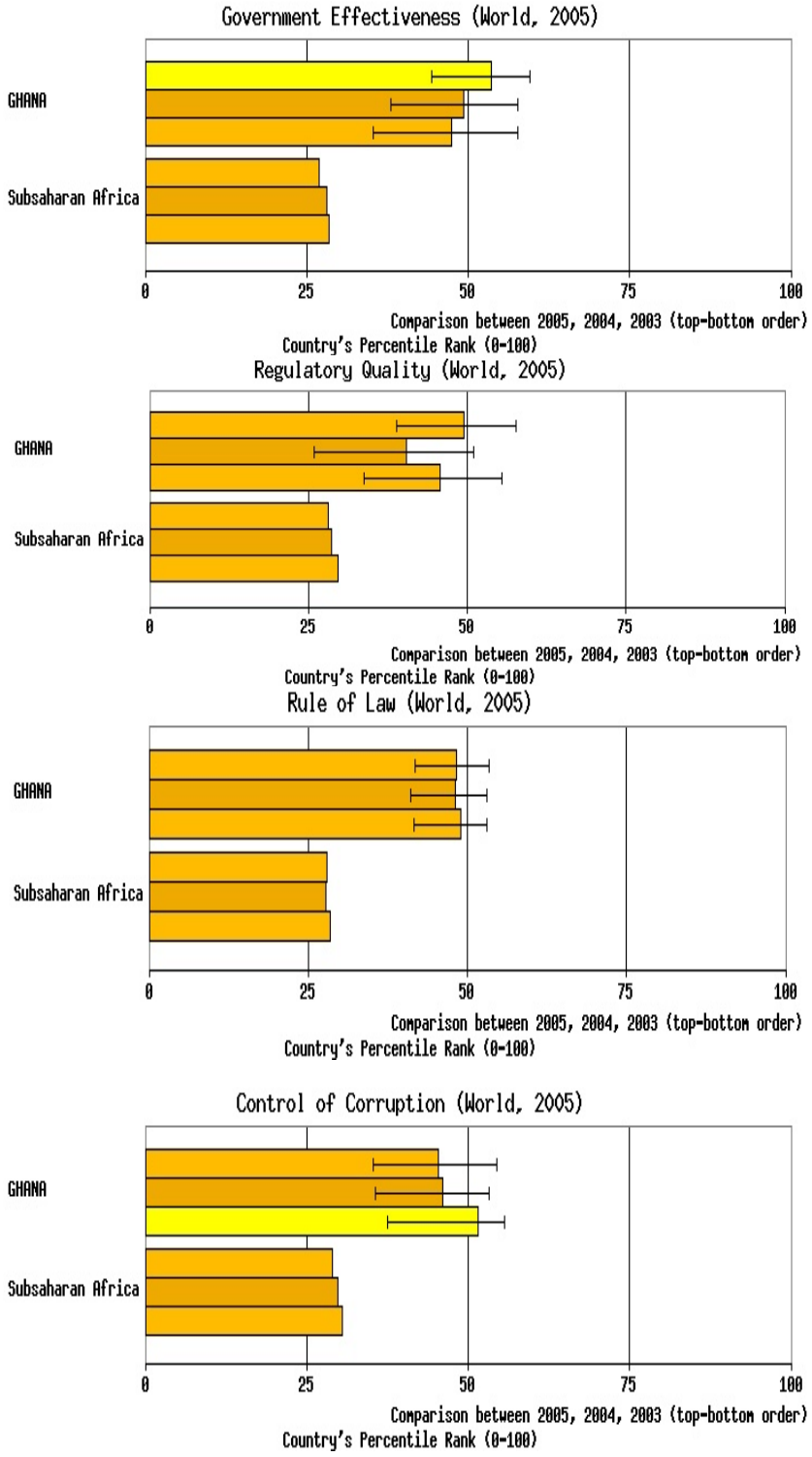
Source: World Integrated Trade Solution and World Bank World Development Indicators.

Figure IV.7. Ghana: Relative Price of Investment in Domestic Currency to PPP, 1965–2000



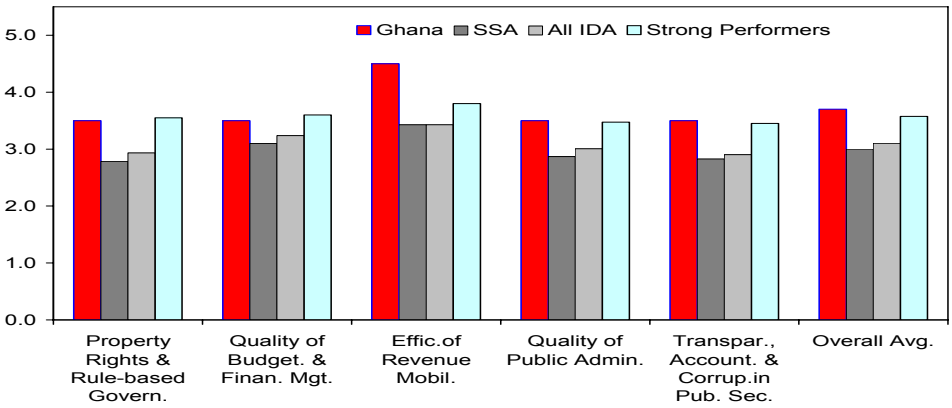
Source: Penn World Tables.
Note: Fast growers excludes Equatorial Guinea.

Figure IV.8. Ghana: Governance Indicators, 2003–2005



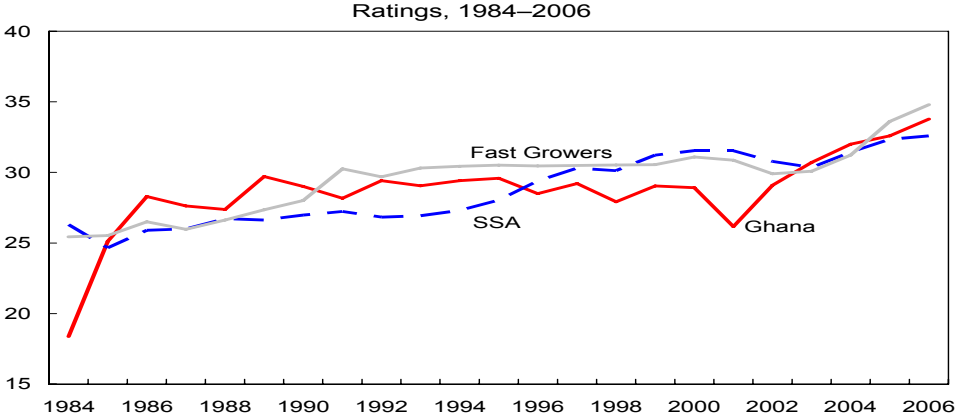
Source: World Bank, *World Governance Indicators Database*.
Note: The charts depict the percentile rank on each governance indicator. Percentile rank indicates the percentage of countries worldwide that rate below the selected country (subject to margin of error). Higher values indicate better governance ratings.

Figure IV.9. Ghana: Public Sector Management and Institutions by Component, 2005



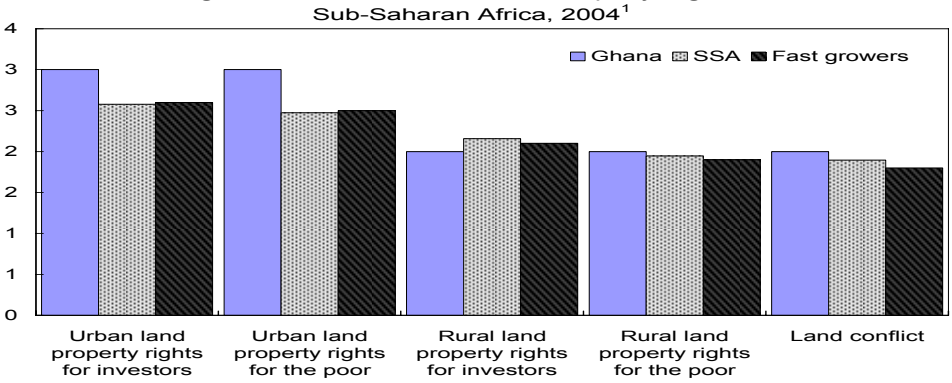
Source: World Bank International Development Association.

Figure IV.10. Ghana: International Country Risk Guide Economics Risk Ratings, 1984–2006



Source: *International Country Risk Database* .

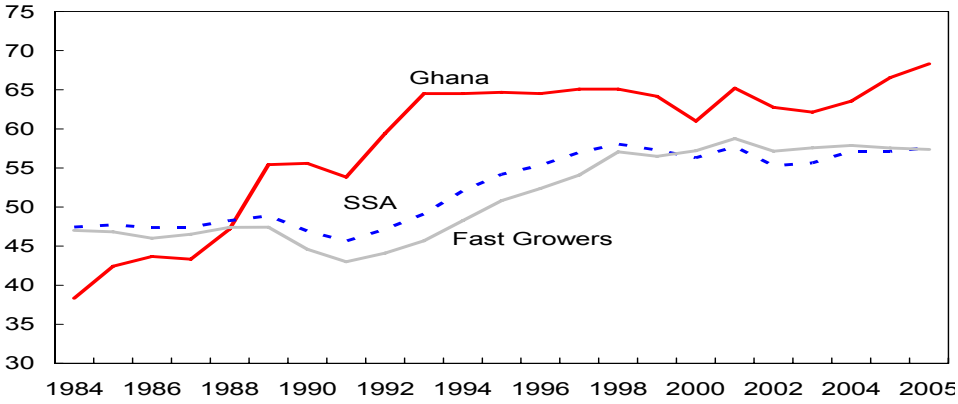
Figure IV.11. Ghana: Land and Property Rights in Sub-Saharan Africa, 2004[1]



Source: World Bank (1994); and World Bank database on land and property rights in Africa 2004.

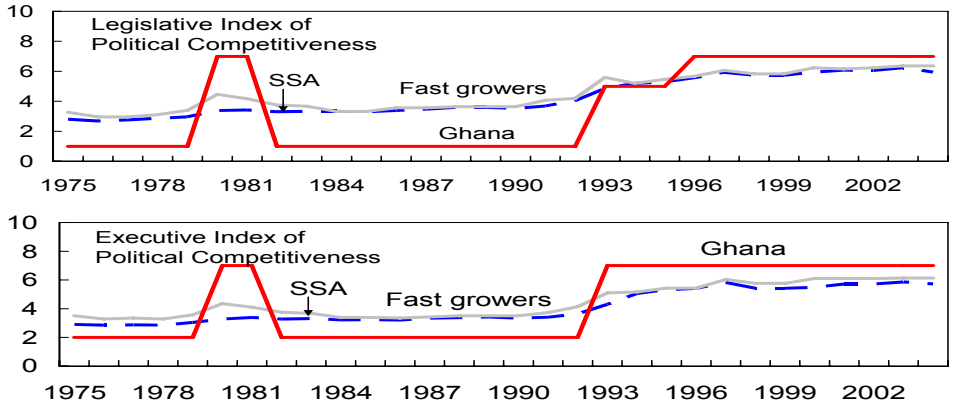
[1]Land Property Rights (Higher index = worse environment)

Figure IV.12a. Ghana: International Country Risk Guide Political Risk Ratings, 1984–2006



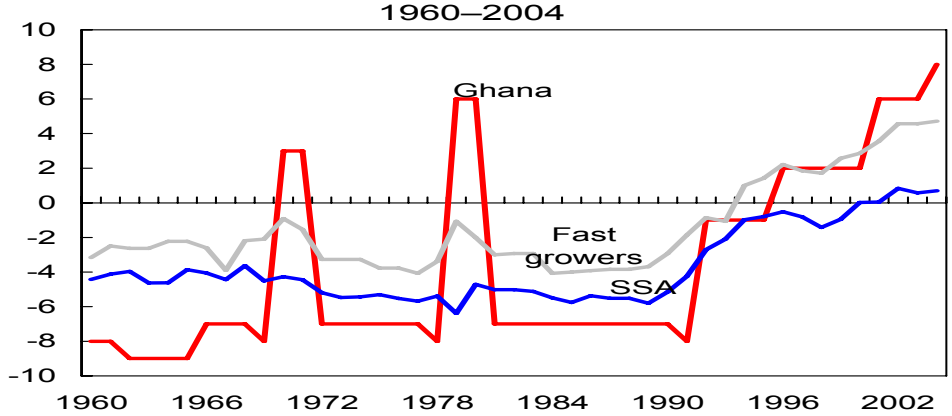
Source: International Country Risk Database.

Figure IV.12b. Ghana: Political Institution Comparison, 1975–2004



Source: *Polity IV Database, 2004.*

Figure IV.12c. Ghana: Political Regime Index, 1960–2004



Source: World Bank, Database of Political Institutions, 2005.

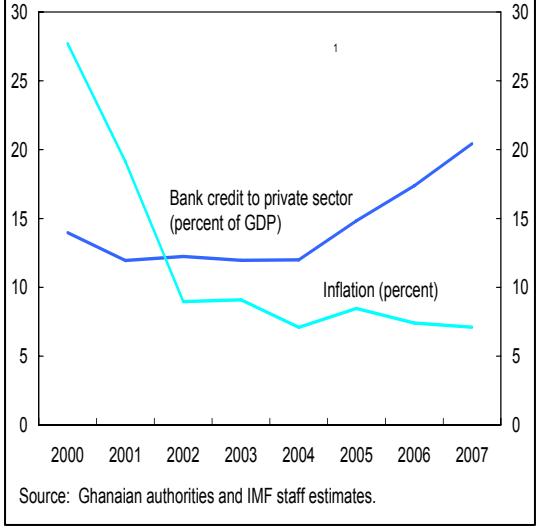
V. Growth in Credit to the Private Sector in Selected Sub-Saharan African Countries[1]

1. **Several African countries, including Ghana, have experienced rapid growth in credit to the private sector in recent years.** This may reflect two very different developments. First, a genuine financial deepening[2] after structural reforms and rapid development of the financial sector; second, cyclical excessive credit growth that fuels strong domestic demand, leading to overheating and deterioration in the external current account.[3]

2. **Some recent facts about the Ghanaian banking sector indicate that Ghana may be in the former category**, i.e., undergoing a phase of genuine financial deepening:

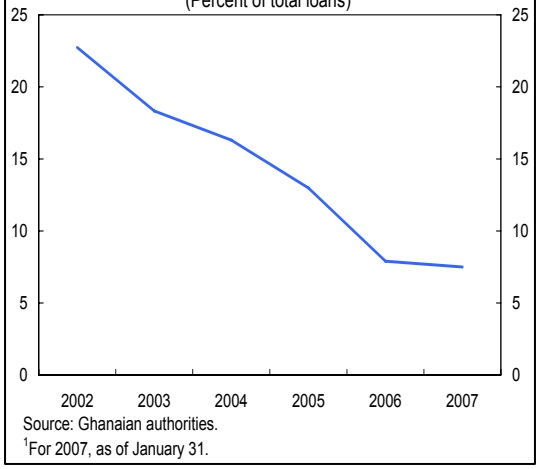
- Private sector credit growth has picked up in the wake of macro stabilization as measured, for example, by the decline in inflation.
- Credit expansion is significant, but from a very low base: the ratio of private sector credit to GDP increased from 11.9 percent in 2004 to 17.4 percent in 2006.
- The expansion of lending to the private sector has been accompanied by a moderation of credit risk, as suggested by a declining non-performing loan (NPL) ratio. The NPL ratio declined to 7.5 percent in January 2007 from 22.7 percent in December 2002.
- The solvency of the banking sector has continued to improve. The capital adequacy ratio (CAR) was 17 percent at end -January 2007, well above the statutory requirement of 10 percent, and all banks are compliant with the new minimum capital requirements introduced at the end of 2006.

Figure V.1. Ghana: Bank Credit to the Private Sector and Inflation, 2000–2007



Source: Ghanaian authorities and IMF staff estimates.

Figure V.2. Ghana: Non Performing Loans, 2002–2007[1]
(Percent of total loans)



Source: Ghanaian authorities.
[1]For 2007, as of January 31.

[1] Prepared by Elena Loukoianova and Amar Shanghavi.

[2] Financial deepening is a phenomenon where the growth in private sector credit exceeds that of GDP.

[3] IMF, 2004.

3. **This chapter investigates the hypothesis that Ghana is indeed undergoing financial deepening by employing one possible analytical tool, which attempts to assess an "equilibrium" level of credit for an economy, based on structural as well as economic "fundamentals**." The chapter uses estimates of an econometric model of structural determinants of banking credit to the private sector (BCPS).[4] The model relates the BCPS/GDP ratio to:

- The public debt-to-GDP ratio (*PublicDebtY*), as an indicator of how much private sector credit is being crowding out;
- Per capita GDP (*GDPPC*), as an indicator of the total economic development of a country;
- Inflation, as an indicator of economic stability;
- Indices of financial liberalization (*LibIndex*), bank entry requirements (*Entry Restrictions*), and quality of governance (*Inst*);
- The origin of the country's law (German, French, or English) (*German Origin*);
- A trend, introduced to control for any omitted trend variable (the coefficient is, however, fairly small).[5]

4. The model was estimated for 24 emerging market and developed economies, using annual data for 1973–1996 and a random effects GLS estimation procedure.

$$BCPS = -0.133^{*}\, PublicDebt_{it} + 0.069^{*}\ln(GDPPC)_{it} + 0.037\, LibIndex_{it}$$
$$+ 0.00(1 - HighInfl) * (1/Infl_{it} - 1/InflThreshold) + 0.004^{*}(HighInfl) * (1/Infl_{it} - 1/InflThreshold)$$
$$+ 0.087^{*}\, Inst_{it} - 0.014\, Entry\,\mathrm{Re}\, strictions_{i} + 0.298^{*}\, GermanOrigin_{i} - 0.294 - 0.012t^{*}$$

* - indicates significant at 10%

5. **The estimated coefficients were then used to evaluate the equilibrium level of the BCPS for selected SSA countries for 2005**.[6] Various sources were used to obtain SSA

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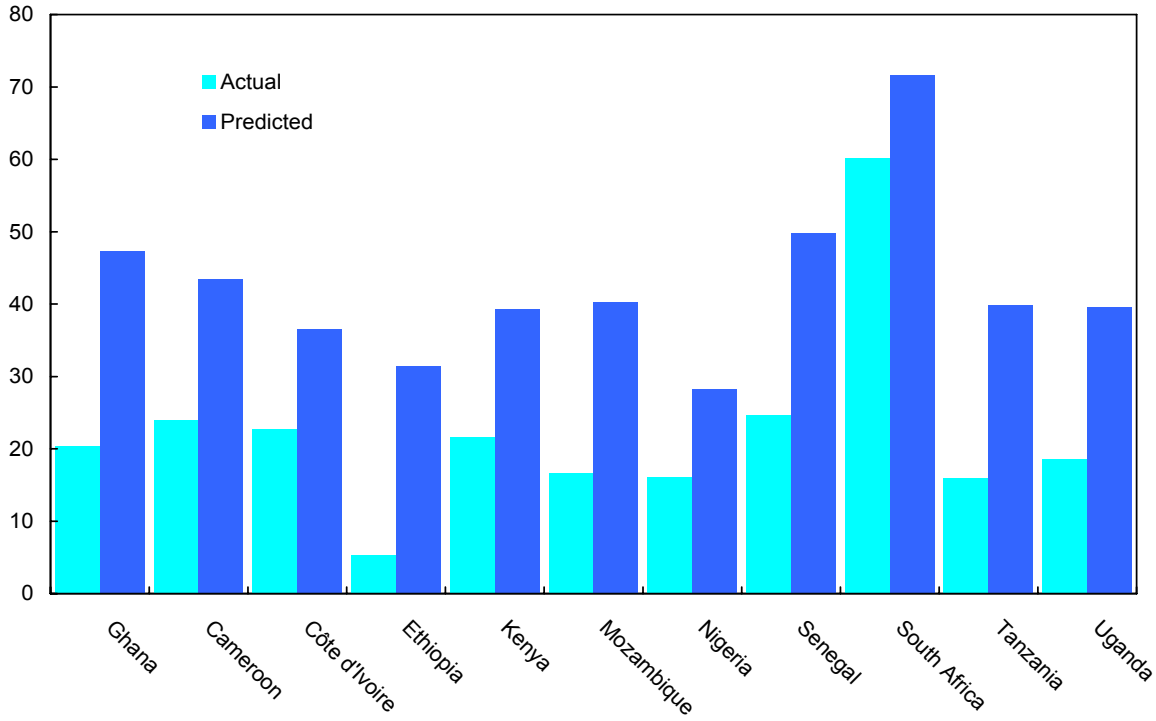
[4] Cotarelli, Dell'Ariccia, and Vladkova-Hollar, 2003.

[5] *HihgInfl* is a dummy for inflation above the threshold level (1/*Infl*-1/*InflThreshold*) measures how far below or above the threshold inflation is for country *i* at time *t*. The $LibIndex_i$ represents an index of the financial liberalization of the domestic financial system and the capital account, which is expected to have a positive impact on financial deepening over the long run. *Entry Restrictions* is an index of banking sector liberalization that measures the stringency of specific legal requirements for obtaining a license to operate a bank; it is expected to have a negative impact on financial deepening. A quality of governance ($inst_{it}$) index is included to control for information on which lending decisions are based; it is expected to have a positive impact on financial deepening as more information reduces the risk premium over risk-free assets. The origin of a country's law also seems to have a significant effect on financial deepening. In particular, German civil law systems have more protection of private property, better enforcement of contracts, and well- developed banks. To account for this $GermanOrigin_i$ was included in the model.

country data.[7] The predicted or equilibrium level of private credit in 2005 was well above actual levels in all SSA countries in the sample, including Ghana. This may imply that rapid credit growth in these countries is a "catching-up" phenomenon. The findings must be interpreted with caution, however, given that the estimations are imprecise. Indicative though they may be, the results are similar to those obtained in Central and Eastern Europe and in former Soviet Union countries that are undergoing rapid structural transformation and strong credit growth.[8]

Figure V.3. Ghana and Comparator Countries: Bank Credit to Private Sector, 2005
(Percent of GDP)



Source: World Economic Outlook; World Bank; and IMF staff estimates

6. **However, even if what we see in SSA is genuine financial deepening and catching-up from low initial credit levels, the speed with which credit growth takes** place warrants careful supervision. This is particularly important in countries where the

[6] The SSA countries selected, based on data availability, are Cameroon, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Mozambique, Nigeria, Senegal, South Africa, Tanzania, Uganda, and Zimbabwe.

[7] The macroeconomic data for 2005 were taken from the WEO. The financial liberalization index for Ghana for 2005 was constructed by the desk economists, and for the rest of the countries is taken from Detragiache, Abiad, and Tressel (2007). The quality of governance indicator was calculated as a simple average of the six World Bank governance indicators. The bank entry restrictions were calculated based on Barth, Caprio and Levine (2002), greater values indicate greater stringency. This index is available at: http://www.worldbank.org/research/interest/prr_stuff/bank_regulation_database.htm

[8] European Bank for Reconstruction and Development (2005).

banking sector is still relatively underdeveloped, with inadequate risk management, poor information on borrowers, and large concentration risk due to lack of diversification in the economy. Some of these factors (concentration and credit risks) are issues in Ghana, as well as potential maturity mismatches. In these cases, reinforcing prudential regulation with strict provisioning requirements and accumulating more information on borrowers by setting up credit bureaus should have high priority. Moving to more risk-based regulation, such as the simplified version of Basel II, could also be advisable in countries, such as Ghana, where the regulatory fundamentals are already well established.

References

Abiad A. and Mody A., "Financial Reform: What Shakes it? What shapes it?", IMF Working Paper WP/03/70 (Washington: International Monetary Fund).

Barth R., Gerard C. and Levine R., 2002, "Bank Regulation and Supervision: What Works Best?", Journal of Financial Intermediation, National Bureau of Economics Research, Working Papers Series (U.S.) No. 9323: pp. 1-46. (November).

Cottarelli C., Dell'Ariccia G., and Vladkova-Hollar I., 2003, "Early Birds, Late Risers, and Sleeping Beauties: Bank Credit Growth to the Private Sector in Central and Eastern Europe and the Balkans", IMF Working Paper WP/03/213 (Washington: International Monetary Fund)

Detragiache E., Abiad A., and Tressel T., 2007, "A New Database of Financial Reforms," IMF Working Paper, forthcoming

European Bank for Reconstruction and Development, 2005, *Transition Report,* November (London: EBRD)

Financial Stability Report, March 2007, Vol. 7, No.1/2007, Bank of Ghana.

International Monetary Fund, 2004, *Are Credit Booms in Emerging Markets a Concern?* in *World Economic Outlook,* April. (Washington: International Monetary Fund).

La Porta R., Lopez-de-Silanes F., Shleifer A. and Vishny R., 1999, "The Quality of Government", Journal of Law, Economics and Organization, Vol. 15, No.1, pp 222-79, Oxford University Press.

La Porta R., Lopez-de-Silanes F., Shleifer A. and Vishny R., 1998, "Law and Finance", The Journal Political Economy, Vol. 106, No.6, pp 1113-1155, The University of Chicago Press.

Sacerdoti E., "Access to Bank Credit in Sub-Saharan Africa: Key Issues and Reform Strategies", IMF Working Paper WP/05/166 (Washington: International Monetary Fund).