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Monetary Policy and Financial Sector Reform For Employment Creation and Poverty Reduction in Ghana

Gerald Epstein
James Heintz

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Gordon Hall
418 North Pleasant Street
Amherst, MA 01002

Phone: 413.545.6355
Fax: 413.577.0261
peri@econs.umass.edu
www.umass.edu/peri/

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ABSTRACT

This report summarizes the findings of a UNDP-sponsored study on the structure of the financial sector, central bank policy, and employment outcomes in Ghana. The financial sector is the primary conduit through which monetary policy affects real economic outcomes, and monetary policy determines the resources available to financial institutions. Therefore, monetary policy must be coordinated with financial sector reforms in order to improve employment opportunities, reduce poverty and support human development. The report develops a critique of financial programming and inflation targeting, presents a series of empirical estimates on the impact of monetary policy variables in Ghana, and describes the elements of an alternative monetary policy. In addition, the report documents the institutional and structural constraints currently operating in the financial system which prevent the sector from facilitating investment, growth, and improved employment opportunities. Econometric estimates of the determinants of investment explicitly link financial variables to real economic activity. The report summarizes a series of financial sector reforms that would improve the financial sector's capacity to move Ghana onto an employment-intensive growth path.

JEL Codes: E22, E24, E52, E58, O11

Gerald Epstein and James Heintz
Department of Economics
Political Economy Research Institute
418 N. Pleasant St
Amherst, MA 01002
gepstein@econs.umass.edu

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Gerald Epstein and James Heintz[1]
Political Economy Research Institute
University of Massachusetts, Amherst
Amherst, MA
USA

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1. Introduction

The structure of the financial sector and the implementation of monetary policy directly impact employment. To generate better employment opportunities in Ghana, central bank policy must encourage employment-generating investment, facilitate sustainable economic expansion, and maintain macroeconomic stability. However, the impact of monetary policy cannot be considered in isolation from the nature of the country's financial institutions. These two policy areas are closely intertwined. The financial sector is the primary conduit through which monetary policy affects real economic outcomes, and monetary policy determines the amount and distribution of resources available to financial institutions. Therefore, monetary policy must be coordinated with financial sector reforms in order to reduce poverty and support human development.

The Bank of Ghana has focused its policy efforts in recent years on controlling inflation. Keeping inflation at a moderate and stable level is an important goal of macroeconomic policy. However, in a country in which the quantity and quality of remunerative employment falls far short of its potential, the central bank can use existing tools and implement new policies that foster an environment to improve employment outcomes, while moderating inflation and keeping the exchange rate at an appropriate level. Similarly, the financial sector can be transformed to support improvements in the quality and quantity of employment opportunities. In short, what is needed is a broader framework for central bank policy and the financial sector, a framework that targets real outcomes such as creating more employment, while keeping inflation and exchange rate instability in check.

This report summarizes the findings and recommendations of a UNDP-sponsored study on the linkages among the structure of the financial sector, central bank policy, and employment outcomes in Ghana. During the course of the study, the research team met with representatives from government, the banking sector, and non-government organizations in order to identify the core relationships and constraints that connect monetary policy, the structure of Ghana's financial structure, and employment outcomes. It was apparent from our consultations that the focus of the study is both timely and relevant. There is a general consensus that the structure of the financial sector, the availability of credit, and prevailing interest rates directly impact employment outcomes – in both the formal and informal economies.

The report is organized as follows. The next section provides background for the rest of the report – summarizing relevant macroeconomic trends and the current employment situation. Section 3 analyzes Ghana's monetary policy regime and develops a critique of financial programming and inflation targeting. From this foundation, we describe the elements of an alternative monetary policy, one with an emphasis on real economic outcomes. Section 4 provides specific detail on the institutional and structural constraints currently operating in the financial system which prevent the sector from facilitating investment, growth, and improved employment opportunities. We explicitly link financial variables to real economic activity by investigating the determinants of productive investment. Section 6 presents financial sector reforms that would improve the financial

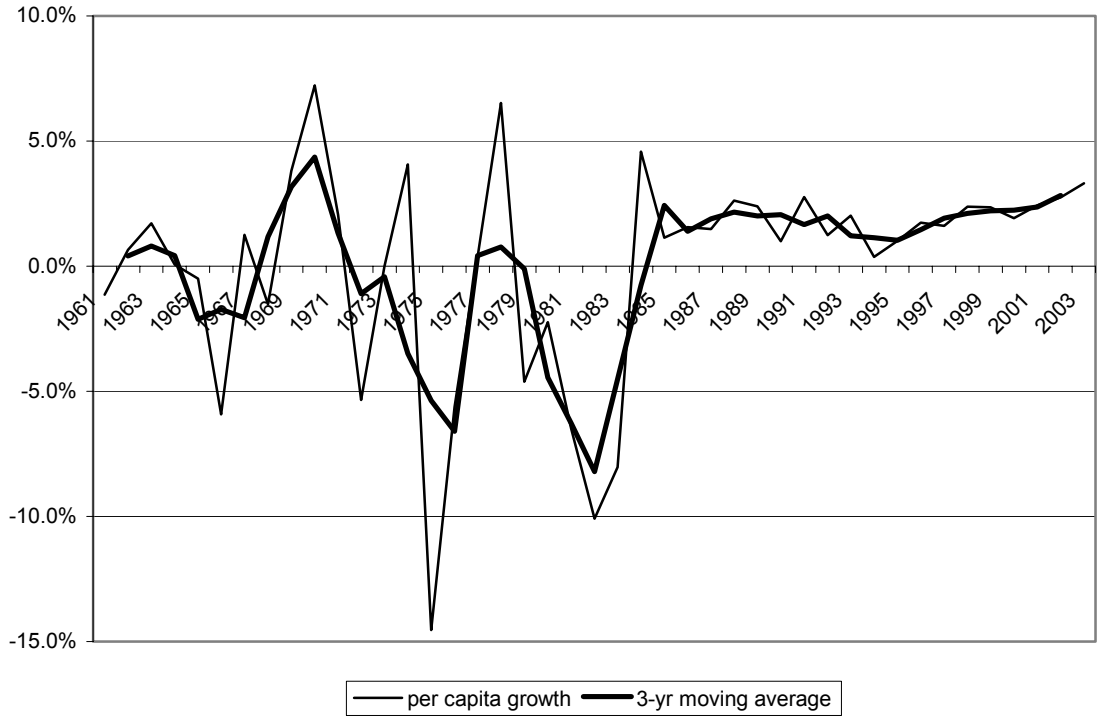
sector's capacity to move Ghana onto an employment-intensive growth path. Finally, section 7 concludes with some specific recommendations.

2. Background: growth and employment in Ghana

2.1 Growth and macroeconomic indicators

When employment expands along with production, the benefits of growth will be broadly distributed. Growth, therefore, is necessary, but not sufficient, for improving employment opportunities. Ghana's growth record has been volatile in the decades following independence (Figure 1). During the economic crisis years of the 1970s, the growth rate of per capita GDP was negative on average. The introduction of economic reforms and structural adjustment in 1983 helped to stabilize the macroeconomic environment. Since that time, growth in per capita GDP has remained positive and remarkably steady. Data from the national accounts suggest that per capita GDP growth averaged 2.0 percent from 1984 to 2003.

Figure 1
Per Capita GDP Growth, Ghana, 1961-2003

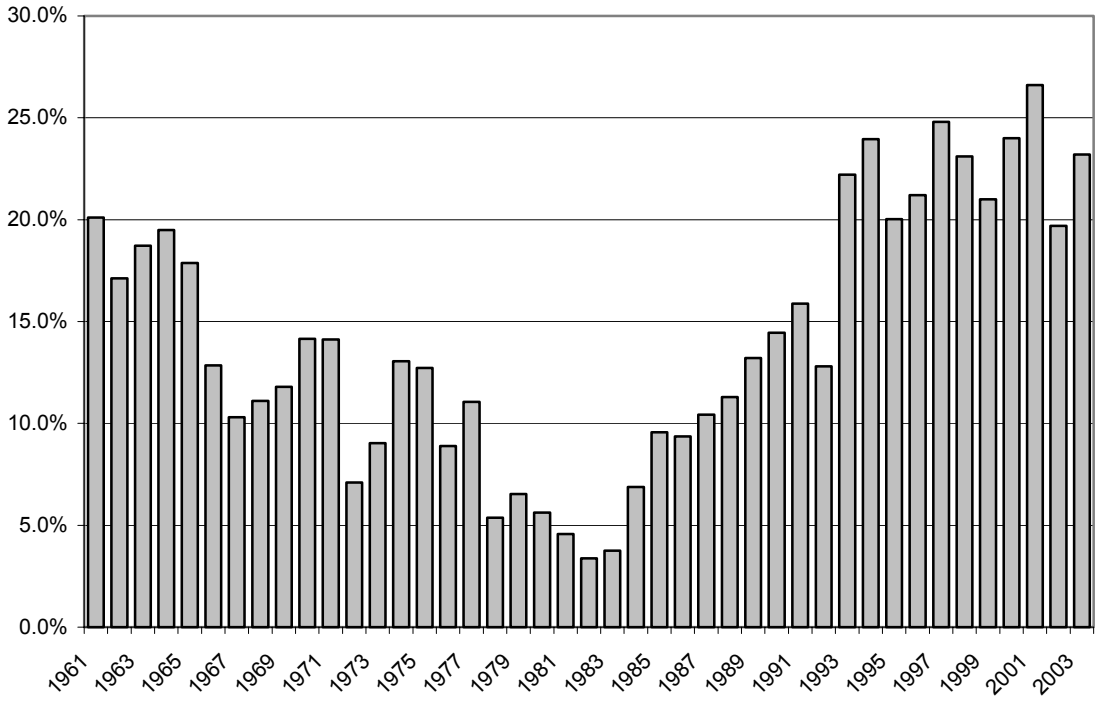


Source: World Development Indicators, World Bank.

Investment in new productive capacity is essential if growth is to generate employment opportunities. Figure 2 shows total gross investment as a percent of GDP – both public and private – from 1961 to 2003. After the 1960s, investment declined in Ghana, reaching its lowest point in the years immediately preceding the economic reforms. Since 1983, the

level of investment rose and then, over the past decade, stabilized. In the 10 years from 1994 to 2003, gross investment, as a percent of GDP, averaged 22.8 percent. This is higher than the rate of investment of many other low-income countries over the same period – for example, Kenya (15.6 percent), Malawi (12.9 percent), Senegal (18.7 percent), Cambodia (16.8 percent), and Pakistan (17.0 percent). It is also slightly higher than the average rate of investment for all low-income countries over this same decade, 21.7 percent.[2]

Figure 2
Gross Investment as a Percent of GDP, Ghana, 1961-2003



Source: World Development Indicators, World Bank.

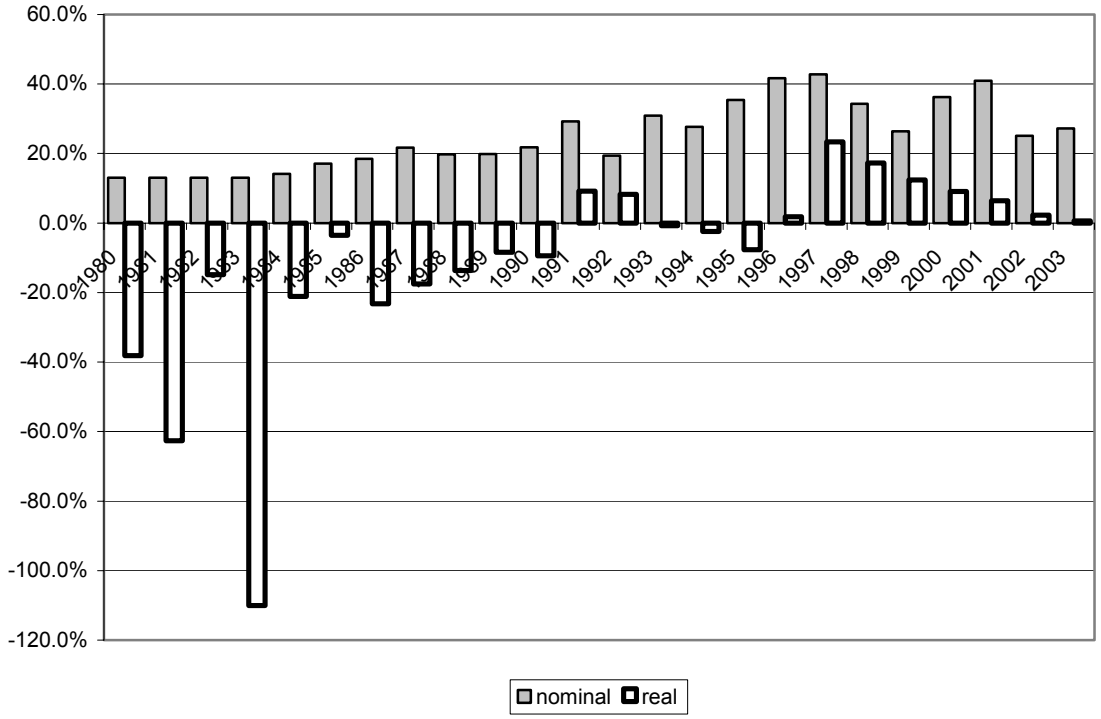
The focus of this report is the interaction of monetary policy, the financial structure, economic growth, and employment in Ghana. Two macroeconomic variables play a central role in influencing these relationships: the interest rate and the exchange rate. Figure 3 charts short-term interest rates – both real and nominal – since 1980. The government treasury bill (t-bill) rate is used as an indicator of trends in a short-term rate with little or no risk premium. Despite high nominal rates, real t-bill rates were negative throughout much of the 1980s, due to relatively high levels of inflation (averaging 47 percent from 1980-89).

It should be noted that, while the data on the real yield on short-term treasury bills allows us to track interest rates over time, the t-bill rate is much lower than the real lending rate in Ghana. Estimates placed the average real lending rate in Ghana in 2004 at around 16-18

[2] World Bank, *World Development Indicators* CD-ROM, 2005.

percent (Bawumia, Belnye and Ofori, 2005). We discuss the real costs of borrowing in more detail later in this report.

Figure 3
Nominal and Real Interest Rates, Ghana, 1980-2003
(yield on short-term treasury bills)

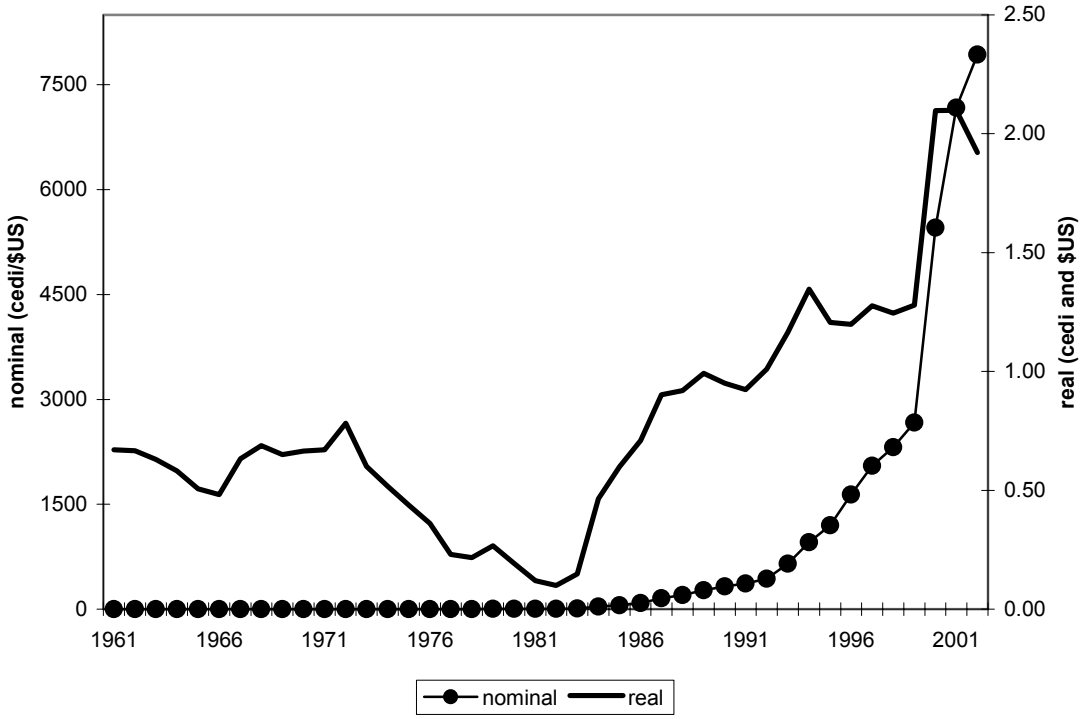


Source: International Financial Statistics, IMF and World Development Indicators, World Bank.
Note: The inflation rate was calculated from Ghana's GDP deflator.

Nominal and real exchange rates from 1961 to 2002 are presented in Figure 4. Throughout the 1960s and 1970s, nominal rates (expressed as cedis/$US) were kept relatively stable. However, the high rates of domestic inflation in the 1970s led to an appreciation of the real exchange rate which undermined the competitiveness of the export sector. The structural adjustment program introduced in 1983 induced a significant devaluation of the cedi. The real exchange rate has become more competitive since the economic reforms.

As part of Ghana's structural adjustment programs, the government pursued a series of reforms in terms of financial regulations and foreign exchange markets. In the late 1980s and early 1990s, there was a transition from a monetary policy regime that used direct controls to a regime that used indirect interventions in the money market (Sowa, 2002). Inflation has been increasingly brought under control since the switch, resulting in positive real short-term interest rates, but raising nominal rates even higher. Spreads between lending and deposit rates also widened significantly after the reforms. In addition, beginning in 1983, a series of reforms were introduced to liberalize foreign exchange markets and to make the exchange rate increasingly market determined (Sowa, 1999).

Figure 4
Nominal and Real Exchange Rates, Ghana, 1961-2002

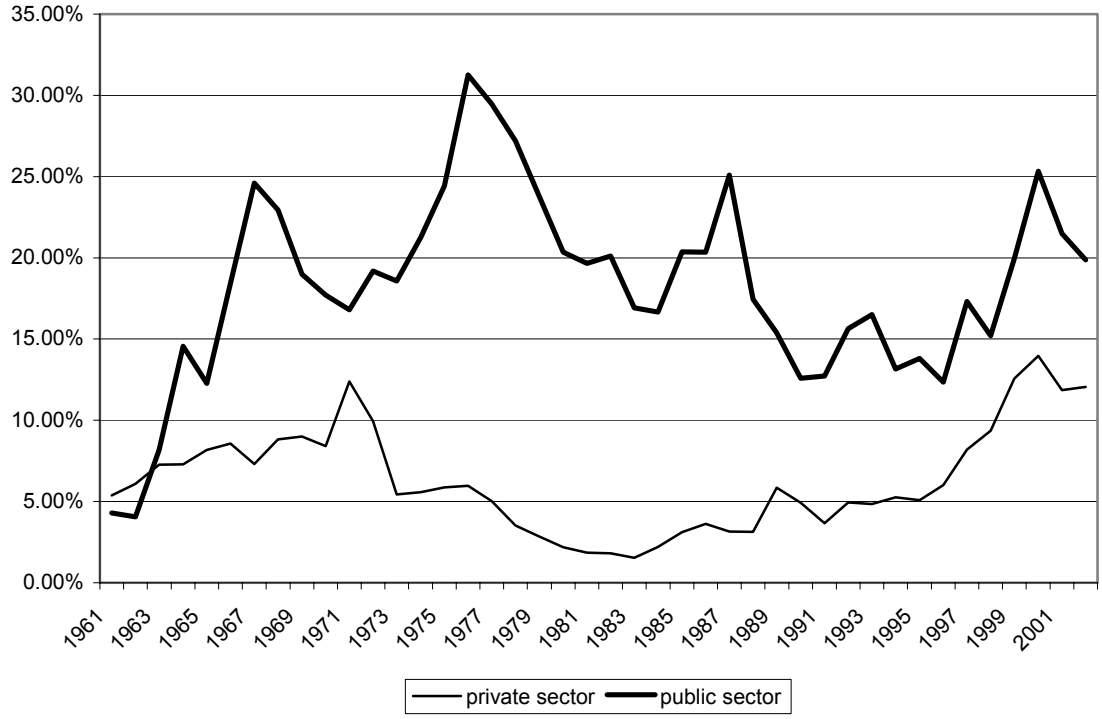


Source: International Financial Statistics, IMF; World Development Indicators, World Bank; and U.S. Bureau of Economic Analysis.

The composition of domestic credit changed in recent decades, corresponding with the period of structural adjustment programs and financial reform. As shown in Figure 5, credit to the public sector, including both government and public enterprises, accounts for the largest share of domestic credit. Beginning in the mid-1980s, domestic credit to the private sector as a percent of GDP began to increase, reversing a steady downward trend. In recent years, credit to both public and private sectors has increased simultaneously.

At one level, the economic reforms that Ghana has implemented since the early 1980s appear to have been a success. Macroeconomic instability has been reduced, inflation has been brought under control, per capita growth rates have been stable and positive, and the real exchange rate has become more competitive. However, the success of the reforms in terms of some key macroeconomic variables has not been as apparent in terms of employment and poverty reduction. It is to these issues that we now turn.

Figure 5
Domestic Credit to the Public and Private Sectors,
Percent of GDG, Ghana, 1961-2002



Source: International Financial Statistics, IMF.

2.2 Employment and poverty in Ghana

Improving the quality and quantity of employment opportunities directly links economic growth to poverty reduction. Low-income households possess few assets of their own. Instead, the most abundant resource the poor have at their disposal is their labor. Therefore, a development strategy that more fully employs a country's human resources and raises the returns to labor becomes an effective instrument for reducing poverty.

Despite the reasonable record of per capita growth in recent years, the Ghanaian economy has failed to develop new and better employment opportunities and to more fully utilize the country's labor force. Under the economic reform programs of the 1980s and early 1990s, faster rates of growth did not improve access to decent employment for a large segment of the working population (Baah-Boateng, 2004; Fine and Boateng, 2000). Instead, the majority of employment opportunities continued to consist of low-income agricultural and informal activities. Moreover, formal public and private sector jobs declined. Persistent unemployment, underemployment, and growth in precarious forms of employment remained central features of the economy.

Table 1 presents a profile of the labor force, estimated from the data generated by the most recent round of the Ghana Living Standards Survey (GLSS 4, 1998/9). Of the labor force aged 15 to 64 years, 52 percent were self-employed in agriculture, 37.4 percent worked in the non-agricultural informal economy, and only 13.7 percent worked in formal public or private employment. Labor force participation rates are nearly identical for men and women. However, there is evidence of gender segmentation of the employed labor force. Formal employment accounts for a smaller share of women's employment than men's. Women are strongly represented among informal, non-agricultural own-account workers and unpaid workers on family enterprises.

Table 1

Percent of total employment in selected employment categories by sex, 1998/9. Employed population, 15 year or older, Ghana.

	Women	Men	Total
Formal employment, non-agricultural			
Formal private wage employees	0.2%	0.6%	0.8%
Formal public wage employees	1.1	3.0	4.1
Formal, self-employed	1.9	1.7	3.6
Formal employment, agricultural			
Formal wage employees	<0.1*	0.2	0.2
Informal employment, non-agricultural			
Informal, self-employed	20.0	7.4	27.4
… of which: own account workers	19.2	6.6	25.8
Informal wage workers	2.2	5.9	8.1
… of which: informal public wage workers	0.7	1.8	2.5
Unpaid family workers	1.3	0.6	1.9
Informal employment, agricultural			
Self-employed	16.3	22.2	38.5
Informal wage workers	0.2	1.0	1.2
Unpaid family workers	10.0	3.8	13.8
Other (unclassified)	0.1	0.3	0.4
TOTAL	***53.3%***	***46.7%***	***100%***
Supplementary statistics			
Labor force participation rate	87%	90%	88%
Unemployment rate	8%	7%	8%

Source: Heintz (2005).

* not significantly different from zero.

The persistence of informal and precarious work has compromised the economy's ability to translate growth into broad-based poverty reduction. Although poverty rates have declined on average, households living in poverty have actually become more prevalent in certain rural areas (GSS 2000). Much of the poverty reduction has occurred in urban areas. Moreover poverty rates remain high for a large portion of the employed population. Table 2 shows the income poverty rates among working individuals by employment categories. Poverty rates are highest among informal agricultural workers. As noted above, women represent the majority of informal non-agricultural own-account workers and unpaid workers on family enterprise, employment categories with relatively high poverty rates.

Table 2
Income poverty rates among employed persons (15+) in selected employment categories by sex, 1998/9, Ghana.

	Women	Men	Total
Formal employment, non-agricultural			
Formal private wage employees	---	26.5	25.8
Formal public wage employees	36.5	43.9	42.0
Formal, self-employed	52.0	45.8	49.2
Formal employment, agricultural			
Formal wage employees	---	---	65.6
Informal employment, non-agricultural			
Informal, self-employed	57.4	58.8	57.7
… of which: own account workers	57.4	58.5	57.7
Informal wage workers	40.3	43.8	42.8
… of which: informal public wage workers	39.4	46.2	44.4
Unpaid family workers	70.0	60.0	67.0
Informal employment, agricultural			
Self-employed	74.4	72.9	73.5
Informal wage workers	---	56.9	57.7
Unpaid family workers	87.8	80.7	85.8

--- = estimates not reported because there were less than 20 observations. Note: in Table 2, individuals are considered poor if they live in a household whose reported income from all sources falls below the poverty line as described in GSS(2000).
Source: Heintz (2005).

In summary, Ghana's economic performance during the period of economic reforms has achieved some success in stabilizing the macroeconomic environment, but has been less effective in diversifying economic activities, generating improved employment opportunities, and reducing poverty throughout the country. There are many reasons why economic growth has not yielded better outcomes. The focus of this report is on one set of contributing factors: the failure of monetary policy and financial institutions to mobilize resources in a way that supports the realization of development objectives.

3. Monetary policy

3.1 Monetary policy In Ghana

Monetary policy has been strictly limited by macroeconomic stabilization agreements made with the IMF and World Bank in conjunction with IMF loans, the HIPC (Heavily Indebted Poor Country) initiative and the PRSP (Poverty Reduction Strategy Paper) process. As described below, in addition to the typical IMF requirements to limit credit to the government and increase foreign reserves, the Bank of Ghana has also been encouraged to focus on reducing inflation into the low single digits. This focus on inflation fighting and the other limitations imposed by IMF conditionality has reduced the prospects for rapid economic growth and broad-based employment generation in Ghana. An alternative monetary policy which focuses more on real variables, including promoting employment and faster GDP growth, is both feasible and necessary if Ghana is to make more rapid progress in reducing poverty and generating sustainable development.

In this section we discuss the recent history of monetary policy in Ghana, the limitations that the IMF stabilization policies have placed on monetary policy, the further limitations imposed by the inflation-fighting focus, and, most importantly, suggest an alternative monetary policy structure that can enhance the role that monetary policy can play in promoting employment and reducing poverty.

3.2 Financial programming

Monetary policy has been strongly influenced by the IMF "Poverty Reduction and Growth Facility" (PRGF) agreements and commitments undertaken by Ghana (see IMF, 2004b and 2005) as well as commitments made in conjunction with the development of the *Ghana Poverty Reduction Strategy* (GPRS), as part of the HIPC debt-relief initiative, and the Multi Donor Budgetary Support initiative (MDBS) (IMF, 2004a). According to documents associated with these initiatives: "The focus of macro-stability in the medium term is to ensure prudent fiscal and monetary policy management to achieve price stability, maintain interest rate levels that are conducive to both savings and investments, and to ensure stable yet competitive exchange rates and a fiscally sustainable debt burden. The GoG (Government of Ghana) with its development partners have defined a number of macroeconomic targets and measures." (IMF, 2004a, p. 38).

Financial programming has been used since the 1970's as part of the IMF's lending programs to LDCs. This model has now been folded into the PRSP and HIPC processes without much alteration. The programming uses a set of "identities" and extremely simple models (at best, a set of assumptions about the structure of the economy) to establish a set of targets that the IMF will monitor and the government will have to meet in order to receive the next installments of IMF loans, or qualify for HIPC relief and other donor support. (See Easterly, 2002, for an excellent critique of this approach).

As mentioned above, the typical program connects balance of payments constraints, the government fiscal deficit, and central bank policy in order to lower indebtedness to a sustainable level, primarily by keeping economic growth in line with likely available foreign resources from export receipts, aid and capital inflows. Increasingly, reducing inflation into the low single-digits has become a central focus. Therefore, two key central assumptions of these programs are (1) that inflation rates between 10 and 20 percent are bad for economic growth and reducing inflation below that level will not reduce economic growth; and (2) that reducing government spending is good for the economy, because more government spending crowds out private investment. We will return to the problems with this approach and assumptions below. First, we will explain how this approach is used in Ghana and other low-income developing countries.

The primary targets and measures have been structured by IMF financial programming. Under the standard financial programming methods implemented by the IMF, target ceilings are set for central bank monetary and credit expansion and floors are established on net foreign reserves (see Barth, *et al.*, 2000, and Blejer, *et al.*, 2002 for good descriptions of these programs). The original motivation for these restrictions were to ensure the ability of program countries to reduce their foreign debt and remain solvent,

including protecting the ability of the IMF to get repaid. Recently, other goals, such as reducing inflation, increasing foreign exchange reserves and "creating room for private investment," have been emphasized

Table 3, adapted from Blejer, *et al.* (2002), illustrates how the programming works. As mentioned above, the main targets are net domestic assets ceilings (NDA) – sometimes called domestic credit ceilings – which directly limit the amount of credit that the Bank of Ghana can create, and net international reserve floors (NIR), which require monetary and fiscal policy to operate so to preserve a minimum level of international reserves. If either target is threatened – that is, if international reserves are too low or if net domestic assets are too high – then the policy calls for tightening monetary policy, usually raising interest rates or reducing monetary expansion.

A key and troubling implication of this programming approach is that there is no clear set of conditions under which expansionary monetary policies are called for, even in a situation of slow growth and high unemployment. Even if both targets are met, programming does not call for expansionary monetary policy. This is largely because there is no explicit operational target for economic growth, employment creation, or poverty reduction. The bias of financial programming is therefore highly contractionary.

Table 3
Financial Programming with Net Domestic Asset and Net International Reserve Targets

		Net Domestic Assets (NDA)	
		Higher than Programmed (Threatened)	*Lower Than Programmed (Not threatened)*
Net International Reserves (NIR)	*Higher than Programmed (Not Threatened)*	Only the NIR target has been met. Reflects overexpansion of money. **Policy: tighten**	Both targets have been met. **Policy: No need for tightening**
	Lower than Programmed (Threatened)	Neither target has been met. **Policy: tighten**.	NIR has not been met. **Policy: keep tight to stem further reserve losses**

Source: Adapted from Blejer, et. al., (2002), Table 1.

In addition, inflation targets have recently been stressed as additional goals of IMF programs. Inflation targeting (IT), or more generally, anti-inflation focused central

banking, reinforces this contractionary approach to central banking by adding an additional contractionary constraint.

Traditional financial programming did not incorporate explicit inflation targets. Now, however, there are new commitments made by central banks to the IMF and associated organizations to reduce inflation. This essentially adds an additional restriction on central bank policy along with the traditional commitments with respect to domestic credit ceilings and reserve floors. (Blejer, *et al.*, 2002). Table 4, adapted from Blejer, *et al.* (2002) illustrates this point.

As Table 4 demonstrates, even if the NDA ceiling is met, if the inflation target is not met, then the central bank will still be expected to tighten credit. As we discuss, there are many problems associated with financial programming, and these are exacerbated when inflation targeting is added.

Table 4
Financial Programming with Net Domestic Asset and Inflation Targets

		Inflation Target (IT)	
		Higher than Programmed (Threatened)	*Lower Than Programmed (Not threatened)*
Actual Net Domestic Assets (NDA) Relative to Program Assumptions	*Higher than Programmed (Not Threatened)*	NDA and IT give the same signal. **Policy: tighten**	NDA and IT give different signals: NDA – tighten; *IT – no tightening needed.* **Policy: tighten**
	Lower than Programmed (Threatened)	NDA and IT give different signals: IT – tighten; *NDA* – no tightening needed. **Policy: tighten**	NDA and IT give the same signal. **Policy: no tightening needed.**

Source: Adapted from Blejer, et. al., (2002), Table 2.

3.3 A critique of financial programming

There are many problems with financial programming that economists have highlighted:

1. It is based on identities that, in practice, often have large and variable measurement errors ("errors and omissions"), thereby rendering precise targets problematic (Easterly, 2002);
2. Their policy prescriptions are based on the assumption of constant or even one-for-one economic relationships – for example a stable velocity of money or a constant relationship between domestic credit and the money supply – relationships which turn out to be highly unstable and often not one-for-one (Easterly, 2002);
3. They often leave out other important channels of monetary policy besides changes in the money supply, channels such as credit and asset prices; and
4. There are important variables that are assumed to be exogenous to monetary variables, which are, to the contrary, often affected by monetary policy, for example, the level of unemployment. (Easterly, 2002).

This last problem turns out to be very important in considering output and employment effects of monetary policy in Ghana.

In particular, financial programming is based on a new classical approach to macroeconomic policy that assumes that output growth is not affected by monetary policy. Hence, financial programming assumes that restrictive monetary policy will reduce inflation, without any long-run negative impacts on economic growth. Important evidence and reasonable theory suggests that excessive restrictions on monetary and credit and high interest rates do indeed have negative impacts on economic growth. We discuss some of this evidence later in this section.

On top of these problems with financial programming, many other "structural" goals are often included as targets or even as performance requirements. Often included among these performance requirements is financial liberalization. While in the case of Ghana these goals and targets are embedded in the PRSP and HIPC processes, so that implicitly, poverty reduction is part of the overall framework, the key question for monetary policy is this: do these "stabilization" goals contribute to Ghana's ability to reduce poverty and generate more employment, or do these "stabilization procedures" in fact interfere with these developmental objectives?

3.4 Recent monetary policy in Ghana: application of financial programming

Ghana's recent experience with financial programming began after the 2000 election. (IMF, 2001). Due to devastating terms of trade shocks and macroeconomic policy decisions, inflation was running at over 40 percent per annum prior to the election, foreign exchange reserves fell to around one month's imports, the cedi was depreciating rapidly, and reserve money was expanding at a rapid pace. The new government entered into a set of commitments with the IMF to dramatically reduce inflation, monetary growth, fiscal deficits, and foreign borrowing, as well as to undertake a number of policy changes to

stabilize the economy, promote private investment, and gain international acceptance for debt relief.

Since that time, inflation has fallen dramatically, domestic and foreign debt have declined and economic growth has risen, partly as a result of macroeconomic policies, and partly due to fortunate circumstances, notably, dramatic improvements in cocoa prices and associated terms of trade.

The key monetary policy issue facing Ghana moving forward is whether a continuation of the same focus on "macroeconomic stabilization" with strict monetary and inflation targets will serve the needs of Ghana's population in terms of economic growth, employment generation, and poverty reduction.

Table 5 presents information, gleaned from IMF documents on IMF targets for economic growth and inflation from 1999 to 2008, alongside information on actual growth and inflation during the period.

As the table shows, inflation has come down dramatically since 2000, and is now in the low double digits (perhaps around 15 percent). Economic growth has increased from 3.7 percent in 2000 to 5.2 percent in 2004, and is projected to grow to 5.8 percent in 2005. Nevertheless, rates of growth in this range have not been associated with the creation of better employment opportunities or poverty reduction throughout all regions of Ghana, as discussed in previous sections. Moreover, the primary goal of the monetary policy remains to reduce inflation and to keep economic growth in the 5 percent range. Performance requirements associated with the latest IMF review are consistent with those targets. As stated in the Memorandum "The goal of monetary policy will continue to be to reduce inflation" (IMF, 2005 p. 7).

Table 5

Inflation and Economic Growth, 1999-2008, Targets and Actual[*]

	Inflation		***GDP Growth***		***Per Capita GDP Growth***	
	Target	**Actual**	**Target**	**Actual**	**Target**	**Actual**
1999		13.8		4.4		1.8
2000	23.0	40.5	4.0	3.7	1.3	1.2
2001		21.3	4.0	4.2		1.6
2002	13.0	15.2	4.5	4.5	1.9	1.9
2003	22.0	23.6	4.7	5.3	2.1	2.6
2004	7.0 (7.7)	11.8	5.0 (5.2)	5.8	2.4 (2.6)	2.8
2005	5.0 (14.5)		5.0 (5.8)		2.4	
2006	5.0		5.0		2.4	
2007	5.0		5.0		2.4	
2008	5.0		5.0		2.4	

[*] The most recent actual values were used in all cases. Figures in parentheses refer to altered targets in more recent documents. For later periods, projections are used as targets.

Sources: IMF (2001, 2002, 2003, 2004b, 2005)

More specifically, over the next several years the IMF reports assume that real GDP in Ghana will grow at 5 percent to 5.8 percent per year, which, given estimates of population growth, would translate into per capita growth rates of about 2.4 percent per year. The IMF assumes this rate is the natural rate of growth of the economy. However, the question is whether a relaxation in the inflation, monetary, and credit targets could generate higher levels of real GDP growth while maintaining adequate macroeconomic stability (IMF, 2003; 2004a,b).

3.5 Impact of monetary policy

As we discussed above, the implicit assumption of much of the IMF financial programming is that tight monetary policy will lower inflation, but will not have significant long run negative effects on economic growth. Moreover, it assumes that larger increases in credit will significantly increase inflation without having salutary impacts on economic growth.

But are these assumptions correct? It is difficult to know for sure because we have limited macroeconomic data on the Ghanaian economy. Still, we can learn enough about these issues from econometric work to assess, at least, the appropriate degree of confidence one should have in the IMF assumptions about the relationship between monetary and credit policy, inflation and growth. In the next section we report on econometric results from the Bank of Ghana's econometric model. As we will see, the Bank's model raises serious questions about some of the key assumptions implicit in typical IMF financial programming.

3.5.1 Analysis by the Bank of Ghana (BOG)

It is crucial to understand the channels and influence of monetary policy in order to assess the impacts of current policy and to intelligently propose alternatives. There have been a few instructive empirical studies on the transmission mechanisms and impacts of monetary policy, most of them carried out by the Bank of Ghana (eg. Bawumia and Abradu-Otoo, 2003 and Abradu-Otoo, *et. al*., 2003). They have used standard time series econometric techniques to analyze the impacts of monetary policy, but have been hampered by data limitations and recent structural changes in the Ghanaian economy.

The best studies have used Vector Auto-Regression Models (VAR), Vector Error-Correction Models (VEC), and other time series techniques to examine the impact of monetary policy tools on inflation, exchange rates and economic growth. Unfortunately, the lack of meaningful time series data on employment means that we can only look at indirect measures of monetary policy on employment.

Existing studies (see, especially Abradu-Otoo, *et. al*, 2003) find interesting results. They estimate a VEC on quarterly data from the fourth quarter of 1970 (1970-4) to the fourth quarter of 2002 (2002-4). The endogenous variables included in the analysis are: the rate of inflation (INF), real gross domestic product (RGDP), credit to the private sector (CREPS),

the 91-day Treasury bill rate (TBILL) and the real exchange rate measured by the bi-lateral exchange rate between Ghana and the United States (NER), and a broad definition of the money supply that includes foreign currency deposits (M2+).

3.5.2 Interest rate shocks

As discussed above, since the Bank of Ghana currently uses a short term interest rate to conduct monetary policy, analysis of the impact of short term interest rates on the economy is of particular concern.

Impact of interest rate increases on:

Economic Growth: The econometric analysis shows that the implementation of a tight monetary policy (an increase in the interest rate) significantly reduces the growth of real GDP. Hence, in contrast to standard Washington Consensus views, a tight monetary policy does have a negative impact on economic growth and, presumably, employment.

Inflation: Importantly, the reduction of economic growth does not initially reduce the rate of inflation. Instead, by raising the cost of borrowing, increases in interest rates initially raise the rate of inflation. This is a common finding in VAR analyses of monetary policy. Because interest is a cost of doing business, then increases in interest rates initially raise costs and are passed on as higher prices. In this VAR analysis, eventually, inflation falls to its initial level, but – and this is important – increases in interest rates do not, in the end, lower the inflation rate. Hence, there is a cost to raising interest rates (lower real GDP growth), without any apparent benefit in terms of lowering inflation. Indeed, the result is quite the opposite: inflation briefly increases as a result of the interest rate "shock". Moreover, this decline in output is not simply a short term phenomenon. Real GDP growth stays below its baseline amount for three and a half years, according to the VEC analysis. (Abradu-Otoo, *et. al*, 2003, p. 17).

The Real Exchange Rate: One somewhat surprising result concerns the direction and the size of the effects of interest rates on the real exchange rate. The real exchange rate initially depreciates when the interest rate goes up. One possible explanation is based on the fact that cocoa and other agricultural products are a major export product in Ghana. Increases in interest rates increase the cost of holding inventories, and therefore might lead sellers of agricultural products to reduce their stocks of the product, thereby lowering the export price, which leads to a depreciation of the real exchange rate. Hence, increases in the interest rate appear to have overall negative impacts on economic performance: lower economic growth and temporarily higher inflation, and, as just suggested, they might lower export prices.

3.5.3 Monetary shocks

The money supply can also have an important impact on the economy. According to the VEC results, an increase in the money supply, from whatever sources, does have the expected results. Within the first quarter inflation rises and the real value of the currency

depreciates. The central bank responds to the monetary shock, and the increases in inflation and exchange rates, by raising interest rates. The net impact of this is increased instability in real GDP growth, but that growth falls below the baseline for a period of time due to the interest rate increase resulting from the Bank of Ghana's monetary policy.

3.5.4 Private credit shocks

Some of the most interesting results concern the impact of private credit on the economy. Increases in private credit increase the rate of growth of GDP, while at the same time lowering the rate of inflation. Interest rates also fall and exchange rates depreciates rather little. One channel through which private sector credit could increase economic growth is through its impact on investment. Later in the paper, we present evidence that shows that private capital flows positively impact real fixed capital formation in Ghana, but this effect only exists during the period of financial reform (1987 onwards).

3.5.5 Effect of GDP growth on inflation

Of significant interest is the impact of increases in real GDP growth on inflation. The VEC results indicate that increases in real GDP growth have relatively small, and short-lived, positive effects on inflation. This suggests that the inflationary costs of increasing output growth are likely to be small. This is to be expected since increases in GDP growth have not only a demand side effect, which might raise inflation, but it also increases supply, which would tend to lower prices and inflation.

3.5.6 Conclusion from the VEC analysis

The Bank of Ghana's VEC model of the transmission mechanism of monetary policy is instructive. It suggests that increases in interest rates can have a stagflationary impact on the economy, causing both an increase in inflation and a reduction in real GDP growth. The implication of these results is that a monetary policy oriented toward lowering the inflation rate by raising interest rates could be very difficult to carry out successfully and may have significant costs in terms of output growth, employment and poverty reduction. At the same time, policies to increase GDP growth have relatively small positive impacts on inflation, possibly because of supply-side impacts. It is important to add to this picture the relationship between the exchange rate and inflation. The VEC results suggest a positive pass-through of exchange rate depreciations on inflation, but the impact is not one-for-one. More work is necessary to more precisely pin down the effect.

3.5.7 Our econometric estimates of monetary policy

The Bank of Ghana's VEC model described above gives a good picture of the channels and impacts of monetary variables. But it does not give us clear estimates of the impacts of changes in monetary policy rules on economic growth, and on other variables of interest, including inflation and exchange rates.

In order to estimate the impacts of changes in monetary policy, we built two simple macro-econometric models of monetary policy. We used a similar but somewhat simpler approach because of data limitations and other considerations (see Appendix A for much more detail on our model and simulations). Our models contain the following endogenous variables: exchange rate changes, inflation, and economic growth. Both models use the price of oil as an exogenous variable. The two models differ in that one adds the short term interest rate as the tool of monetary policy and the other uses the rate of growth of the money supply as the tool of monetary policy.

Our results indicate that more expansionary monetary policy has modestly positive impacts on economic growth, without having large negative impacts on inflation and exchange rates. For example, as Table 6 below indicates, an increase of money supply growth by 5% points for five years over the baseline will, on average, annually lead to a quarter percentage point increase in economic growth while raising inflation by only 1.5 % points. Exchange rate depreciation increases only modestly.

Table 6.
Monetary Simulation:
Impact of Money Growth Increase by 5% Points, held over year period

	2000	***2001***	***2002***	***2003***	***2004***
EXCHANGE RATE	1.51	0.70	1.83	1.82	2.17
GROWTH	0.05	0.19	0.23	0.27	0.28
INFLATION	0.27	2.07	2.30	1.77	1.50
PRICE OF OIL	0.00	0.00	0.00	0.00	0.00
MGROWTH	5.00	5.00	5.00	5.00	5.00

Notes: Exchange Rate Change is percentage rate of change of the exchange rate – an increase is a depreciation; "growth" is % rate of growth of real GDP; Inflation is "rate of" inflation; price of oil is the logarithm of the price of oil.
Source: See Appendix A.

3.5.8 Summary of econometric model results

Our results and those of the Bank of Ghana together imply that a responsibly more expansionary monetary policy is both feasible and can have positive impacts on economic growth without having significantly negative impacts on inflation and economic growth. Moreover, the results indicate that interest rate *increases* can have stagflationary costs, and that increases in GDP growth appear to have minimal impacts on inflation. Hence, having a narrow focus on controlling inflation by raising interest rates and moderating economic growth in order to contain inflation is not a sensible strategy, especially in light of the significant costs in terms of forgone income and employment in a poor country such as Ghana.

But, our results also show that more expansionary monetary policy, by itself, cannot solve the problem of low growth, employment and poverty. Other complementary policies, including new financial market policies, will be necessary as well. Given the difficulties in identifying macroeconomic relationships in Ghana, especially given data limitations and structural uncertainties, one cannot draw definitive conclusions about economic policy

from this econometric exercise. But the results do suggest some very important lessons in relation to the IMF financial programming model.

3.5.9 A note on the costs of inflation

Given that the costs of fighting inflation are significant, as just described, the question arises: how large are the benefits? The answer is that the benefits of lowering inflation depend on, among other factors, how high the inflation rate is to begin with. Most research suggests that inflation above 20 percent per annum can have significant negative consequences for employment, poverty and economic growth. On the other hand, there is very little evidence that inflation at 20 percent or below has significant negative impacts (see, for example, Bruno and Easterly, 1998; Pollin and Zhu, 2005). Applied to the case of Ghana, these results suggest that bringing down the inflation rate from 40 percent to below 20 percent after 2000 was in all likelihood an important and useful product of Ghanaian macroeconomic policy. However, the same results do raise the question of whether it makes sense to establish a goal of bringing down the inflation rate significantly further to the low single digits as is enshrined in most of the IMF and PRSP documents. The costs in terms of excessive real interest rates and forgone output, income and employment can be much greater than the benefits.

3.6 Monetary Policy for Employment Creation and Poverty Reduction

Now that Ghana has stabilized the inflation rate at a moderate level, and foreign debt obligations will be significantly reduced, monetary policy should focus more on generating employment and more rapid economic growth, rather than reducing inflation rates even further at quite uncertain benefits. As discussed above, the emphasis on reducing inflation adds an additional constraint to the already highly constraining monetary, debt and reserves targets. Moreover, these targets and the tools used to achieve them – ceilings on domestic credit (or reserve money) and floors on international reserves – themselves have rather uncertain impacts on the Ghanaian economy. Yet, as our discussion above makes clear, their bias is in the contractionary direction.

It is time to place employment center stage along with inflation control, debt reduction and reserve accumulation in the formulation of monetary policy. Doing so would entail the following:

1. When other targets are met, the Bank of Ghana should push as much as possible in the expansionary direction, rather than maintaining excessive caution with respect to the monetary policy setting.

2. The focus on reducing inflation to the low single digits should be abandoned. Instead, the Bank of Ghana should stabilize inflation at its current rate, and protect against significant increases in the inflation rate.

3. The Bank of Ghana has already created two tools to help evaluate monetary policy choices in terms of their impact on real economic performance – a Composite

Index of Economic Activity and a Business Confidence Index. The Composite Index of Economic Activity includes a variety of indicators that are available on a timely basis. These indicators provide a sense of where the real economy is heading and can be used to adjust decisions concerning monetary policy. The Composite Index of Economic Activity also incorporates a measurement of employment, available from SSNIT, which could be further developed into an instrument for employment-targeting. The Business Confidence Survey provides useful information on prevailing sentiments concerning economic performance – another tool for enriching monetary policy deliberations. These current initiatives could be strengthened over time to provide a foundation for incorporating real targets into monetary policy decision-making.

4. The Bank of Ghana should loosen its credit ceilings to support credit expansion for employment generating and poverty reducing financial intermediation. This would allow a more rapid increase in money and credit, which, as we saw above, can lead to somewhat more rapid real economic growth. This policy will need to be supported by other changes in the financial sector if it is to have a major impact on employment and poverty. As we discuss below, banks are relatively unwilling to invest the effort to find worthy borrowers, as the high levels of excess reserves attest. A more active approach through the credit policies of the Bank of Ghana, especially to support lending by small and rural banks, would likely be much more effective.

Role of the Financial Sector

4.1 Financial constraints to improving employment opportunities

Clearly, the conduct of monetary policy has a direct effect on Ghana's ability to realize an employment-intensive development path. However, the structure of the financial sector impacts the effectiveness of monetary policy in influencing economic outcomes. Ghana's financial institutions, dominated by the banking sector, are not currently structured to mobilize resources for investment and employment creation. Instead, banks are geared to extend a limited amount of high cost, short-term credit.

One of the central roles of a financial system is to facilitate the management of risk associated with the process of development. However, the possibilities for risk management in Ghana are circumscribed by limited access to the appropriate type of developmental financial services that would encourage investment. Barriers to credit and financial markets are a particularly severe problem for smaller enterprises and those operating in the informal economy. Rural entrepreneurs and individuals engaged in agricultural production also have limited access to affordable credit. Since these activities account for the vast majority of employment in the country, financial constraints have a negative impact on efforts to improve employment opportunities.

Not only is access to credit limited, the cost of credit is also high in Ghana. This represents a significant constraint for many investors, large and small, both in terms of direct costs and cash flow management. Under these conditions, firms are reluctant to take advantage of investment opportunities by borrowing. Those enterprises with existing debt can encounter problems making required payments, adding to the uncertainty of sustaining productive activities and employment. Many factors are frequently identified as contributing to the high cost of credit in Ghana: large interest rate spreads, concentration in the banking sector, the asset portfolio of banks (including reserves), and high transactions costs, in some cases linked to inadequate information.

Before moving into a more detailed discussion of the specific structural barriers found in Ghana's financial sector, it is important to consider these institutional constraints within a larger context. Specifically, financial constraints may not be the only, or even the most binding, constraints to economic development and poverty reduction in Ghana. Removing the financial barriers that impede the improvement of employment opportunities in Ghana must be coordinated with other policy interventions.

For example, small, agricultural enterprises might be able to make productivity-improving investments with adequate and affordable sources of credit, but there might not be any incentive to undertake these improvements unless the producers have access to markets. Securing access to markets could involve new infrastructure investments, expanding domestic demand, providing business services that facilitate exchanges between sellers and potential buyers, or creating marketing channels for non-traditional exports. Providing access to credit is necessary, but not sufficient, for improving employment outcomes in Ghana.

Financial reform and monetary policies must be seen as elements of a broader, coherent policy framework for development. Otherwise, simply removing barriers by changing the nature of the financial sector will not yield the desired outcomes. This section of the report describes the financial sector constraints and policy issues that should be address within a broad development strategy. The next section, Section 5, proposes some possible solutions.

4.2 Limited access to affordable credit

As described above, the financial intermediation system in Ghana is not operating so as to promote economic growth and employment. Among the most important problems in this regard is the lack of access to medium- and long-term credit at low lending rates. Three core factors that contribute to the relatively high cost of credit are: (1) the unusually high interest rate spreads between lending and deposit rates, (2) the high level of concentration in the banking sector, and (3) the asset portfolio of the individual banks.

4.2.1 Interest rate spread (deposit/lending rates)

The spread between lending and deposits rates is extremely large in Ghana, and has increased after financial markets were liberalized in the late 1980s and early 1990s (Sowa 2002). Table 7 presents the interest rate spread in the Ghanaian Banking system relative to

the spreads in several other sub-Saharan Africa. Ghanaian interest rate spreads are among the highest in Africa.

Table 7
Lending Rates and Spreads.

	Lending Rate		***Spread****	
	2000	**2004**	**2000**	**2004**
Ghana	**47.0**	**28.8**	**30.2**	**21.3**
Gabon	22.0	18.0	17.0	13.0
Kenya	22.3	12.5	14.2	10.1
Mauritius	20.8	21.0	11.2	12.8
Mozambique	19.0	19.2	9.3	9.3
Nigeria**	21.3	19.2	9.6	5.5
Tanzania**	21.6	13.9	14.2	9.7
Uganda	22.9	20.6	13.1	12.9
Zambia	38.8	30.7	18.6	19.2

* Spread: Lending rate minus deposit rate (not shown).
** For Nigeria and Tanzania, the central bank lending rate is shown.
Source: Bawumia, Belnye and Ofori (2005), p. 3.

As Table 7 shows, even though the bank spread in Ghana has dropped by almost one-third between 2000 and 2004, it is still extremely high. Moreover, the bank lending rate still stood at almost 30 percent on average in 2004. During most of 2004, the inflation rate hovered around 12 percent. Therefore, a rough estimate of the real lending rate in 2004 was 18 percent, a very high real rate of interest by any standard. Lending rates for small producers and informal enterprises could be substantially higher. Although there is no complete consensus on the reasons for such high real interest rates and spreads, there are a number of factors which most analysts agree play a role.

4.2.2 Concentration in the banking sector

The banking sector currently consists of a significant number of different types of institutions, with approximately twenty major banks and 120 rural and community banks. The major banks group consists of 8 commercial banks, 3 development banks, 2 merchant banks, 6 universal banks and one apex bank (Bawumia, *et. al.*, 2005, p. 4). The degree of concentration in the banking system has fallen somewhat in the last few years, but it remains high. The top five banks hold about 70 percent of the banking assets and deposits. Moreover, there is significant evidence of interest rate coordination among the banks (Buchs and Mathisen, 2005; Bawumia, *et. al*, 2005).

4.2.3 Asset portfolio of banks and excess reserves

At the same time that interest rates and spreads are very high, banks held large amounts of excess reserves. Table 8 shows the relationship between required and actual reserve ratios of deposit money banks (DMB's). Reserve ratios are the level of reserves expressed as a percentage of total deposits. It should be noted that, as of July 1st, 2005, the secondary reserve requirement was reduced to 15 percent, down from 35 percent. This should cause

the composition of reserves to shift from that portrayed in Table 8. Nevertheless, the fact that banks argue that reserve requirements are too high is puzzling, in light of the high level of excess reserves.

Table 8.
Required and Excess Reserves Among Deposit Taking Banks 2003 and 2004

	Primary		**Secondary**		**Total**	
	Minimum	Actual	Minimum	Actual	Minimum	Actual
December 2003	9.0	9.8	35.0	69.4	44.0	82.9
December 2004	9.0	9.7	35.0	45.0	44.0	57.3

Source: Bank of Ghana, Statistical Bulletin, January, 2005a, Table, 7.

The treatment of foreign exchange deposits provides a partial explanation for why banks argue for a lower reserve requirement. Although primary reserves are held as foreign exchange, the entire secondary reserve ratio of 15 percent (35 percent prior to July 2005) must be held in cedis. This imposes modest costs on banks with significant foreign exchange deposits. However, the rules governing foreign exchange deposits cannot fully explain the pattern of reserves observed in the banking sector.

Apart from high excess reserves, banks also hold a large amount of government securities. Banks hold about 20 percent of their assets in government securities, and another eight percent in the paper of public corporations. They hold about 10 percent more in cash. This leaves only about 30 percent to be held in claims on the private sector (Bank of Ghana, 2005a). In recent years, falling interest rates on these assets have reduced the level of investment in public securities. Nevertheless, the overall level of investment in public debt instruments remains quite high.

Most analysts suggest that the availability of high interest rate government securities help to keep lending rates high. Of course, this cannot explain why deposit rates are so low, and therefore why spreads are so high. The holding of large excess reserves might help to explain these large spreads, but it is still unclear as to why the banks hold such large excess reserves.

One explanation might be the absence of deposit insurance. A second contributing factor might be insufficient numbers of low cost, low risk borrowers. A third factor might be a lack of motivation on the part of bankers to find and develop more customers who can become effective borrowers. This lack of motivation might stem from a lack of competition and an absence of compelling reason due to the high profitability of investing in other assets.

In principle, the government could play an important role in generating more motivation for banks to more effectively utilize their reserves to develop and fund new customers.

4.3 Dominance of short-term credit

Most credit in Ghana is short-term.[3] There is inadequate credit for medium- and long-term investments. A number of factors constrain the availability of longer-term credit, one of the most important being the term structure of deposits. As a result of the short-term structure of deposits, banks are limited in their ability to make long-term loans. The lack of long-term deposit instruments, of deposit insurance, or the existence of secondary markets for loans, severely limits the maturity transformation capabilities of the banking system. As a result, the deposit money banks are unable to provide needed long-tem credit. The limited diversity of credit instruments reduces the ability of the financial sector to facilitate the management of risk for producers and investors.

4.4 Limited access to credit, particularly in rural areas and among smaller firms

One of the obstacles to generating more employment is the limited access smaller firms have to credit. According to several recent studies, most small and medium sized firms felt constrained in their access to credit. "A good majority of the firms, 62 percent, felt fully constrained in accessing funds while 19 percent felt partially constrained. Only 12 percent felt unconstrained in accessing funds. This means a good majority of firms 81 percent felt somewhat constrained in having access to funding." (Ofei, 2001; see also Gokel and Akoena, 2002).

Credit is also hard to come by in rural areas, where self-employment in small-scale agriculture dominates the economic opportunities available. As pointed out earlier, poverty rates are highest among individuals working informally and in the agricultural sector. Therefore, if the financial sector is to support poverty reduction, it must facilitate investment to raise living standards and improve employment among informal workers and rural producers.

There are various reasons why most small-scale and rural producers do not have adequate access to credit. First, transactions costs tend to be high for smaller borrowers. A large number of small-scale loans are more costly to deal with than a few large ones. Second, low-income borrowers might not have the collateral to secure a loan. Under these circumstances, banks will be reluctant to lend. Third, information about potential borrowers is lacking. This is particularly true for small-scale producers and informal enterprises. Fourth, the lack of skills and business background to manage credit and cash flows limits access to finance. Therefore, small producers require more of the banks' time and resources in terms of monitoring.

In the rural sector, a system of agricultural banks has been established to help extend financial services and credit to this sector. The network of rural banks and associated offices is fairly extensive, providing an alternative tier of banking for the rural economy. However, the distribution of these banks is not even throughout the country. Table 9 presents the ratio of licensed rural banks and registered offices to the population for 9 of

[3] Although bank credit is almost entirely short-term, the repeated rolling-over of short-term loans in Ghana has allowed some firms to use such loans for long-term finance (Brownbridge, 1998).

Ghana's administrative regions. The three least well-served regions – the Upper East, Upper West, and North Regions – are also the areas with the highest poverty rates, with much of the population relying on small-scale, informal agricultural production.

Table 9
Regional Differences in Number of Licensed Rural Banks and Offices

Region	***Licensed Rural Banks and Registered Offices***	***Population, 2000 ('000s)***	***Population per Rural Bank ('000s)***	***Poverty Rates (GLSS 1998/9)***
Ashanti	22	3,188	145	28%
Central	21	1,580	75	48%
Eastern	19	2,109	111	44%
Brong-Ahafo	18	1,825	101	36%
Western	12	1,843	154	27%
Volta	9	1,612	179	38%
Upper East	3	917	306	88%
Upper West	2	574	287	84%
North	3	1,855	618	69%

Note: The Greater Accra Region is omitted because of its large urban population.
Source: Bank of Ghana,2000 National Census, and GSS (2000).

In addition to the factors driving the high cost of credit in Ghana outlined in the previous section, there are additional problems that contribute to the scarcity of affordable credit for small-scale activities. One concern is the risk-aversion of the banking sector. The profile of depository banks in Ghana suggests that the banks are excessively risk averse, or do not feel under competitive pressures to expand their market share. They seem content to achieve the high rates of return from their current activities (see Bawumia, Belnye and Ofori, 2005). Small enterprises are likely to be perceived as more risky than large-scale, established firms and will therefore have a more difficult time securing credit.

The system of rural banks is particularly prone to these perverse incentives. Although borrowers must provide, in most cases, collateral, business reports, and other documentation to access credit, the degree of strictness is minimal compared to the major commercial banks.[4] This raises the risk profile of these loans still further and increases the incentive to hold other, less risky, assets – including excess reserves in the form of government securities. For example, in the first quarter of 2005, "primary reserves showed an excess of 9.0 percent over the mandatory minimum requirement of 13.0 percent. The secondary reserve ratio also recorded an excess of 26.2 percent above the mandatory requirement of 30.0 percent." (Bank of Ghana, 2005b, p. 54). The Bank of Ghana notes that rural and community banks continue to shift investment into holding government bonds and bills, a trend that "can be explained by the apparent high risk associated with lending vis-à-vis the guaranteed return and risk-free nature of Treasury bills." (Bank of Ghana, 2005b, pp. 53-4)

[4] Personal communication between Ms. Lynda Pickbourn, national consultant on this project, and Mr. Martin Ofori, Bank of Ghana.

There are significant problems on the demand side as well. Borrowers lack collateral and skills that would make them lower-risk, successful borrowers. This is true of small businesses as well as small borrowers in the city and the countryside. At the same time, the large deposit money banks appear to have relatively little interest in developing ways of acquiring information on the repayment prospects of small borrowers.

Despite these problems, there is evidence that there has been growth in rural banking relative to the banking sector as a whole and that lending by these banks has begun to increase in recent years. Table 10 summarizes these changes from 2000 to 2004. These positive trends may represent an important step forward in increasing access to financial services in the rural areas.

Table 10

The Rural Banking Sector as a Share of the Total Banking Industry, Ghana

	2000	***2001***	***2002***	***2003***	***2004***
Deposits	3.2%	4.3%	6.1%	6.3%	6.3%
Loans	1.9%	2.3%	3.5%	3.3%	4.9%
Total Assets	2.6%	3.5%	4.9%	4.9%	5.4%

Source: Bank of Ghana.

4.5. Informal financial institutions

Informal entrepreneurs and small-scale businesses that cannot access formal credit markets often rely on informal sources of credit. Research suggests that, in some circumstances, informal credit institutions have distinct advantages vis-à-vis formal financial institutions. Informal credit institutions frequently have more detailed knowledge of local conditions, their clients, and the communities in which they operate (Lyon, 2003; Amoako-Tuffour, 2002; Aryeetey and Udry, 1997). They often face lower transactions costs when extending credit to underserved communities and regions. In these respects, informal suppliers of credit have successfully relaxed some of the constraints that inhibit access to formal financial services for people working in small-scale enterprises or informal self-employment.

The historic development of Ghana's banking sector partially explains the duality between formal and informal financial institutions. As noted previously, lending to government and public enterprises dominated the extension of credit in the country during the decades following independence. Many banks never had an incentive to develop the institutional capacity to collect information and monitor small-scale private lenders (Nissanke and Aryeetey 1998). Under these conditions, informal financial institutions helped to fill this gap. However, informal suppliers of credit face constraints of their own.

Informal suppliers of credit are not well integrated into the banking system, limiting the resources at their disposal. Formal credit institutions enjoy economies of scale and can mobilize large amounts of deposits for credit extension. Informal credit networks lack the resources and scale economies of formal banks. However, large commercial banks currently cannot serve small-scale borrowers efficiently. By forging linkages between

formal and informal credit institutions, more financial resources could be made available to support the expansion and improvement of informal activities, with potentially large positive impacts on employment outcomes (Aryeetey, 2003, 1998; Amoako-Tuffour 2002). These mutually beneficial interactions have not been exploited to their fullest extent in Ghana. We suggest ways in which these institutions could be better integrated later in the report.

4.6 Credit and the Determinants of Investment in Ghana

We have stressed that both monetary policy and institutional factors influence financial variables. These financial variables, in turn, affect real economic outcomes that partly determine employment opportunities in the country. One channel through which financial variables impact employment opportunities is through fixed investment in productive capacity. Research has suggested that financial development plays a role in determining the level of investment in sub-Saharan Africa (Ndikumana 2000). Therefore, it is useful to examine the determinants of fixed investment in Ghana, in the context of this discussion of the relationship between financial sector constraints and monetary policy.

To investigate the determinants of investment in Ghana, we estimated an econometric model for the period 1961 to 2002. The details of the methodology and the statistical analysis are presented in Appendix B. Here we focus on the main findings of this exercise. The results of this analysis should be approached with some caution due to the relatively short time period and the limited amount of data available. Nevertheless, we found that a number of variables have a significant impact on investment in Ghana: current government spending, exports (influenced by the real exchange rate), domestic credit supplied to the public sector, and domestic credit supplied to the private sector (in the years after 1983 to reflect the beginning of economic reforms). Table 11 presents the long-run investment elasticities for these three variables.

Table 11
Responsiveness of Total Gross Investment (as a % of GDP) to key determinants of investment, Ghana, 1961-2002.

Variable	***Elasticity***
Govt current expenditures (% of GDP)	0.78
Total exports (% of GDP)	0.34
Credit to the public sector (% of GDP)	-0.57
Credit to the private sector (% of GDP)*	0.27

Note : Elasticities are evaluated at the variable means. Calculations based on the estimated coefficients of Equation (5a), Table A3, Appendix A. Total gross investment includes both public and private investment, since dis-aggregated data were not available for the time period investigated.
* The elasticity of investment with respect to private sector credit is evaluated from 1984 onwards, when economic reforms were initiated.

Current government expenditures were found to have a strong positive impact on investment, other factors being equal. This is due to two factors. First, current government spending is likely correlated to some extent with government capital expenditures. Second,

current expenditures could have a "crowding-in" effect on private investment. Unfortunately, the lack of disaggregated data over a significantly long time period prevents us from disentangling these two effects.

Other studies of investment in sub-Saharan Africa and other developing regions have found that trade in general, and exports specifically, are important determinants of investment and growth (Ndikumana, 2000; Harrison, 1996). In the analysis of the determinants of investment, presented fully in Appendix B, the real exchange was found to have a significant impact on domestic investment: a depreciation in the real exchange rate was associated with higher rates of investment. The relationship between the real exchange rate and domestic investment could go either way. If a country was heavily dependent on imported capital goods, a depreciation could lower investment. However, if the positive impact on the tradable sector outweighs the negative impact on the cost of capital goods, the overall effect would be positive. In Ghana, this second situation appears to prevail.

The financial variables produced more surprising results. The real, short-term interest rate had no discernable impact on investment in Ghana. Furthermore, the level of domestic credit supplied to the public sector had a significant negative impact on investment.

The composition of domestic credit (previously illustrated in Figure 5), provides one explanation for this result. Throughout much of the period studied, the majority of domestic credit in Ghana financed the public sector – both government spending and public enterprises. Because of the country's financial structure, more credit extended to the public sector reduces the incentive to lend to more risky, private sector activities. As discussed earlier, banks preferred to hold their assets in the form of government bonds, with their relatively high yields and low risk. They had little incentive to extend credit to the private sector, particularly to smaller enterprises. Other research into investment behavior in sub-Saharan Africa supports these conclusions: public borrowing has been associated with less fixed investment, if other factors remain the same (Ndikumana 2000).

The impact of public credit and government spending on investment in Ghana is complex. These estimates suggest that government spending has had a positive impact on the rate of fixed capital investment in Ghana. However, increased domestic credit to the public sector – given the structure of the financial system and the ways in which monetary policy has been conducted – can discourage investment when other factors remain constant. In particular, increased credit to the public sector only has a negative impact on fixed investment when domestic credit to the private sector and government spending do not change. Therefore, the overall impact of government spending on investment activity depends on how public expenditures are financed, the structure of the financial system, and how monetary policy is conducted. Increased public borrowing may crowd out private investment when monetary policy tightens restrictions on domestic credit or if financial structures inhibit the extension of credit to finance private investment.

If we restrict our attention to credit to the private sector only, a different dynamic emerges. Over the entire time period, 1961-2002, our analysis shows little impact of private sector credit on domestic investment. However, the reforms that began in 1983 were associated

with an increase in the share of credit going to the private sector. Overall, the credit markets showed increased buoyancy after the economic uncertainty of the 1970s and early 1980s was tamed, although the cost of credit increased noticeably (Bownbridge, 1998).[5] After the reforms were introduced, our econometric estimates reveal evidence of a notable positive impact of private credit on domestic investment.

These results suggest a number of important policy conclusions. First, monetary policy impacts real investment activity in Ghana through two channels: the real exchange rate and the amount of credit extended to the private sector. The macroeconomic model of the Bank of Ghana, discussed earlier, also found that private credit and the exchange rate were important channels through which monetary policy could affect real economic performance (Abradu-Otoo, *et. al*, 2003). Second, the effectiveness of expanding the credit supply depends on the institutions governing the domestic financial sector. Third, government spending can encourage domestic investment, but only if excessive domestic borrowing is avoided.

Although the increase in private sector credit appears to have had an impact on domestic investment, financial liberalization, by itself, does not necessarily lead to economic and social development. The constraints outlined in this paper – high domestic real lending rates, the short-term structure of loans, large interest rate spreads, and limited access to financial services for agricultural and informal activities – could very well have been exacerbated by the process of liberalization. Structural problems still remain. Other researchers have found that the process of financial liberalization pursued under the structural adjustment programs did not adequately deal with the institutional problems of Ghana's financial system (Aryeetey 2001, Nissanke and Aryeetey 1998). The reforms have not transformed the structure of the financial sector to support growth, employment, and poverty reduction.

5. Possible solutions to structural problems in the financial sector

As discussed earlier, institutional constraints in the financial sector will limit the effectiveness of monetary policy. Therefore, a transition from an "inflation-targeting" monetary policy regime to a monetary policy regime that supports growth and employment must be coordinated with reforms to the financial sector. There are a number of concrete steps that could be taken to address the constraints identified in the previous section. Here we briefly discuss six such interventions: introduce credit guarantee schemes, develop a public deposit insurance policy, introduce asset-based reserve requirements, diversify the range of financial instruments available in Ghana, forge links between formal and informal financial institutions, and expand business services and financial information systems.

5.1 Credit guarantee schemes to reduce risk premiums

As mentioned above, substantial risk premiums can prove debilitating for investments in employment-improving activities. Extending credit to medium- and long-term productive

[5] The government also introduced policies to promote domestic investment in the mid-1980s (Brownbridge, 1998). This could have helped strengthen the relationship between private credit and investment.

investments is not attractive to banks in Ghana because of the perceived risk and the availability of substitute assets, such as treasury bills, that have high returns and are less risky. One way of reducing the risk associated with these investments is to have the government guarantee a portion of the loan to support approved projects. Government loan guarantees have implications for fiscal policy, since a non-performing loan would place demands on public resources. However, with adequate safeguards to prevent abuse, underwriting loans is a viable strategy to lower risk premiums for investments that support employment-intensive growth.

One potential problem with loan guarantees is that they can create the wrong incentives for borrowers. If borrowers bear no responsibility for the consequences for non-performing loans, then the incentive to insure that employment-oriented investments bear fruit is weakened. Therefore, it is important to design a loan guarantee scheme that reduces risk premiums while simultaneously preserving a system of monitoring and accountability on the part of the borrower. This could include requiring the borrower to supply some form of collateral, even if a large portion of the loan were guaranteed. The collateral requirements could be far less stringent than would be the case for other types of loans.

The interest rate charged on guaranteed loans would be lower than the prevailing market rate. The appropriate level for the concessional interest rate would be a weighted average of the market rate of interest for the type of loan extended and the risk-free rate of return on government securities. At this rate of interest, the program would not place any economic burden on the banks that participated in the guarantee scheme. However, it does suggest that the lowest possible interest rate would be the prevailing rate on government securities (for a 100% secured loan). Therefore, such a credit guarantee program can only lower the cost of borrowing so far. The program would be more effective if paired with strategies to reduce the average cost of borrowing, including the risk-free rate, throughout the Ghanaian economy.

5.2 A public deposit insurance policy

The structure of the liability side of banks' balance sheets limits the effectiveness of financial intermediation in Ghana. Most of the deposits held by banks are short-term. This increases the risks that banks face in terms of meeting their obligations at any given moment. Short-term deposits raise the risks associated with lowering reserves and extending additional credit. In addition, a short-term liability structure makes it difficult to extend medium- and long-term credit. If resources are tied-up in longer maturity loans, a bank's ability to meet short-term obligations is compromised. A public deposit insurance policy could reduce the risks associated with short-term deposits and encourage the extension of a larger supply of medium- and long-term credit. At the same time, steps would need to be taken to make sure that banks' asset portfolio's are not excessively risky in order to avoid "moral hazard" problems that beset some systems with deposit insurance.

5.3 Asset-based reserve requirements and prescribed assets

The idea behind asset-based reserve requirements is straight-forward: give the banking system an incentive to hold a portfolio of assets that channels resources towards employment-targeted investments. In recent years, banks have preferred to hold short-term treasury bills with high yields rather than extending credit to riskier projects. The introduction of asset-based reserve requirements would alter these incentives. For example, if banks extend loans to approved employment-targeted projects, they would enjoy a lower reserve requirement than if they held other types of assets (e.g. other types of loans, t-bills, short-term securities, etc.). Banks that are subject to a lower reserve requirement would enjoy a competitive advantage in the credit market. By introducing such a system, financial resources could be directed to strategic projects, reducing the impediments to employment creation.

Asset-based reserve requirements differ from other instruments sometimes used for the allocation of financial resources: prescribed assets. A prescribed asset policy represents a type of financial quota. Under such policies, a certain fraction of a bank's (or other financial institution's) assets must be held as investments or loans that support a priority area of economic development. Prescribed assets are not new to Ghana. In the past, banks were required to hold 20 percent of their assets as loans to the agricultural sector.

Asset-based reserve requirements create incentives for lending in priority areas while prescribed asset policies typically stipulate that a fraction of assets much support investment in strategic sectors. A version of these strategies could be introduced in Ghana to support employment creation. As with other interventions into the financial markets, it is important to have safeguards in place to prevent corrupt uses of the mechanism.

5.4 Diversify financial instruments

The introduction of new, longer-term securities could improve the financial sector's ability to manage assets and liabilities of different maturity structures. As a result, resources for medium- and long-term financing could be unleashed. One recent example was the creation of a new, longer maturity public debt instrument, the Government of Ghana Index-Linked Bonds. Previously, public debt was finance through the issue of short-term treasury bills, with high debt servicing costs. The creation of a longer-term debt instrument improves the ability of government to manage the public debt. In a similar fashion, the introduction of new financial instruments could help address other impediments in the financial system. For example, the introduction of a more vibrant long-term mortgage market could provide a means of mobilizing household savings, which currently get tied up in illiquid assets, for more productive uses.

5.5 Forge linkages between informal and formal financial institutions

Formal and informal credit markets interact in a number of different ways. In some cases, informal credit institutions may compete with or substitute for formal credit. In other cases,

complementarities exist. For example, formal credit institutions may lend informally mobilized deposits or informal lenders might act as intermediaries for formal institutions (Aryeetey 2003). Complementary linkages can be forged on a number of fronts. For instance, relationships could be built between formal banks and savings and credit associations in order to facilitate group savings and lending for informal and small enterprise development (Amoako-Tuffour 2002). Arrangements between formal banks and *susu* collectors – individuals who mobilize informal deposits and extend credit to their clients – to improve interest rates on deposits and enhance small-scale credit extension provide another example of how these linkages can be fostered (Aryeetey 1998). Developing these new institutional relationships will require a broader regulatory structure for suppliers of credit in Ghana that specifically incorporates a role for informal credit institutions.

The lack of prudential regulations for informal financial institutions may hinder the ability to forge links between formal and informal institutions. Formal financial institutions may be reluctant to enter into a relationship with informal institutions, if there are no safeguards in place to ensure stability in the informal financial sector. An appropriate regulatory framework may need to be developed in order to integrate the activities of the two types of institutions.

5.6 Business services and better information resources

The lack of skills, technical support, and adequate information limit banks' willingness to lend to small-scale producers. Therefore, there is a need to develop capacity for technical assistance, particularly in terms of managing the risks faced by small and medium enterprises. For example, legislation could be developed that requires all banks to have a highly functioning desk to deal with SME applications. Specific parameters would be set to evaluate whether banks comply with the regulations. Similarly, government could spearhead policies that support the establishment of credit bureaus which collect and maintain information on potential borrowers. These credit bureaus could be designed to specifically deal with the information problems associated with small-scale credit applications. The credit bureaus would be charged with facilitating financial services between lenders and potential borrowers.

6. Summary and Recommendations

We have identified three general financial and monetary obstacles hindering government attempts to generate more employment and growth:

1. An inflation-reducing approach to monetary policy, similar to formal inflation-targeting, that does not sufficiently take into account the need for monetary policy to be more supportive of employment generation and economic growth. This is partly due to lack of timely information on the impact of monetary policy on real economic outcomes and also partly due to the way in which the goals of monetary policy are framed.

2. High real lending rates and limited access to credit emanating from the structure of the country's financial institutions. A monetary policy regime that exclusively focuses on inflation and monetary aggregates often contributes to high real interest rates and exacerbates credit constraints.

3. Insufficient utilization of financial resources that do exist to support borrowing that would generate more employment and productive economic activity more generally.

To begin a process to remove these obstacles we propose the following steps:

a. The Bank of Ghana should adopt as its focus a dual mandate of stabilizing inflation at moderate levels while generating more employment and economic growth, a focus that is consistent with its current mandate. In time we would hope that this could lead to the establishment of employment generation and economic growth targets alongside inflation targets.

b. The Bank of Ghana, together with the Ghana Statistical Service, should accelerate its efforts to generate timely data on real economic activity, including employment, which can be used in its deliberations on monetary policy.

c. A commission of inquiry should be established to initiate discussions among government ministries, the banking and finance sector, potential borrowers, representatives from informal and agricultural constituencies, and those in the NGO and academic community into how to overcome the following financial obstacles to employment generation and growth:

    - How to bring down the real rate of interest of government borrowing. This inquiry could include a better understanding of the auction processes for government debt, including the degree of competition involved in the auction process.
    - How to bring down interest margins charged by the deposit money banks.
    - How to make more credit available to those in the private sector who need employment and who can generate employment for others. This would include an investigation of all the tiers of the banking system, both urban and rural. It would also include a discussion of policies that the government and Bank of Ghana can take to support more productive lending to generate more employment in a sustainable and efficient manner. These could include some of the proposals made here, such as loan guarantees and asset-based reserve requirements.
    - How to integrate monetary and financial sector policies much more deeply into the PRSP process, rather than taking monetary policy as a given that the rest of the PRSP has to work around. This would make it much more likely that monetary policy would support the goals of employment generation and poverty reduction. How can monetary policy be a positive force for poverty reduction, rather than a stabilization constraint that the other policies must work around?

This commission of inquiry should have a definite time table and could feed into the overall government plan for poverty reduction.

Appendix A. Monetary policy impacts on the growth, inflation and exchange rates in Ghana: VAR simulation experiments

As we discussed in the text, the Bank of Ghana has undertaken a number of interesting econometric exercises to determine the channels and impacts of monetary policy. (see, for example, Bawumia, et. al., 2003 and Bawumia and Abradu-Otoo, 2003). These studies use vector error correction models (VEC's) to analyze monetary policy. To utilize this framework, they used data going back as far as the 1970's. They were mostly interested in understanding the interactions of key variables, rather than assessing the impacts of changes in monetary policy.

For our work, we are interested in looking at the medium term impacts of changes in monetary policy on key variables such as inflation, economic growth and exchange rates. Moreover, we are concerned about significant structural change in the Ghanaian macroeconomic situation over the last thirty years or so, and have chosen to work with data only since the mid-1980's. For these reasons, we use a somewhat simpler empirical framework more suitable to less data availability and more suitable to the kinds of policy experiments we want to run. In this appendix we describe our simple vector auto-regression model and the monetary policy experiments that are summarized briefly in the body of this report.

We built two simple VAR models to study monetary policy changes. The first model analyzes the following variables: treasury bill rates, inflation, exchange rate changes and real economic growth. The second model substitutes the rate of growth of the money supply (M2 growth) for the treasury bill rate and retains the other endogenous variables. Variable definitions are presented in Table A1.

Table A1

Variables, Definitions and Sources

Variables	Definitions	Sources
Interest Rate	90-day interest rate; %	Bank of Ghana
Inflation	4-quarter rate of change of consumer price index; %	Bank of Ghana
Growth	4-quarter rate of growth of or real GDP; %	Bank of Ghana
Exchange Rate	4-quarter rate of change of the exchange rate; %	Bank of Ghana
Price of Oil	Natural log of the $ price of oil	Bank of Ghana
Money Growth	Rate of Growth of M2 Supply; %	Bank of Ghana

Initial Diagnostic Tests

Unit root tests were performed on all the variables. According to the adjusted Dickey-Fuller tests, none of these endogenous variables have unit roots according to conventional levels of significance.[6]

[6] The treasury bill rate and money supply growth levels of significance are slightly larger than conventional.

Pair-wise Granger causality tests were also carried out on all the variables. Table A2 below reports the results:

Table A2

Pairwise Granger Causality Tests

Sample: 1986Q1 2004Q4, Lags: 4

Null Hypothesis:	Obs	F-Statistic	Probability
GROWTH does not Granger Cause EXCHNGRTCH	76	1.54774	0.19851
EXCHNGRTCH does not Granger Cause GROWTH		1.47563	0.21942
INFLATION does not Granger Cause EXCHNGRTCH	76	1.78534	0.14206
EXCHNGRTCH does not Granger Cause INFLATION		1.23954	0.30264
MGROWTH does not Granger Cause EXCHNGRTCH	76	4.42364	0.00311
EXCHNGRTCH does not Granger Cause MGROWTH		1.32800	0.26862
CREDITGROWTH does not Granger Cause EXCHNGRTCH	76	1.90239	0.12022
EXCHNGRTCH does not Granger Cause CREDITGROWTH		1.55824	0.19563
TBILL does not Granger Cause EXCHNGRTCH	76	0.98365	0.42252
EXCHNGRTCH does not Granger Cause TBILL		1.44924	0.22756
INFLATION does not Granger Cause GROWTH	76	2.71144	0.03720
GROWTH does not Granger Cause INFLATION		0.87916	0.48123
MGROWTH does not Granger Cause GROWTH	76	0.83841	0.50566
GROWTH does not Granger Cause MGROWTH		3.12771	0.02026
CREDITGROWTH does not Granger Cause GROWTH	76	0.53188	0.71271
GROWTH does not Granger Cause CREDITGROWTH		0.32809	0.85816
TBILL does not Granger Cause GROWTH	76	0.26183	0.90141
GROWTH does not Granger Cause TBILL		3.08959	0.02142
MGROWTH does not Granger Cause INFLATION	76	1.36099	0.25684
INFLATION does not Granger Cause MGROWTH		0.36590	0.83207
CREDITGROWTH does not Granger Cause INFLATION	76	1.13800	0.34625
INFLATION does not Granger Cause CREDITGROWTH		2.62349	0.04229
TBILL does not Granger Cause INFLATION	76	1.15357	0.33923
INFLATION does not Granger Cause TBILL		2.13656	0.08584
CREDITGROWTH does not Granger Cause MGROWTH	76	1.05996	0.38327
MGROWTH does not Granger Cause CREDITGROWTH		1.60143	0.18417
TBILL does not Granger Cause MGROWTH	76	1.02689	0.39990
MGROWTH does not Granger Cause TBILL		1.71368	0.15725
TBILL does not Granger Cause CREDITGROWTH	76	1.09504	0.36624
CREDITGROWTH does not Granger Cause TBILL		0.79448	0.53293

The Granger-Causality tests suggest that only a few of these relationships are Granger "causal" at standard significance levels. The significant relations are given below in Table B3.

Table A3

Summary Results of Granger Causality Tests

"Significant" Granger Relationships [1]	**Significance Levels 2**
Exchange Rate "causes" growth	.22
Growth "causes" exchange rates	.20
Money growth "causes" exchange rate changes	.003
Money growth causes credit growth	.18
Money growth causes tbill	.15
Economic growth "causes" tbills	.037
Economic growth "causes" money growth	.02
Inflation "causes" credit-growth	.04

[1] Significance refers to the statistical significance of rejecting the null hypotheses of NO granger causality.
[2] Normal significance levels are .01 to .10 but we use a broader range.

The Granger tests find little support for the claim that monetary policy has a direct link to economic growth or inflation; the main link, based on the pair-wise tests, seems to be through its impacts on exchange rates. Money growth also might have an impact on treasury bill rates and credit growth. Otherwise, money and credit-growth appear to be at least partly endogenous with respect to inflation and economic growth.

One must be cautious in interpreting these results, however. The main problem is that the data series are relatively short so these tests are subject to relatively few degrees of freedom. For this reason, we have chosen to interpret "significance levels" rather loosely.

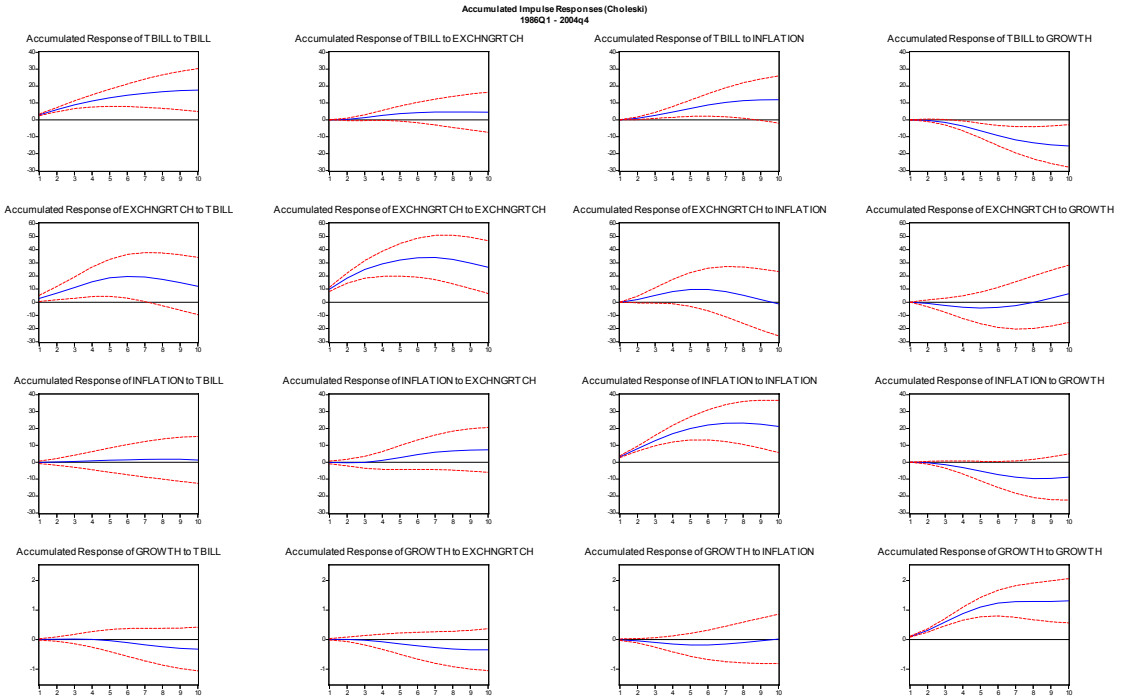
In order to better assess the underlying macroeconomic dynamics, we have built two simple VAR models and will use each of these to describe monetary policy experiments.

Interest Rates as Tool of Monetary Policy

The first VAR model examines four endogenous variables: treasury bill rate (t-bill), the rate of change of the exchange rate (exchange rate), the rate of real economic growth (growth) and inflation (inflation). The logarithm of the price of oil is included as an exogenous variable.

The time period of the analysis is 1986 Q1 about 2004 Q4. Figure A1 shows the VAR impulse response functions with the following ordering: interest rate, exchange rates, inflation, growth.

Figure A1.
Impulse Response Functions, 1986Q1 – 2004Q4,
Interest Rates, Exchange Rates, Inflation, and Growth

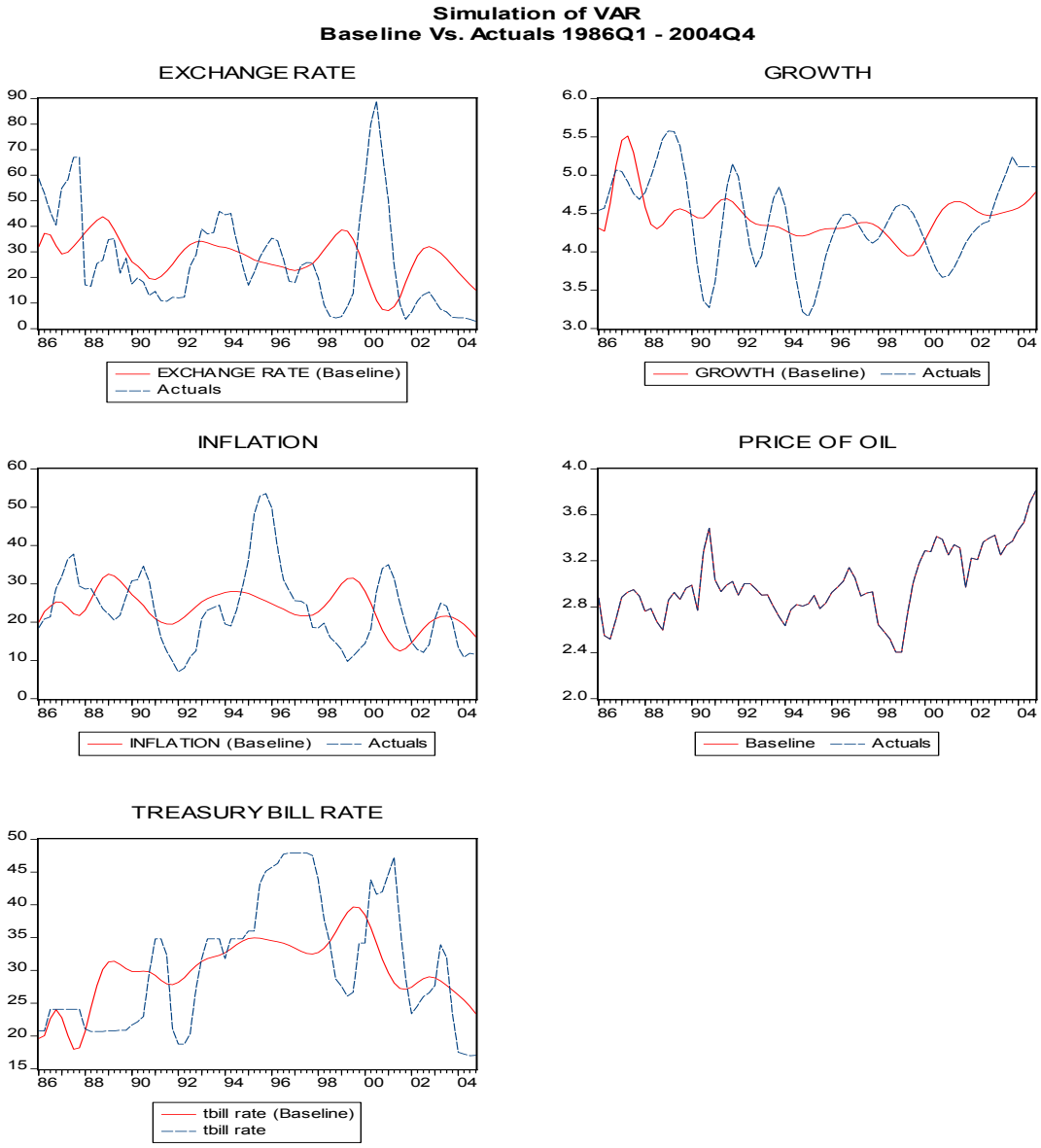


These impulse response functions suggest that interest rate shocks work in more or less the expected ways. We will use this VAR as the basis for our policy simulations.

Figure A2 below shows the simulation of the VAR model compared with the actual variables. As is often the case, the simulations only track the broad changes in the variables and do not do a good job of tracking extreme values and turning points. In any case, we use this model to simulate the impacts of changes in monetary policy.

Figure A3 shows the impacts of lowering the interest rate by 2% points. The impacts on inflation, exchange rates and economic growth are all relatively modest. These results suggest that more expansionary monetary policy would not, according to these estimates, have large costs in terms of higher inflation and more variable exchange rates; but on the other hand, interest rate policy would have to be complemented by other policies to have

Figure A2



significant impacts on economic growth. As we will see below, monetary policy that focuses on increasing the money supply could have larger impacts on the economy.

Figure A3.

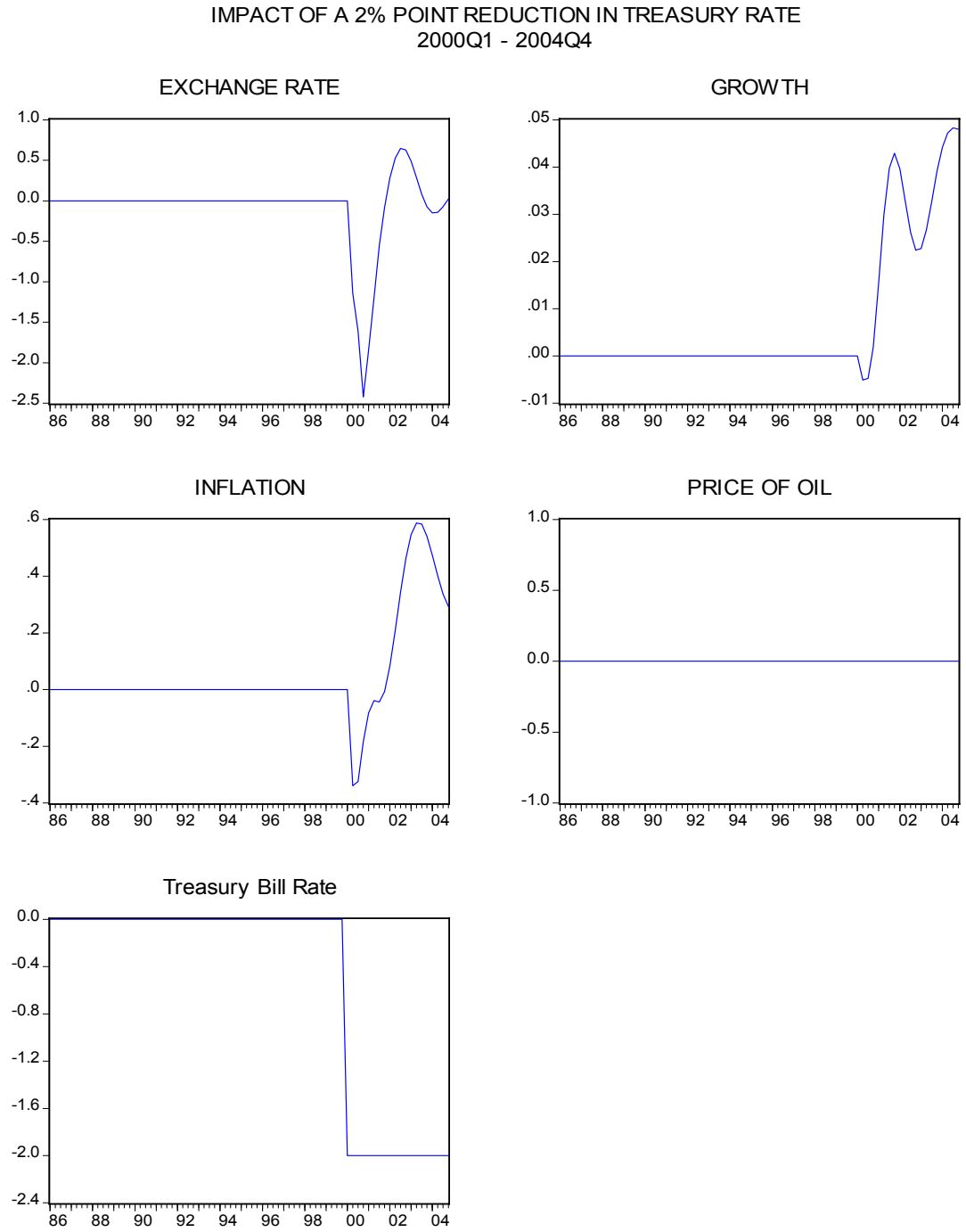
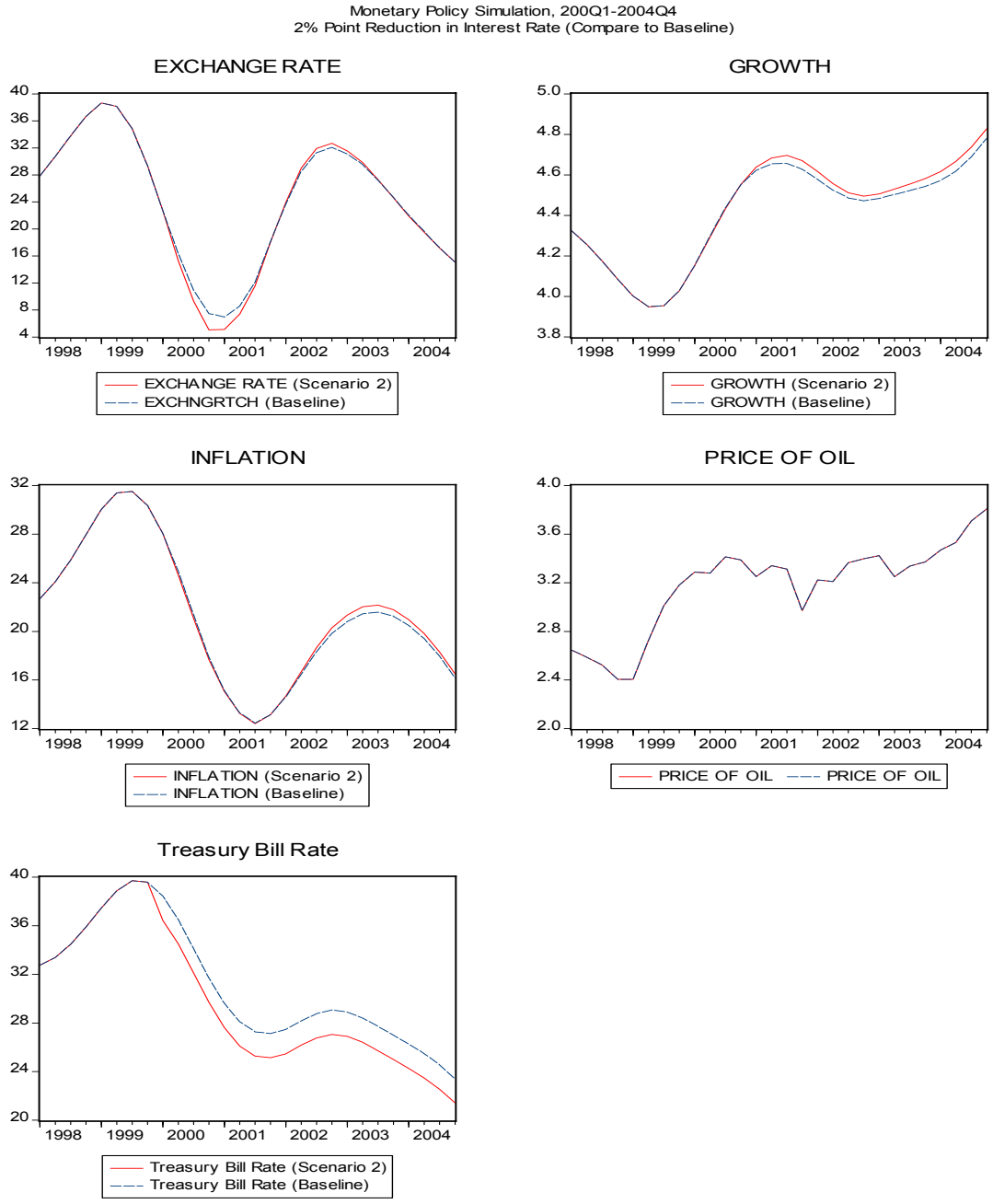

IMPACT OF A 2% POINT REDUCTION IN TREASURY RATE
2000Q1 - 2004Q4
EXCHANGE RATE
GROWTH
INFLATION
PRICE OF OIL
Treasury Bill Rate
86 88 90 92 94 96 98 00 02 04

Figure A3, cont.



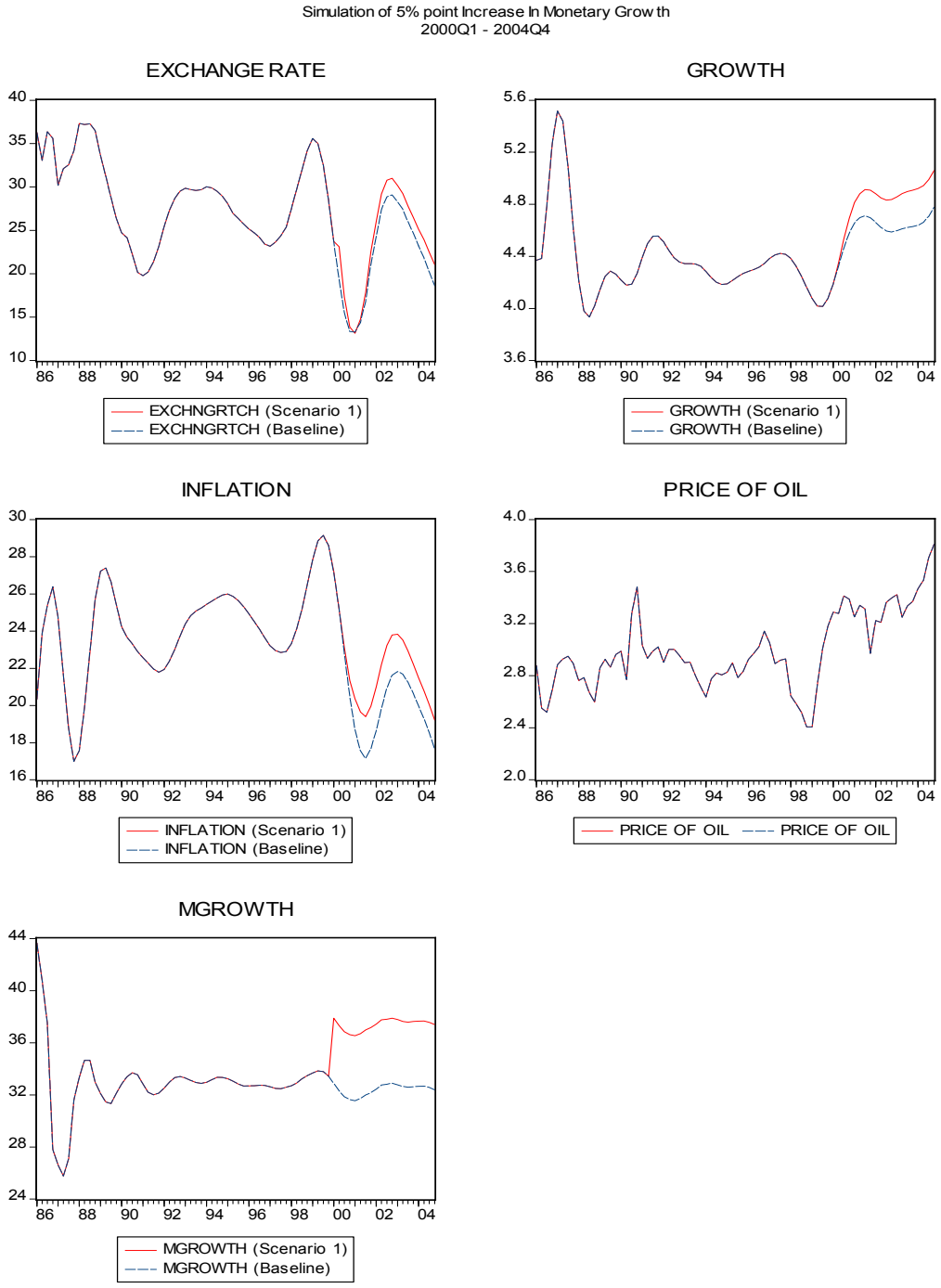
VAR with Money Supply as tool of Monetary Policy

The second VAR model substitutes money supply growth (using M2 as the definition of money), and includes exchange rate changes, inflation and real GDP growth as the other endogenous variables, and the logarithm of the price of oil as an exogenous variable. The impulse response functions (not shown) indicate that the money supply has fairly standard

effects on output, exchange rates and inflation. We used this estimated VAR model to perform monetary policy experiments to show the impacts of more expansionary monetary policy. The figure shows the simulation of the model and compares the dynamic simulation results (the baseline) to the actual data. Once again, the model misses extreme values and misses turning points. We then used this model to simulate the impact of an increase in the rate of growth of the money supply by 5% points per year and keeping the higher growth rate for 5 years, over the period, 2000Q1 to 2004Q4 (Figure A4).

Figure A4.

Figure A4. cont.



The next set of graphs (Figure A5) shows the difference between the baseline and a model with money supply growing by 5% higher growth rate.

The impact on economic growth is to raise economic growth rate by an average of a quarter of a percentage point; inflation goes up by at most 2 percentage points. And the rate of exchange rate depreciation goes up by 2 or 3 percentage points. Table A4 below

shows the year to year differentials between the baseline simulation and the more expansionary monetary policy.

Figure A5.

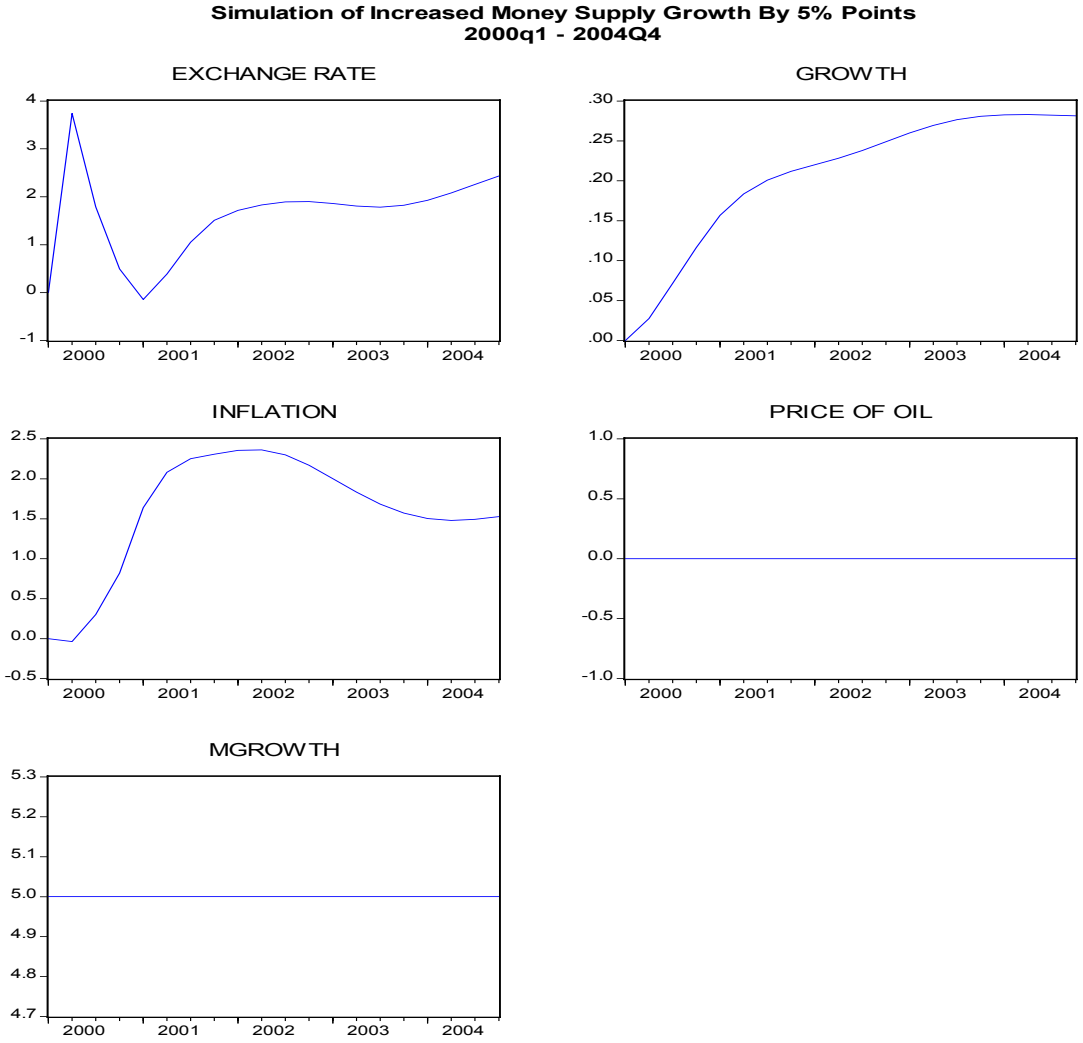


Table A4

Simulated Impacts of 5% Increase in Money Supply Growth, 2000-2004

	2000	2001	2002	2003	2004
EXCHANGE RATE	1.51	0.70	1.83	1.82	2.17
GROWTH	0.05	0.19	0.23	0.27	0.28
INFLATION	0.27	2.07	2.30	1.77	1.50
PRICE OF OIL	0.00	0.00	0.00	0.00	0.00
MGROWTH	5.00	5.00	5.00	5.00	5.00

Conclusion:

Results from these VAR's should be treated with caution. The time period used in the analysis, 1986Q1 – 2004 Q4, is somewhat short and therefore the VAR estimates are not as precise as one might like. Also, no model with four or five variables can capture the complexities of any economy, including that of Ghana. However, the results are suggestive. They indicate that expansionary interest and monetary policy can have modestly positive impacts on economic growth, without at the same time having strongly negative impacts on inflation and exchange rates. This implies that there is a justification for more expansionary policy. But, at the same time, to be sufficiently effective, expansionary monetary policy must be combined with policies in other areas, including the types of financial policies we discuss in the text.

Appendix B. Estimation of an aggregate investment function for Ghana.

We estimated an aggregate investment function for Ghana using data from the IMF (International Financial Statistics), the World Bank (World Development Indicators), and the Government of Ghana. Typically, the determinants of investment are thought to include the cost of capital, an accelerator term, a measure of government expenditures or investment, and other exogenous variables (see Chirinko, 1993, for an overview). We used this kind of generic investment function as a starting place to investigate the determinants of investment in the Ghanaian economy:

$$I = f(r, a, g, X)$$

in which I represents gross investment, r represents the cost of capital, a the accelerator effect, g government spending, and X a matrix of other exogenous variables.

Studies of investment in Ghana and sub-Saharan Africa suggest a number of additional explanatory variables: for example, the real exchange rate and the quantity of domestic credit (Ndikumana 2000, Brownbridge 1998). In addition, the importance of exported commodities to the Ghanaian economy could influence rates of investment. Table B1 presents the variables that were used to estimate the investment function in this report along with their definitions.

Table B1.
Variable definitions.

Variable	Definition
INVEST	Total gross fixed investment as a percentage of GDP
GOVT	Government consumption expenditures as a percentage of GDP
INTEREST	Discount rate adjusted for inflation using the GDP deflator
GROWTH	Annual percent change in real GDP (captures accelerator effects)
XCHNG	Real exchange rate measured as the nominal cedi/$US adjusted for price levels in Ghana and the U.S. using the appropriate GDP deflators
EXPORT	Total exports as a percentage of GDP
PUBCRDT	Credit extended to the public sector as a percentage of GDP
PVTCRDT	Credit extended to the private sector as a percentage of GDP.

Non-stationarity is frequently an issue with macroeconomic time-series analysis. Therefore, it is essential to test all the above variables for the presence of unit roots. We used an augmented Dickey-Fuller procedure, with and without a deterministic linear trend, to test for stationarity. The results of these tests are summarized in Table B2.

As can be seen from the table, all variables are non-stationary with the exception of the growth rate. Further analysis (not show) shows that the first differences of the non-stationary variables are stationary – that is, all variables, except the growth rate, are integrated of order one. This raises the possibility that a cointegrating relationship exists between these variables, allowing for a more detailed specification of the investment function.

Table B2.
Unit Root Tests Using the Augmented Dickey-Fuller Methodology.

	Intercept	**Intercept+Trend**
INVEST	-1.30 (p=0.62)	-1.85 (p=0.66)
GOVT	-2.45 (p=0.14)	-2.81 (p=0.20)
INTEREST	-2.23 (p=0.20)	-2.37 (p=0.39)
GROWTH	-4.11 (p=0.003)	-4.36 (p=0.007)
XCHNG	-0.13 (p=0.94)	-1.40 (p=0.85)
EXPORT	-0.14 (p=0.94)	-0.99 (p=0.93)
PUBCRDT	-2.88 (p=0.06)	-2.75 (p=0.22)
PVTCRDT	-1.12 (p=0.70)	-1.07 (p=0.92)

We can model the investment function empirically as a long-run cointegrating relationship coupled with an error-correction model that describes the adjustment to the long-run equilibrium. The cointegrating relationship takes the general form:

$$Y_t = \alpha + \sum_{i=1}^{l} \beta_i Y_{t-i} + \sum_{j=1}^{n} \gamma^j X_t^j + \mu_t$$

in which Y_t is the endogenous (dependent) variable, l denotes the length of the lag on the lagged endogenous variable, n is the number of exogenous variables X^j, and μ_t represents a stochastic error term. All the variables in the above equation are integrated of the same order – in this case, first order integration.

The corresponding error-correction can be expressed as:

$$\Delta Y_t = \delta + \sum_{i=1}^{l} \eta_i \Delta Y_{t-i} + \sum_{j=1}^{n} \lambda^j \Delta X_t^j + \sum_{k=1}^{m} \nu^k Z_t^k + \pi \mu_{t-1} + \varepsilon_t$$

in which the operator Δ signifies the variables are first-differenced, m is the number of exogenous variables Z^j not included in the cointegration specification, and ε_t is another stochastic error term. Since the non-stationary variables are expressed as first-differences, all the variables in the error correction models are stationary, as long as a cointegrating relationship exists among the non-stationary variables such that the residual, μ_t, does not have a unit root.

Table B3 presents estimations of the investment function that attempt to estimate a long-run equilibrium relationship among the non-stationary variables.

Table B3.

Long-Run Investment Function Estimates and Cointegrating Relationships, Ghana 1961-2002. Dependent variable is Gross Investment as a Percentage of GDP (t-statistics for coefficient estimates are in parentheses).

Equation	(1a)	(2a)	(3a)	(4a)	(5a)
$INVEST_{t-1}$	0.535*	0.463*	0.411*	0.322**	0.286**
	(4.68)	(5.08)	(3.08)	(2.24)	(2.22)
$GOVT_t$	0.235	0.465**	0.434**	0.747*	0.692*
	(1.05)	(2.16)	(2.04)	(3.09)	(2.89)
$XCHNG_t$	0.047*	0.060*			
	(3.20)	(4.33)			
$INTEREST_t$	0.0002				
	(0.70)				
$EXPORT_t$			0.364*	0.225**	0.169***
			(4.35)	(2.27)	(1.91)
$PUBCRDT_t$		-0.200**	-0.228**	-0.290*	-0.313*
		(-2.23)	(-2.56)	(-3.28)	(-3.60)
$PVTCRDT_t$		-0.115	-0.336	-0.257	
		(-0.57)	(-1.54)	(-1.23)	
$PVTCRDT_t$ x $FINADJ_{1984-}$				0.467**	0.507**
				(2.32)	(2.53)
Constant	0.002	0.018	0.024	0.021	0.030
	(0.08)	(0.66)	(0.87)	(0.80)	(1.21)
N	41	41	41	41	41
R^2	0.81	0.84	0.84	0.85	0.85
D-W	1.87	1.91	2.00	2.09	1.98
D-F	-5.74	-5.93	-6.61	-6.63	-6.20
(residual)	(p<0.001)	(p<0.001)	(p<0.001)	(p<0.001)	(p<0.001)

* *denotes significance at the 1% level,* ** *at the 5% level, and* *** *at the 10% level.*

Equation (1a) estimates a fairly standard investment function in which the real interest rate is used to proxy the cost of capital. In addition, the estimates include the real exchange rate as an independent variable. The accelerator term – in this case, the GDP growth rate – is not included in the estimates of long-run equilibrium relationship. Instead, an accelerator terms will be incorporated into the error-corrections model that describes deviations around the long-run equilibrium. Moreover, the GDP growth rate variable is not integrated of the same order as the variables included in the long-run relationship.

Of all the exogenous variables, only the coefficient on the real exchange rate is significant. Surprisingly, the coefficient on the real interest rate is particularly weak, running contrary to the expectations that are generated by the standard neoclassical investment function. However, the quantity of credit might be a more important determinant of domestic investment than the price of credit.

Equation (2a) re-estimates the model, this time substituting private and public sector credit variables for the real interest rate. The coefficients on government expenditure and the real exchange rate are positive and statistically significant. Domestic credit to the public sector has an independent, and significant, negative impact on domestic investment. However, credit to the private sector does not appear to have any significant impact on investment, when analyzed over the entire time period.

A negative coefficient on the public sector credit variable does make sense in the Ghanaian context. During the period examined here, the majority of domestic credit financed public expenditures, not private investment. Banks held, and continue to hold, excess reserves of short-term government securities. This limits the role that the banking sector has played in financing real fixed investment. More credit to the public sector at a given level of government spending will tend to reduce gross investment, given the structure of the financial sector and the conduct of monetary policy over the period examined here. If government spending increases with public borrowing, then the effect on gross investment is ambiguous.

The positive coefficient on the real exchange rate variable suggests that a real depreciation in the exchange rate encourages a higher level of investment in the long-run. This runs counter to arguments that a real depreciation will discourage investment in Ghana, because of the impact on the price of imported capital goods (Brownbridge 1998). One explanation for this seemingly incongruous finding is that investment in Ghana tends to be concentrated in the tradable sectors, particularly the key export sectors. Therefore, a real exchange rate depreciation leads to export growth and more investment.

Equation (3a) replaces the real exchange rate variable with exports expressed as a percent of GDP. This coefficient on the exports variable is strongly positive, with the coefficient on the government spending variable remaining positive and the coefficient on credit to the public sector remaining negative.

The economy underwent a series of fundamental reforms, beginning with the first structural adjustment program introduced in 1983. Both during and after these reforms, credit to the private sector grew as a share of GDP. Some of the constraints that limited the impact of private sector credit on domestic investment could have been relaxed during this period. To test this possibility, Equation (4a) adds an interaction term to the estimates of the investment function. Domestic credit to the private sector is multiplied by a dummy variable, representing financial sector reforms, that takes on a value of zero prior to 1984 and a value of one for all other years.

The coefficient on the interaction term is positive and significant. This suggests that, after reforms were initiated, private sector credit become a more important determinant of investment in Ghana. This does not necessarily mean that all the elements of the financial sector reform process improved domestic investment. Some aspects of the reforms could have been detrimental. However, the impact of private credit on domestic investment is much stronger during the reform period than in previous years.

Equation (5a) re-estimates the model represented by Equation (4a), but eliminates the private sector credit variable while retaining the interaction term. This equation was used to calculate the elasticity estimates presented in the main body of the paper (Table 11).

The augmented Dickey-Fuller tests of the residuals from the five estimated equations in Table B3 all show that the residuals are stationary. This suggests that a cointegrating relationship exists among the non-stationary variables such that a linear combination of these variables is stationary. We selected the specification of Equation (5a) in Table B3 to represent the long-run equilibrium investment relationship. From this model, we proceeded to estimate the error-correction component of the overall model.

Estimation of an error-correction model complements the estimates of the long-run investment relationships. An error-correction model captures the short-run adjustments around long-run investment trends by focusing on the impact of changes (not levels) in the independent variables and by examining how investment responds to deviations from its estimated long-run equilibrium level. Table B4 presents estimates of the error-correction models based on the long-run investment function present in Equation (5a) of Table B3.

Table B4.
Error-Correction Models of the Investment Function, Ghana 1961-2002. Dependent Variable is the First Difference of Gross Investment as a Percentage of GDP (t-statistics for coefficient estimates are in parentheses).

Equation	(1b)	(2b)
$GROWTH_t$	0.111 (1.13)	0.151 (1.60)
$\Delta GOVT_t$	0.726** (2.32)	0.590** (1.97)
$\Delta EXPORT_t$	0.108 (1.01)	
$\Delta PUBCRDT_t$	-0.203 (-1.55)	
$\Delta PVTCRDT_t$ x $FINADJ_{1987-}$	-0.075 (-0.16)	
$RESID_{t-1}$	-0.769* (-3.91)	-0.761* (-3.97)
Constant	-0.001 (-0.14)	-0.002 (-0.47)
N	40	40
R^2	0.34	0.40
D-W	1.77	1.87

** denotes significance at the 1% level, ** at the 5% level, and *** at the 10% level.*

The non-stationary variables are expressed as first differences in the estimates shown in Table B4. In addition, the growth rate, a stationary variable, is included in some of these estimates to capture any short-run impact of the accelerator.

In Equation (1b), government spending is the only exogenous variable with a significant coefficient. The coefficient on the residual term is both significant and negative. This suggests that the error-corrections component is well-behaved – investment tends to return to the long-run equilibrium level after an exogenous shock. Equation (2b) estimates the same error-correction model, excluding the export and credit variables. In this model, the statistical significance of the coefficient on the growth rate improves (p-value=0.12) and the coefficient on the government spending term retains its sign and significance. Equation (2b) is also well-behaved in terms of the adjustment to the long-run equilibrium.

The results of this analysis – both the long-run cointegration and the short-run error correction models – should be approached with some caution. Given the lack of quarterly data for many of the variables, only a limited number of observations were available, despite efforts to maximize the length of the period studied. The limited availability of data for the entire period restricted the choice of variables. In some cases, the most appropriate variables for estimating an investment function were not readily available. As with many empirical macroeconomic models, the possible endogeneity of the variables could affect the reliability of the estimates. Unfortunately, the limited number of variables and the relatively small number of observations prevent the application of more sophisticated dynamic models. Despite all these caveats, the exercise presented here does provide a number of useful insights into aggregate investment behavior in Ghana.

Appendix C. Meetings and consultations

Meetings and consultations primary took place in Accra, Ghana in March 2005. In addition, Lynda Pickbourn, the national consultant working on the study, engaged in selected follow-up consultations during June and July 2005.

Dr. J.S. Abbey (Centre for Policy Analysis)
Dr. Mahamudu Bawumia (Bank of Ghana)
Ms. Grace Bediako (Ghana Statistical Service)
Mr. Daniel Boakye (World Bank, Accra)
Mrs. Angela Brown-Farhat (National Development Planning Commission)
Prof. George Gyan-Baffour (Ministry of Finance and Economic Planning)
Hon. Alan Kyerematen (Ministry of Trade and Industry)
Mr. Daniel Ato Kwamina Mensah (Ghana Association of Bankers)
Mr. Winifred Nelson (National Development Planning Commission)
Mr. Jerry Odotei (National Development Planning Commission)
Mr. Martin Ofori (Bank of Ghana)
Dr. Nii K. Sowa (Centre for Policy Analysis)

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