Charles University in Prague
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Bachelor Thesis

Evaluating Monetary Policy
The Case of Ghana

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Declaration of Authorship

Hereby I declare that I compiled this thesis independently, using only the listed resources and literature.

Prague, May 21, 2010 ……...………………..

Jiří Jílek

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Abstract

This thesis provides an overview of monetary policy in Ghana during the past two decades. A special focus is placed on assessment of inflation-targeting regime that the Bank of Ghana adopted in 2002 and became the first developing country to do so. After detecting the sources of inflation and a thorough description of monetary policy pursuit before 2002, the inflation-targeting regime is scrutinized. Despite the initial inability of the Bank of Ghana to meet its inflation targets, I consider the disinflationary process as well set. Optimistic expectations about the future success of inflation targeting, that the author of this thesis has, stems from the legislative changes that were made in 2002. Finally the credibility of the Bank of Ghana is identified as the main area for improvement.

JEL Classification: E31, E52, E58

Keywords: inflation targeting, monetary policy

Abstrakt

Tato bakalářská práce poskytuje přehled monetární politiky v Ghaně za posledních dvě desetiletí. Zvláštní důraz je kladen na zhodnocení cílování inflace, jež centrální banka v Ghaně přijala za svůj měnově-politický rámec v roce 2002 a stala se tak první rozvojovou zemí, která tak učinila. Poté, co identifikuji příčiny inflace v sub-saharské Africe, následuje analýza monetární politiky před rokem 2002 a analýza inflačního cílování po roce 2002. Navzdory počátečním neúspěchům splnit inflační cíle, považuji disinflační proces za relativně dobře započatý. Zdrojem těchto optimistických očekávání jsou především legislativní změny týkající se centrální banky v Ghaně a přiměřená flexibilta inflačního cílování. Prostor pro zlepšení vidí autor této práce především ve zlepšení kredibility centrální banky v Ghaně.

Klasifikace JEL: E31, E52, E58

Klíčová slova: cílování inflace, monetární politika

Contents

List of Tables 7

List of Figures 7

1. Introduction 8

2. Framework for evaluating monetary policy 10

2.1. Evaluating monetary policy 10

2.1.1. Evaluation *ex ante* 11

2.1.2. Evaluation *ex post* 14

2.1.3. Credibility of monetary policy 14

3. Inflation dynamics in Ghana 16

3.1. Economy of Ghana 16

3.2. Historical overview of inflation in Ghana 17

3.3. Sources of inflation in sub-Saharan Africa 21

4. Evaluating monetary policy in Ghana 24

4.1. Monetary policy in Ghana prior 2002 24

4.2. Inflation targeting: Key elements 28

4.3. Fulfillment of IT prerequisites in Ghana 30

4.3.1. Central bank independence 31

4.3.2. Accountability of the BOG 32

4.3.3. Macroeconomic stability 33

4.3.4. Stability of the financial system in Ghana 34

5. Evaluating inflation targeting in Ghana 36

5.1. Forecasting and analysis methods 37

5.2. The Bank of Ghana external communication 40

5.3. Fully-fledged inflation targeting in Ghana 43

6. Conclusion 47

Bibliography 49

List of Tables

3.1 Sector contributions to the GDP 2003-2007 (% of total). 17
4.1 Indicators of macroeconomic instability. 27
4.2 Bank of Ghana Targets and performance (per cent/year). 29
4.3 Financial soundness indicators in Ghana. 35
5.1 Inflation targets in the world. 43

List of Figures

2.1 The forecast Taylor curve. 12
2.2 Isoloss lines and the optimal monetary policy. 13
3.1 Trends in CPI inflation: 1960 - 2003. 19
3.2 Trends in CPI inflation, Ghana: 1/2003-1/2009. 20
2.3 Ghana: Real and Nominal Effective Exchange Rates, 1/ 2001 – 3/ 2009. 21
4.1 Fiscal deficit development in Ghana. 33
5.1 Ghana: CPI Inflation, 1/2000 – 7/2009 (year-on-year, percent) . . . .
5.2 Prime interest rate 01/2007-05/2010. . . . .

Chapter 1

Introduction

In 1990, New Zealand was the first country to adopt inflation targeting (IT) as its monetary policy regime. Since then, a substantial number of other central banks have followed the pioneer of inflation targeting – the Reserve Bank of New Zealand – on this path. To name a few of them: Chile in 1990, Canada in 1991, and the United Kingdom together with Israel in 1992. It is obvious that inflation targeting has become increasingly popular in industrialized countries. But more recently even central banks in emerging economies have decided to switch to an inflation targeting regime. Slovakia, in an effort to join the European Monetary Union, started to target inflation in 2005 – the aim: decrease its level of inflation to the inflation rate of the European Central Bank. The Central Bank of the Republic of Turkey followed in 2006 and finally in 2002 the Bank of Ghana became the first central bank in a low-income country on the African continent (and only the second country in Africa - after South Africa)[1].

As pointed out by Saborowski (2009), there is a distinction between industrial countries and emerging countries concerning the rate of inflation at the advent of adoption of IT. Industrial countries adopted inflation targeting at the rate of inflation consistent to price stability while emerging countries had been tackling the rate of inflation even higher than 10%. The reason for moving on to the inflation targeting policy framework in emerging countries was to decrease the rate of inflation in the process of disinflation as it was, for instance, in the case of the Czech Republic, Romania, Mexico or Poland.

Since inflation targeting has been successfully applied in industrialized countries, more and more often the question of applying inflation targeting in emerging and developing economies has been raised. In Masson et al. (1998), the prerequisites for adopting IT regime in developing countries are discussed. In my thesis I investigating whether these prerequisites had been fulfilled and whether the Bank of Ghana had been ready to start targeting inflation.

[1] In 2002, the Bank of Ghana started targeting inflation informally. Only in 2007, the Bank of Ghana moved on to a fully-fledged inflation-targeting regime.

The goal of this thesis is to describe the recent history of monetary policy in Ghana and especially make an assessment of changes in monetary policy that occurred at the beginning of the millennium. I describe the hardships which the Bank of Ghana had to face up to during 1990s and the reasons why the Ghanaian central bank decided to switch from the monetary policy of money-targeting to inflation targeting. In writing this thesis, I attempted to follow the form of monetary policy evaluations that have been already carried out (see for example Giavazzi and Mishkin, 2006; Svensson et al., 2002; Svensson, 2001).

The thesis is structured as follows. In the second section, I describe the theoretical framework for monetary policy evaluation as proposed by Svensson (2009a). In the third chapter, inflation dynamics is scrutinized. I present historical overview of inflation dynamics and then proceed with the identification of inflation sources in sub-Saharan Africa. The chapter number four deals with the description of monetary policy before the year 2002, the year in which the Bank of Ghana declared the move to the inflation-targeting regime. The evaluation of prerequisites for inflation targeting is presented. In the fifth chapter, I discuss the Ghanaian case of inflation targeting, and I present a model developed by Alichi et al. (2009). Based on the results of their study, interesting conclusions are drawn and I include these findings into this thesis. The chapter six concludes and provides recommendations for improvement in the conduct of the monetary policy in Ghana.

Chapter 2

Framework for evaluating monetary policy

2.1 Evaluating monetary policy

As more and more countries adopt the monetary policy regime of inflation targeting, it is obvious that the weight put on evaluation of monetary policies is becoming increasingly significant. To carry out such an evaluation of monetary policy under the inflation-targeting regime is not an easy task. As pointed out by Svensson (2009a), the process of evaluation does not consist of mere checking whether inflation missed the target or not. The reason why the analysis should not be that simple is the fact that deviations from the target can be acceptable – this can be the case of flexible inflation targeting when the policy makers try to stabilize the real economy as well as inflation. Svensson (2009a) looks upon the reason more in depth and specifically highlights two circumstances that make mere evaluation of inflation targets inappropriate.

The first such circumstance is *unanticipated shocks that have an impact on the economy*. There are lags connected to monetary policy which means that the monetary policy that is to be pursued is based on forecasts of inflation. The outcome of the monetary policy can be thus influenced by unexpected macroeconomic shocks that were not comprised in the previous inflation forecasts. On the other hand, the outcome of the monetary policy can be correct even if the inflation forecast was wrong. That is in case that unexpected macroeconomic shocks occurred and moved the economy in the “right” direction to fit the target.

As the second circumstance, it can be considered the above mentioned *flexibility of inflation targeting*. Let us suppose a negative supply shock that hits the economy. Such a shock will lead to an increase in an inflation rate. A natural reaction of the central bank, that follows strict inflation targeting, and that wants to stabilize inflation as soon as possible, would be to increase the interest rate. But this would consequently lead to another decrease in the production. This example speaks in favor of flexible inflation targeting which aims to bring inflation down on a path as fast as it is appropriate considering the shock that hit the

economy. Two main approaches to evaluation monetary policy are described by Svensson (2009a).

2.1.1 Evaluation *ex ante*[2]

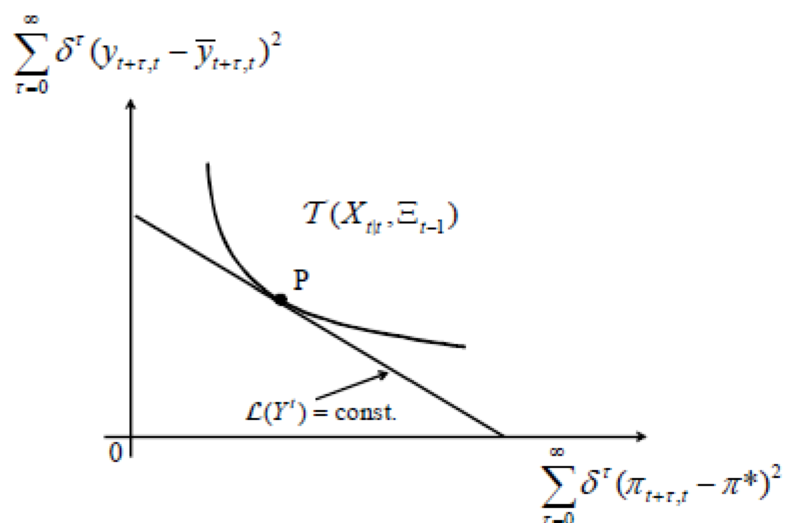
When we evaluate the monetary policy ex ante, it means that we rely on the information available to the policy makers when the decision concerning the policy being put in practice was about to be made. So in this case, the question to be posed is not whether the pursued monetary policy could have led to a better outcome, but whether the decision was the best considering the knowledge and information at the point of taking this decision. As it was pointed out, the central bank decides about its policy on the basis of inflation and real economy forecasts.

The first step that should be made is to analyze the quality of forecast by means of comparing the forecast with reality (and of course take into account external shocks if there were any). We could also compare different forecasts among each other, i.e. forecasts by various institutions such as the ministry of finance, the central bank, national trade unions, universities, and banks. Again, a forecast of the central bank should not be significantly biased in comparison with forecasts of other institutions. On the other hand, Svensson (2009a), pg. 6, stresses out that the way central banks forecast inflation is different from other institutions since the central bank usually uses structural models that take into account a whole range of policy rates. On the other hand, banks and so on only use statistical models which provide better forecasts (Svensson, 2009a).

If we come to the conclusion that forecasts of the central bank are satisfactory, then we can move on to assessing efficiency of the monetary policy and to asking whether the monetary policy was well-balanced. By efficient monetary policy it is meant that we ask whether it would have been possible to choose a different interest rate to stabilize inflation without any negative impact on real economy, or vice-versa. To better grasp the idea of monetary policy efficiency we can follow Svensson (2009b) who describes the forecast Taylor curve as means of illustration of trade-off between the deviations of inflation from the forecasted target on one axis and the actual output deviations from the targeted one (see Figure 4.1).

[2] Svensson (2009a), pg. 4

Figure 2.1 The forecast Taylor curve[3]



Source: Svensson (2009b), pg. 24

Let us consider that the intertemporal forecast loss function that is subject of the minimization problem looks like this:

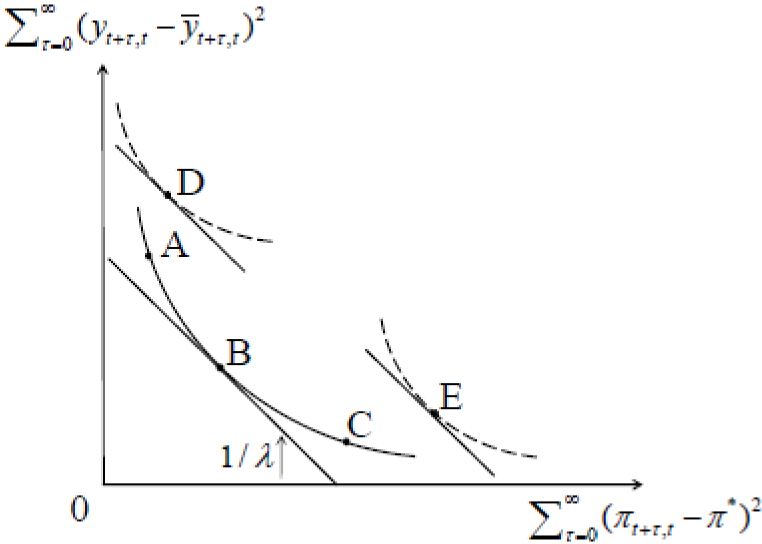
$$\mathcal{L}(Y^t) = \sum_{\tau=0}^{\infty}\delta^{\tau}(\pi_{t+\tau,t}-\pi^*)^2 + \lambda\sum_{\tau=0}^{\infty}\delta^{\tau}(y_{t+\tau,t}-\bar{y}_{t+\tau,t})^2.$$

The main goal of policy makers is to minimize the loss function. In the Figure 4.1, the convex curve is the forecast Taylor curve representing all the efficient combinations of forecasts of inflation and output that are possible to be achieved by using different interest rates. It is clear that points on the right from the curve are inefficient since the central bank can achieve lower values of forecasted inflation and output gaps. Accordingly, points on the left from the forecast Taylor curve cannot be achieved as there are certain limitations caused: 1) by the initial state of the economy, and 2) by the transmission mechanism between inflation, output gap and the interest rate. The analysis of the monetary policy efficiency then becomes an analysis of whether there could have been set a more suitable interest rate. This analysis can be made even more complicated by the fact that some central banks take into account other variables and targets, and second by the fact that the estimation and forecast of the potential output is not unanimously agreed upon.

[3] The original Taylor curve originally represented relationship between unconditional variances of inflation and output and can be found in Taylor, John B. (1979), "Estimation and Control of a Macroeconomic Model with Rational Expectations," Econometrica 47, 1267-1286.

If, as we proceed in our analysis, we come to the conclusion that the monetary policy was efficient, we can further analyze whether the pursued monetary policy is well-balanced. That means we need to analyze which point on the forecast Taylor curve was the best possible choice, to put it differently we need to analyze whether the weights given to the stabilization of the real economy and inflation are balanced in the most desirable manner. This weight is labeled by the constant λ[4]. Then 1/λ represents the slope of the isoloss line – the line representing points that generate the same loss. The higher the λ is, the flatter the isoloss line is and the optimal point would be somewhere in C (a relatively significant weight is put on stabilization of the real economy) – for a smaller λ, the situation is reversed. Notice that the closer to the origin the isoloss line is, the more ideal the situation becomes since the loss is smaller and smaller. Following this logic, we deduce that the optimal point is in B where the isoloss function is tangent of the Taylor curve (see the Figure 4.2). The point D represents a situation in which it is relatively more difficult to stabilize real economy and accordingly the point E represents a situation in which it is relatively more difficult to stabilize inflation.

Figure 2.2 Isoloss lines and the optimal monetary policy



Source: Svensson (2009a), pg. 8

The major advantage of evaluating monetary policy ex ante is the fact that the analysis can be undertaken in real time. As we can see in the next subchapter, evaluation ex post is supposed to be

[4] The value of λ is determined by the MPC of the central bank.

undertaken only after a certain time passes by (usually a couple of years) since you want to see the impacts of the policy on real economy and inflation.

2.1.2 Evaluation *ex post*[5]

When we evaluate monetary policy ex post we ask ourselves the questions what would have the monetary policy looked like given the information about the economy we have now; or would have a different type of monetary policy brought a significantly different outcome? In practice, this analysis consists of explaining forecast errors and missed targets. Svensson (2009a) actually suggests that it is more convenient to focus on explaining forecast errors rather than missed targets. This is because deviations from the target can be acceptable under the flexible inflation-targeting regime.

The very disadvantage of this approach is that one has to wait a substantial amount of time (a few years) before the outcome of the policy becomes apparent and we can begin with our analysis.

2.1.3 Credibility of monetary policy

Credibility is a very important factor in the conduct of monetary policy. Ammano and Perrier (2000) consider two situations which help us to understand the importance of monetary policy credibility. In the first situation, let us consider that the inflation rate went beyond the threshold and the central bank has to reduce it. In such a case, the central bank has lost its credibility because it allowed the inflation rate to leave the band. Now it will be its responsibility to demonstrate the commitment to reduce the inflation rate and gain back its credibility.

In the second example, that is also more interesting from the monetary theory point of view, the level of inflation is already under the control and now the central bank needs to move it as close to the targeted level of inflation as possible. During the first period, the central bank has already shown that it is committed and able to reduce inflation. This means that the central bank gained its credibility or in other words, the public considers the central

[5] Svensson (2009a), pg. 15

bank's monetary policy credible. Now if the central bank declares a new target that is lower than the current level of inflation, the credibility that it has gained in the previous period will significantly enhance the chances to succeed. Moreover, it will speed up the whole process of getting the inflation down to the target. This is because firms – that consider the central bank's monetary policy credible – will put greater value to the declared inflation target when setting their prices (be that wages or prices of their products).

As we have already noted many times in this paper. Various macroeconomic shocks can hit the economy without being expected by economic agents. If such a shock occurs, it will possibly increase the rate of inflation. The central bank, again thanks to its credibility that it has already proved by its commitment and ability to decrease inflation, will manage to stabilize the inflation faster than it would be without its credibility being considered credible by the public.

We can see that the credibility of monetary policy is indeed very important. For that reasons, if we want carry out an evaluation of monetary policy, we should also attempt to assess the central bank's credibility. This can be done by comparing the inflation target with inflation expectations of private sector. The smaller the gap between the expectations and the target is, the more credible the monetary policy of the central bank is. Svensson (2009a) also points to the fact that in an ideal case the inflation expectations should be close to the inflation forecast of the central bank.

Chapter 3

Inflation dynamics in Ghana

3.1 Economy of Ghana

Ghana is a sub-Saharan coastal country situated on the west coast of Africa sharing its borders with Côte d'Ivoire on the west, Burkina Faso on the north and Togo on the east. The political situation has been relatively stable and therefore Ghana is considered an exception in the region. Thanks to its natural resources, Ghana is a typical country that belongs to a group of resource-rich coastal countries (see Collier, 2006). Among the most significant export articles of Ghana is: gold, timber and cocoa[6]. Based on data from 2006-2007 provided by the International Cocoa Organization, Ghana produces 20% of world production, thus being the second largest producer of cocoa after Côte d'Ivoire. Cocoa and gold have been highly demanded on international markets during the past few years and for that reason these two export articles helped Ghana to overcome the recent global crisis.

In 2007, it was announced that major oil deposits were found offshore in the Gulf of Guinea. Ghana will thus soon become an oil-producing country – being in a group of other West African oil producers such as Angola, Congo, Nigeria, and already above mentioned Côte d'Ivoire. If the resources from oil exports are used wisely, it is expected that Ghana will be able to gain middle-income status in 10 years[7].

Despite the relatively high level of development (comparing to other sub-Saharan countries), the agricultural sector still represents a significant part of GDP as we can see in Table 2.1. Thus, 60% of workforce is employed in agriculture, 15% and 29% is employed in industry and services, respectively.[8] Again as noted in the IMF Survey Magazine[9]: Interview

[6] Based on data from the International Cocoa Organization, Ghana produces 20% of world production, thus being the second largest producer of cocoa after Côte d'Ivoire.
[7] IMF Survey Magazine: Interview, Oil Offers Hope of Middle-Income Status for Ghana, February 17,2010
[8] The data is from 2000 based on the census of Ghana, taken from Amit et al. (2004). The next census of Ghana has begun in March 2010.
[9] IMF Survey Magazine: Interview, Oil Offers Hope of Middle-Income Status for Ghana, February 17,2010

with Peter Allum, the IMF's mission chief for Ghana, "the areas which have been growing fastest in the recent past have been the financial services sector and communications."

Table 3.1 Sector contributions to the GDP 2003-2007 (% of total)

Year	Agriculture	Industry	Services
2003	36.1	24.9	29.8
2004	36.7	24.7	29.5
2005	37	24.7	29.4
2006	35.8	24.7	29.4
2007	34.7	26.1	30.5

Source: Ackah et al. (2009), pg. 18

3.2 Historical overview of inflation in Ghana

High rates of inflation have always been a major source of hardship for any developing country – Ghana making no exception. If we want to fathom the rationale behind the change of the monetary policy regime, we need to look upon the inflation dynamics more in detail.

The history of free Ghana dates back to 1957 when the country gained its independence from the United Kingdom. Ghana was the first sub-Saharan African country to do so and after this primacy it has managed to prove time and again to be a real pioneer in political and economic issues on the African continent.

Since 1957, we have mostly seen periods of inflation that are far from what could be considered stable. Looking at the evolution of inflation till 2010, five different periods can be highlighted[10]:

1. *the post-independence period (1957-1966),*
2. *the post-Nkrumah period (1966-1972),*
3. *the deterioration period (1972-1982),*
4. *the disaster period in between 1982-2003,*
5. *and the most recent period from 2003 up to 2010.*

[10] The first four phases are described in Ocran (2007). For obvious reason (the change of a monetary policy regime) we include into our analysis also the fifth period.

Prior to 1957, the level of inflation was relatively low which was due to the Ghanaian participation in the West African Currency Board.[11] As noted in Ocran (2007), typical estimates of inflation in this period were around 1%. The first president of Ghana, Kwame Nkrumah, was the first head of state in Africa who came up with the idea of Pan-Africanism. He was also an eager proponent of socialist doctrine which he tried to implement through his Big Push strategy. This process of industrialization and huge public investment led to severe indebtedness of the country. The bad situation in Ghana induced political pressures against his administration. As a consequence of these pressures, Nkrumah began his tyrannical regime. In the first phase of independence, the level of inflation held a sharply increasing trend: on average 8% p.a. in 1960-1963 and 23% in 1964-1966. The reasons for this increasing trend of inflation were mainly the policies implemented by the government of President Nkrumah: vast government expenditures in infrastructure accompanied by a social system that did not really correspond to the capacity of the budget and last but not least the dependence of the government on the revenues from the cocoa crop.

The 1966 coup d'état launched a period of political instability and economic disorder. During the years 1966 and 1972, the military government, which succeeded the preceding one, made significant efforts to decrease fiscal expenditures and tighten monetary policy. "The combined effect of the fiscal and monetary policies led to an 8% deflation in 1967, the only deflation recorded in the recent economic history of the country." (Ocran, 2007, pg. 7).

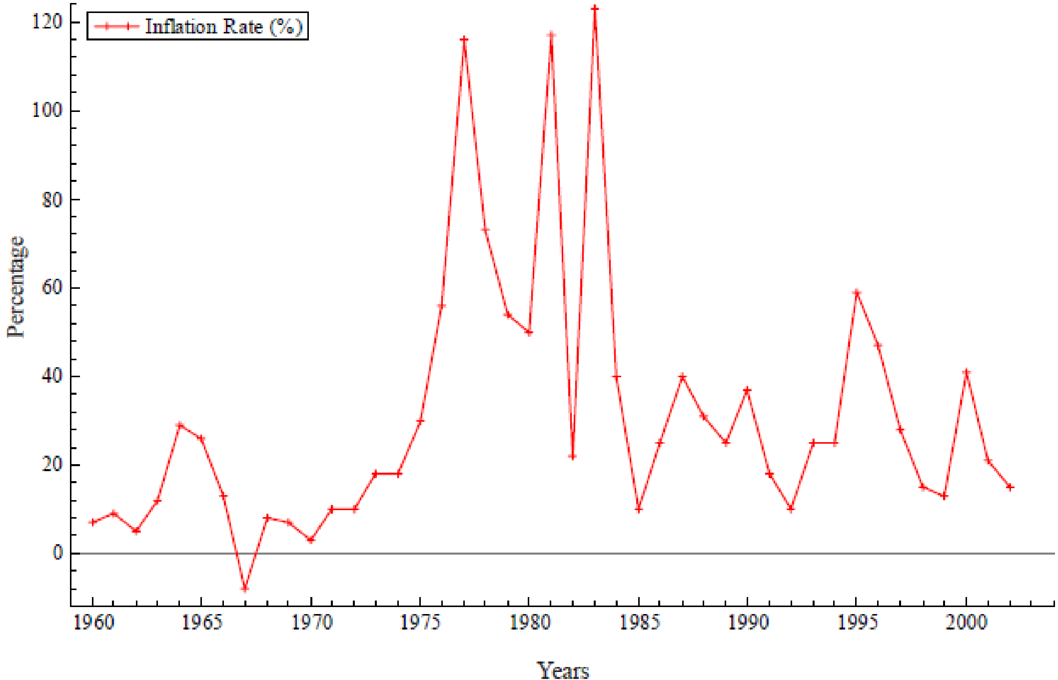
The third period (1972-1982) is characterized by political instability and the overall economic deterioration. As we can see in the Figure 2.1, the year 1972 marks the beginning of an era of extremely high level of inflation and high inflation volatility. This was caused by the lack of money of which the government was suffering. This lack of resources was a direct consequence of the first oil price shock in 1973 and for that reason, the government decided to borrow from the central bank. Consequently, the fact that the Bank of Ghana was printing money to be able to lend to government led to an inflation spiral.

After twenty years of economic chaos, another coup followed and it was Jerry Rawlings who came to power in 1981. During the fourth period, starting in 1983, an unfortunate combination of bad policies pursued by the government and natural disasters led to the worst period in the history of this country. First, Nigeria stopped exporting crude oil to Ghana and then forced over one million emigrants from Ghana to leave Nigerian territory.

[11] The West African Currency Board was established in 1912 and the four following British colonies were included: Ghana, Nigeria, Sierra Leone and the Gambia (see Ocran, 2007).

Another shock came in the form of drought that caused fires destroying the production of food and cocoa crop. The threat of famine became apparent.

Figure 3.1: Trends in CPI inflation: 1960 - 2003



Source: Ocran (2007), pg. 7

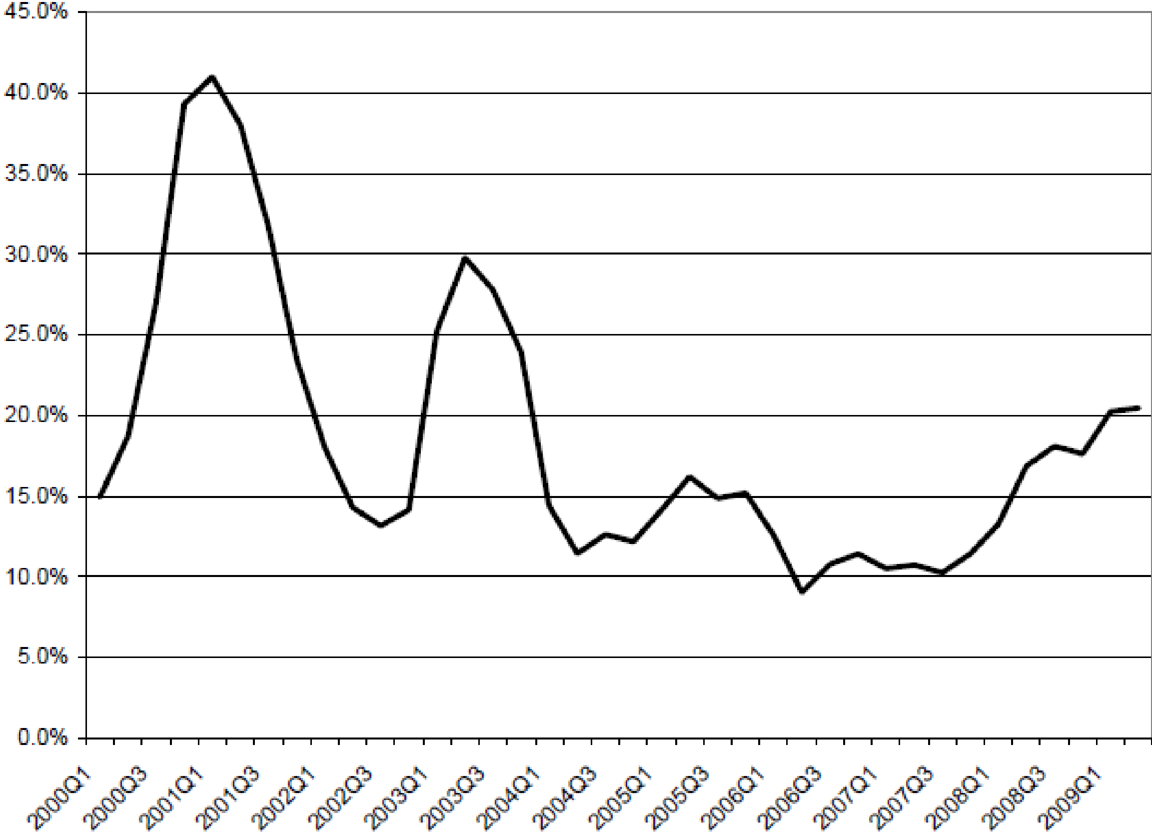
The highest level of inflation attained in Ghana (123%) was partly caused by a devaluation of the Cedi: from initial ¢2.75/USD to ¢30/USD. In April 1983, the government was compelled to adopt the IMF and the World Bank – a set of policies that were supposed to give the economy the right direction. As stated in Ocran (2007), the reforms (Economic Recovery Program) were implemented in three distinct stages:

1. *1983-1986*: *stabilization phase*,
2. *1987-1990*: *the phase of structural adjustment,*
3. *1993-2000*: *accelerated growth phase*.

The fifth, and the last, period to be analyzed is the one between the years 2003 and 2010. This period can be considered relatively stable as far as the level of inflation is concerned (see Figure 2.2) and given the evolution of inflation during the past two decades.

The inflation rate went beyond the limit of 20% only in two years: 2004 and 2009. The first rise in inflation in (2004) was a direct effect of previous macroeconomic mismanagement. This implementation of bad policies was also accompanied by depreciation of the cedi and external shocks that hit the Ghanaian economy.

Figure 3.2: Trends in CPI inflation, Ghana: 1/2003-1/2009

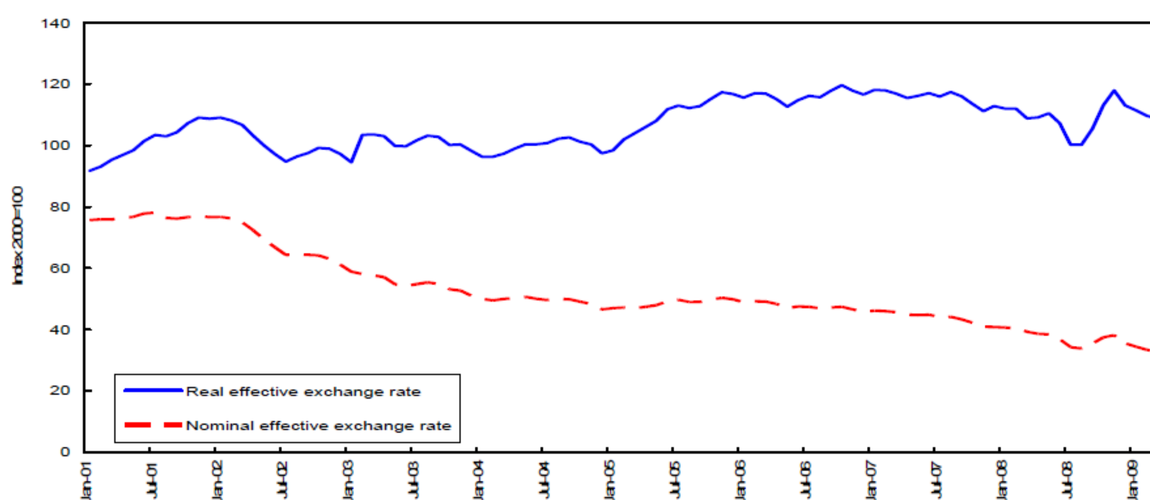


Source: IMF International Financial Statistics.
Available in Heintz & Ndikumana (2010)

The second increase in inflation occurred in 2009. Four major sources of this increased level of inflation can be identified. First, the increase in inflation reflected food and fuel price shocks that occurred in 2007. Second, there was a significant increase in public expenditures as a result of 2008 elections. This led to a deepening of public debt and consequently to an

increased level of inflation (the public deficit in 2008 was 15% of GDP[12]). Third, there was a depreciation of local currency – the Ghanaian cedi (see the Figure 2.3). Fourth, the global financial crisis that first hit advanced economies has subsequently spread all over the world and has had an adverse impact on developing countries, too. Nevertheless, during the second half of 2009, the inflation rate took a decreasing trend.

Figure 2.3 Ghana: Real and Nominal Effective Exchange Rates, 1/ 2001 – 3/ 2009



Source: INS, Information Notice System.
Available in IMF Country Report No. 09/256, pg. 1,
Ghana: 2009 Article IV Consultation and Request for a Three-Year Arrangement Under the Poverty Reduction and Growth Facility—Staff Report

3.3 Sources of inflation in sub-Saharan Africa

The aim of this thesis is to carry out an evaluation of monetary policy in Ghana. To be able to do that, we need to know what are the various sources of inflation dynamics in sub-Saharan Africa. Several studies have attempted to identify the sources of inflation on the African continent.

Barnichon & Peiris (2008) explore the issue by examining the links between the output gap, the real money gap and inflation. Particularly, they attempted to find out what effect on inflation has the gap between the demand for real money and the supply of real

[12] IMF Survey Magazine: Interview, Oil Offers Hope of Middle-Income Status for Ghana, February 17,2010

money; and the output gap. They mention problems with small samples used in this analysis that lead to a bias. However, they managed to get rid of this problem by using a panel cointegration approach and economic theory and also that way isolated the effects of the real money gap and the output gap on inflation. Another drawback of short time series is that it seriously complicates the execution of an analysis for every single country. In their work, they came to the conclusion that there is strong evidence that in sub-Saharan African countries the real money gap represents a stronger impact on the evolution of inflation than the output gap does. From this conclusion they derive the assumption that monetary targeting is an appropriate monetary policy in sub-Saharan Africa. The fact is that the single country analysis for Ghana, carried out by Amoah & Zakari (2008), suggests quite the opposite. Monetary targeting is not suitable for Ghana due to the fact that the demand for money became unstable and for that reason very difficult to be predicted. This is a prime example showing that every country in sub-Saharan Africa has to be analyzed case by case and under the given circumstances related to every particular country.

Another attempt to analyze inflation dynamics in sub-Saharan Africa was carried out by Heintz & Ndikumana (2010). In their work, they use a panel dataset of 12 African countries for which the data were able to be found. They used a broader set of variables that included: the annual inflation rate (based on the consumer price index), the growth rate of the money supply (M2), the percent change in the food production index (to capture agricultural supply-side shocks), the percentage change in the nominal exchange rate, the percentage change in the terms of trade index, the percentage change in the nominal lending rate, and the change in government consumption expenditures as a percentage of GDP. Following the results of their analysis, we can conclude the following[13]:

- the growth rate of M2 has a significant impact on inflation,
- the nominal exchange rate (in this case, an increase in the exchange rate indicates a depreciation) has a significant impact on inflation,
- a 10 percent depreciation of the exchange rate would have a larger impact, ceteris paribus, than a 10 percent increase in the growth rate of the money supply,
- supply-side shocks (changes in food production) are important,
- other variables used in the analysis are insignificant.

[13] Heintz & Ndikumana (2010), pg. 17

As one of the strongest results of this analysis is considered the fact that exchange rates are important variables that need to be taken into account when analyzing monetary policy in sub-Saharan African countries. The implications of these findings for inflation-targeting monetary policy framework are such that if the strict inflation-targeting regime is put in practice accompanied by a significant effect of exchange rate deviations then the central bank will have to target exchange rate as well in order to be able to attain it inflation target. In this case, problems in the conduct of monetary policy could occur since the central bank would attempt to attain both its inflation target and exchange rate target.

Heintz & Ndikumana (2010) also points out to a study carried out by Aizenman, Hutchison, and Noy (2008) in which the authors present their findings about inflation targeting in emerging market economies. According to their findings, emerging market economies that pursue the monetary policy of inflation targeting allegedly follow mixed strategy which means that both inflation and real exchange rates play an important role when determining interest rates of a central bank. Another result of their study is that the response to real exchange rate is more significant in non-IT emerging market economies. In those emerging countries that target inflation the response to exchange rate is more significant in the countries exporting relatively higher number of basic commodities. Heintz & Ndikumana (2010) further discuss the links between exchange rate and inflation targeting, i.e. the level of foreign reserves that a country should maintain, and poses an interesting question that will be a subject of further research: "Is the exchange rate that is consistent with the inflation target also the exchange rate that is consistent with industrialization and long-run development?"

Chapter 4

Inflation targeting in Ghana

4.1 Monetary policy in Ghana prior to IT

Through the recent economic history in Ghana, the primary goal of its monetary policy has always been the same – maintain a stable price level. However, the weight put to this goal has been over the history to some extent different (Amoah & Zakari, 2008).

The year 1992 can be considered a milestone in the modern history of central banking in Ghana as it was that year when the Bank of Ghana began using indirect instrument to carry out its monetary policy. This change occurred as a result of the Financial Sector Adjustment Program started in 1988. Direct instruments (among which we can find interest rate controls, credit ceilings, and directed lending) operate by limiting prices or quantities through regulations. On the other hand, indirect instruments (open market operations, reserve requirements, and central bank lending facilities) *operate through the market by adjusting the demand for, and supply of, bank reserves* (Alexander et al., 1995).

As noted in Amoah & Zakari (2008), the framework for monetary policy then became the IMF programming technique with reserve money as the operating target. To ensure that monetary targeting works well, two preconditions has to be met.[14] First, the central bank has to be able to influence the monetary aggregate through its monetary policy actions. Second, there has to exist a stable relationship both between the operational target and the intermediate target, and between the intermediate target and the ultimate variable which is in this case inflation.

From the precedent chapter, it seems to be apparent that during the 1990s policy-makers in Ghana failed phenomenally to apply any kind of reasonable fiscal and monetary policy (see Table 4.2 Indicators of macroeconomic stability). The Bank of Ghana was in the position of the government's finance provider with only little power to decide about the direction of its monetary policy. This meant that the Bank of Ghana was highly dependent on the government's needs. In Table 4.2 we can see the consequence of this central bank

[14] Kadioglu et al. (2000), pg. 8

dependence. For instance, nominal interest rate was kept high so that banks and other institutions have incentives to buy bonds emitted by the Ghanaian government that needed to finance its deficits. We can also conclude that such a growth in monetary base that was presented in Ghana during 1990s together with increased levels of inflation that followed, deteriorated the nominal exchange rate (especially its instability). This is obvious in the period 1995-1998 during which a significant real appreciation had an adverse impact on international competitiveness of Ghanaian's economy.

Table 4.1 Indicators of macroeconomic instability

	Broad Budget Deficit (% of GDP)	Base Money Growth (% per year)	Inflation (% per year)	Nominal Interest Rate (% per year)	Real Interest Rate (% per year)	Exchange Rate Depreciation (% per year)
1992	8.1	32.2	10.1	20.4	9.4	18.8
1993	7.4	44.4	25.0	33.5	6.9	48.5
1994	3.8	35.4	24.9	29.8	3.9	47.4
1995	4.0	53.1	59.5	38.8	-12.9	25.5
1996	8.4	43.7	46.6	46.5	-0.1	36.4
1997	10.1	41.9	26.0	47.9	17.4	25.2
1998	8.1	24.6	16.4	37.6	18.3	12.9
1999	4.5	19.0	12.4	28.2	14.1	14.4
2000*	8.6	18.9	15.6	34.2	16.1	57.6

*First quarter.

Source: Instruments of monetary policy in Ghana, U.S. Agency for international Development: Mission to Ghana. November 2000

Before 2002, it was the Bank of Ghana Law (1992) that specified the legal relationship between the Bank of Ghana and the government. The Act, among others, also specified the objectives and the organizational structure of the Bank of Ghana. Following the Bank of Ghana objectives, we can see that they were defined too broadly[15]. According to the Bank of Ghana Law (1992), the Bank of Ghana is[16]:

(c) to regulate and direct the credit and banking system in accordance with the economic policy of the Government,

[15] Instruments of monetary policy in Ghana, U.S. Agency for international Development: Mission to Ghana. November 2000

[16] The Bank of Ghana Law, 1992, Part I, Section 3

(d) to promote by monetary measures the stabilization of the value of the currency within and outside Ghana,
(f) to ensure effective maintenance and management of Ghana's external reserves.

When we read these objectives we can see that obviously there is not a simple objective that the Bank of Ghana could focus on. Instead, if these objectives meant to be attained, the policies intended to be applied would be counterproductive. For instance, the Bank of Ghana decided to stabilize nominal exchange rate, which is the objective (d), and it relatively succeeded, but at a cost of decreasing external reserves, which is the point (f). Thus, a reformulation of the Bank of Ghana's objectives was needed and actually adopted by the Bank of Ghana Act, Act 612 (we discuss this act in the section 4.3).

Another problem emanating from the Bank of Ghana Law (1992) is the lack of independence. Before 2002, the Board of directors included one member from the Ghanaian Ministry of Finance. Considering that the Bank of Ghana Law (1992) includes the following two passages: *make advances and loans to the Government on overdraft* and *make direct purchase from the Government of treasury bills or securities representing obligations of the Government*[17]. These two parts could be identified as the main sources of the growth in monetary base at the beginning of the 1990s. Moreover, the constraint imposed on such "lending" was too weak: resources from this kind of financing *shall not exceed the amount of indebtedness or borrowing authorized in advance by the government for the fiscal year in which the advances are made*. This issue was addressed and resolved in the Bank of Ghana Act, Act 612, too.

In the first paragraph of this section I have already mentioned that the operating target of the monetary policy was reserve money. The target, that was supposed to be met within day-to-day operations, was the growth of monetary base (high-powered money). We need to look a little bit more carefully on the rationale behind the monetary targeting to be understand whether (or rather why not) the Bank of Ghana was not successful in conduct of its monetary policy. The Bank of Ghana was using as the intermediate target M2 (monetary aggregate). The targets of M2 and reserve money used to be set by the Bank of Ghana and the IMF on quarterly basis. If the Bank of Ghana met the target for reserve money, then the target for M2 was achieved[18]. However, this causation is not automatic. The fulfillment of the M2 target also depends on how stable is the money multiplier. This matter has been investigated by the

[17] The Bank of Ghana Law (1992), section 27
[18] We know that the following holds: $M2=mMB$ and that he value of the multiplier m depends on reserves.

Bank of Ghana[19] and the conclusions indicate that the money multiplier varied from 2.1 to 2.6 during the period 1/1993 – 1/996. Nevertheless, Youngblood et al. (1992) came to the conclusion that monetary base in Ghana plays a crucial role in the evolution of M2. The Bank of Ghana's inability to control the growth of high-powered money has represented the main source of inflation in Ghana (see the Table 4.3).

Table 4.2 Bank of Ghana Targets and performance (per cent/year)

	1993	1994	1995	1996	1997	1998	1999	2000*
M2 growth**								
Target	0	5	8	5	15	20	15	12
Revised target			14		25		17	
Actual	27	46	37	34	44	18	16	24
Inflation								
Target	9	15	18	20	15	10	10	8
Revised target	20						12	
Actual	28	34	71	33	16	16	14	20

Source: Ghana Budget Statements, Bank of Ghana
Available in Instruments of monetary policy in Ghana, U.S. Agency for international Development: Mission to Ghana. November 2000

Amoah and Zakari (2008) also attempted to examine causes of why the Bank of Ghana failed to attain lower levels of inflation during the 1990s. As they note, the success under the monetary-targeting regime depends on the ability of the central bank to determine the demand for money. For that reason, in their research they focused on the Ghanaian demand for money, more specifically they investigated the stability of the money demand. Their findings suggest that the Ghanaian demand for money is unstable. The main reason for this, as identified in their paper, is the evolution of new financial instruments and new market players. The evolution of financial markets was identified as the main cause why the demand for money became unstable. If the money demand is unstable, then it becomes very hard to be predicted. For that reason, difficulties concerning the execution of monetary policy through monetary targeting arose (Amoah & Zakari, 2008). As stated in Walsh (2003)[20], "the unpredictability of money demand is an important reason that most central banks moved away from using monetary targeting during the 1980s". Since Ghana needed to find a solution for its deteriorating situation in the fight against high levels of inflation, the Bank of Ghana, which

[19] Bank of Ghana (1996)
[20] Walsh (2003), pg. 447

had been using money supply as its target till 2002, finally decided to join the countries that abandoned the monetary-targeting regime and adopted informal inflation targeting.

4.2 Inflation targeting: Key elements

Since the introduction of the inflation targeting regime in 1990 by the Reserve Bank of New Zealand, a considerable amount of literature concerning this monetary policy regime has been produced. According to Svensson (1998a, pg. 14), three main points characterize inflation targeting:

1. *an explicit quantitative inflation target*,
2. *an operating procedure, inflation-forecast targeting, which uses an internal conditional inflation forecast as an intermediate target variable,*
3. *a high degree of transparency of the monetary policy and accountability of the central bank.*

Mishkin (2000, pg. 1) adds two other points:

4. *an institutional commitment to price stability as the primary goal of monetary policy, to which other goals are subordinated,*
5. *an information inclusive strategy in which many variables, and not just monetary aggregates or the exchange rate, are used for deciding the setting of policy instruments.*

The implementation of IT regime and the monitoring of inflation targets were profoundly examined in Svensson (1997). Also, in Svensson (1998b), the difference between strict and flexible inflation targeting has been made. If a central bank pursues *strict inflation targeting*, the only goal of its monetary policy is to keep the level of inflation low and maintain stable prices. On the other hand, if a central bank opted for *flexible inflation targeting*, the role of its monetary policy is twofold: stabilization of both inflation around the inflation target and the real economy – thus a positive weight on output stabilization is put. Based on this definition of flexible inflation targeting, the following standard quadratic loss function represents the flexible IT:

$$L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - y_t^*)^2,$$

where L_t stands for loss in time t, π_t is inflation in time t, π^* is the inflation target, λ is the weight put on the output gap stabilization (in case of strict inflation targeting λ is equal to zero[21]) and $y_t - y_t^*$ is the output gap (defined as the difference between actual output in time t and the potential output in time t).

The framework of full-fledged inflation targeting thus includes declaration of an explicit inflation target[22] (either an interval or a point target based on the inflation forecast of the central bank). The declared (and publicly announced) inflation target is then attempted to be attained by using its monetary policy instruments which is in most cases interest rate. The policy of the central bank has to be transparent and the central bank has to be independent and accountable for the pursued policy. These prerequisites were satisfied by a law as it was the case in Ghana (the new law was passed in 2002: the Bank of Ghana Act, Act 612).[23]

If a central bank does not manage to keep inflation within its target interval, it is supposed to release a publicly available statement and diligently explain why the target has been missed. In the short run, the central bank does not necessarily have to strictly adhere on its inflation target. If it did, the monetary policy pursued by the central bank would be what is called a rule-based monetary policy. This kind of monetary policy means that it is carried out without any space for discretion. Major source of critique of this approach is based on the idea that a central bank is unable to promptly react to changes in the economy.

As far as inflation targeting is concerned, it is suggested that inflation targeting regime should not be labeled as either the rules-based monetary policy, or the one based on discretion (Bernanke et al. (1999)). Inflation targeting can be considered something that lies between these two sorts of central banking management, i.e. rules-based and discretion-based. In literature (again, see Bernanke et al. (1999)), inflation targeting is usually labeled as monetary policy *framework*. There are two reasons for this (again, see Bernanke et al. (1999)). First, monetary policy makers do not dispose with a simple tool that would enable them to conduct monetary policy. On the contrary, central bankers have to rely on sophisticated models that are available to them and have to analyze a whole range of variables that may enter the decision-making process. Second, various kinds of macroeconomic shocks can hit the

[21] This case has been labeled by Mervyn King as *inflation nutter* – the central bank cares only about stabilizing the level of inflation around its target. See King (1997)
[22] The inflation target is set by the central bank, government, or parliament. (Svensson 2008, pg. 7)
[23] The Bank of Ghana Act, Act 612 is analyzed in the section 3.3 Fulfillment of IT prerequisites in Ghana.

economy and for that reasons, central bankers posses tools to react to these short-term fluctuations.

As an increasing number of countries has been adopting inflation targeting as their monetary policy regime, the question of whether inflation targeting is success or disappointment has been raised more and more often. Mishkin and Schmidt-Hebbel (2007) argue that countries targeting inflation succeed in achieving lower inflation in the long run, albeit they do not conclude that inflation targeters performed significantly better than non-inflation targeting countries. Walsh (2008) came to the same conclusion – the difference between the targeting and non-targeting industrialized countries is negligible. But as far as emerging and developing countries are concerned, those with inflation targeting policy have experienced decrease in inflation and more stable real economy (Walsh 2008, pg. 33). The positive effect of inflation targeting on developing countries is also stressed in Jonas & Mishkin (2005), Lin & Ye (2008), and Fang et al. (2009).

4.3 Fulfillment of IT prerequisites in Ghana

In the section 3.1 Inflation Targeting: Key elements, we describe characteristics of inflation targeting framework. But if a central bank is to be able to adopt the IT monetary policy regime, it has to fulfill certain requirements that are characteristic for this regime. The list of such prerequisites usually includes:

a) central bank independence,
b) fiscal dominance,
c) and sufficiently developed financial markets.

As pointed out in Truman (2003), it is certainly true that inflation targeting framework would be more successful providing these preconditions are fulfilled. On the other hand, these preconditions are not "requirements" that have to be met before the central bank start with this framework. They can be put into practice during the first phase of inflation targeting. This was the case in Ghana where the move on to full-fledged inflation targeting was announced after five years of informal inflation targeting.

As we can see in the Figure 2.2 *Trends in CPI inflation: 2003-2010*, there was a significant increase in the level of inflation at the beginning of the new millennium. According to Addison (2008), the crisis in 2000 was a consequence of poor economic policies, among which fiscal dominance played an important role – the Bank of Ghana

provided substantial assistance with financing fiscal deficits. To prevent this from happening again and to restore Ghanaian economy, an action needed to be taken.

4.3.1 Central bank independence

In 2002, the Parliament of Ghana passed the Bank of Ghana Act, 2002 Act 612 which enabled the Bank of Ghana to conduct its monetary policy independently of the government. Measuring independence of a central bank is a relatively difficult task. However, we can still try to analyze a few aspects that are involved in this process. A clear definition of central bank's objectives, rules concerning the appointment of members of the board of directors, the power that the government has during the decision process, and the level to which the central bank has to provide government with money are the main aspects that are supposed to be included in the legislation of Ghana and that we look upon when evaluating the Bank of Ghana independence.

The BOG Act explicitly states that first, *the primary objective of the Bank is to maintain stability in the general level of prices* and second, *without prejudice to subsection (1)*, i.e. the primary objective of the BOG, *the Bank shall support the general economic policy of the Government and promote economic growth and effective and efficient operation of banking and credit systems in the country, independent of instructions from the Government or any other authority.*[24]

Next, the BOG Act also clarifies the matters concerning the administration of the Bank. The Board of Directors, which is the decision-making body of the central bank, consists of the Governor of the Bank, the first and the second Deputy Governors. These three persons are appointed by the president who makes the decision after discussing the matter with the Council of State[25]. All of them are appointed for a period of four years with a possibility to be re-appointed. One post at the board of directors also belongs to the ministry of finance and then there are eight other people nominated by the president, again after the consultation with the Council of State.

The policy of the central bank has to be transparent and the bank has to be accountable for the measures taken. These are essential characteristics of the inflation-targeting regime. The Bank of Ghana holds a press conference after each meeting of the Monetary Policy

[24] The Bank of Ghana Act, 2002 Act 612, Part I – The Bank of Ghana, its objects and shares
[25] The Council of State is a group of prominent citizens that provides the president with advice on matters concerning the state of Ghana.

Committee (MPC)[26]. The information about the decisions concerning the BOG monetary policy steps is published in the local press and is also available on the webpage of the Bank of Ghana. What we see as a drawback concerning the communication process is the fact that the Bank of Ghana does not publish its inflation forecasts that are so important to anchor inflation expectations of people. The Governor of the BOG, however, tries to explain the process behind the pursued policy (Amoah & Zakari, 2008).

4.3.2 Accountability of the BOG

In all democratic countries one precondition certainly holds – the government is accountable for its policy to the public. This precondition makes the government work more effectively. If there is a threat that policymakers can be called off, they will have incentives to work well and to do their best to achieve what in the general interest. For similar reasons, central bankers ought to be accountable for the decisions they take.

A fundamental questions needs to be posed and that is *by whom will it be decided whether the action taken by the central bank was adequate under the given circumstances?* Giavazzi & Mishkin (2006) suggest that monetary policy should be discussed in a public forum. That would be the place where the central bank's monetary policy would be thoroughly scrutinized by the country's well respected economists and journalists. This can be easily done in advanced countries where is a plethora of various organizations (think-tanks, universities, banks, newspapers etc.) that provide a sufficient number of economists and journalists able to discuss monetary policy. On the other hand, in developing countries such as Ghana where is only a limited number of monetary policy experts, this could be a problem. The positive fact is that Ghana, as a developing country, can and does receive help in the form of consultations from international organizations such as the International Monetary Fund. As far as journalists are concerned, they play an important role in the supervision process since they convey the outcomes of these discussions to the public. So it is extremely important that these journalists do understand the rationale behind the decisions of the central bank. The Bank of Ghana informs the public and politicians about the current state of affairs through a press release. Above that, the members of the Monetary Policy Committee have participated in various lectures during which the steps undertaken by the Monetary Policy Committee

[26] The MPC consists of seven members and is responsible for initiating proposals for the monetary policy of the Bank of Ghana and providing statistical data as stated in the Bank of Ghana Act, 2002 Act 612.

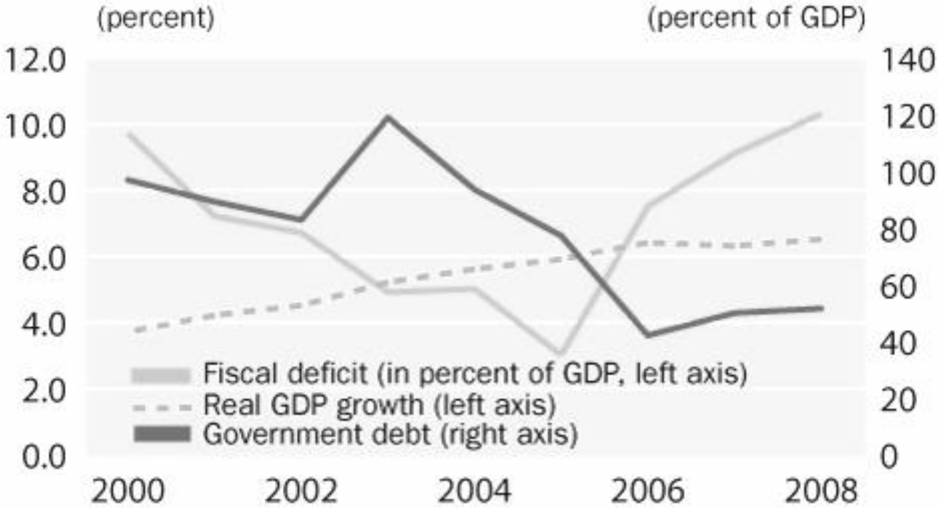
were explained. As a shortcoming of the Bank of Ghana's we can indicate the absence of hearings in the parliament where the monetary policy would be explained to the Ghanaian MP's.

4.3.3 Macroeconomic stability

In many cases, it was the factor of macroeconomic instability that led the decision-makers to switch to the inflation-targeting regime. But it is also this instability that represents risk for the central bank that wants to target inflation since there can be a conflict of its objectives. As noted in Carare et al. (2002), adopting inflation targeting too early after a crisis, could cause that the central bank gives priority to other macroeconomic variables such as output or exchange rate.

It is very important, and more so in developing countries, for the central bank not to be caught in the trap of fiscal dominance. Many of the least developed countries have difficulties with their fiscal deficits and Ghana makes no exception as we can see in the Figure 3.1.

Figure 4.1 Fiscal deficit developments in Ghana



Source: National authorities; IMF staff estimates
Available at: http://www.imf.org/external/pubs/ft/survey/so/2008/CAR072908B.htm

Part III of the BOG Act relates to the function of the Bank as a fiscal agent of government and other state institutions. The BOG Act states that the Bank may: a) *make advances and loans to the Government on overdraft or in any other form that the Board may*

determine, and (b) *make direct purchase from the Government of treasury bills or securities representing obligations of the Government.* However, the total amount of these advances and loans cannot be higher then 10% of the revenue in the fiscal year in which the loans were provided. The BOG Act also determines the period within any advance is to be repaid and that is set to three months. In case that some advances have not been repaid, the bank will not provide any other advances in the subsequent year. These limitations are meant to curb financing of fiscal deficits by the Bank of Ghana.

4.3.4 Stability of the financial system in Ghana

For credibility of the monetary policy of the central bank that operates in the inflation-targeting framework it is essential that the financial system in the country be developed and stable. By financial stability, we understand a system that is viewed by markets as having a minimal vulnerability to economic and financial crises as defined by Carare et al. (2002). The benefits of well-functioning financial system enable[27]:

- to facilitate the formulation of monetary policy under IT,
- to transmit the information about economic fundamentals to the central bank via the evolution of asset prices,
- central banks to focus more on the attainment of their inflation targets since,
- well-developed financial markets absorb more easily macroeconomic shocks.

In 2000, Ghana began with a process of thorough transformation of its financial system to bolster the macroeconomic stability of Ghanaian economy. The process was initiated and supported by the joint program of the IMF and the World Bank - Financial Sector Assessment Program (FSAP).[28] The original FSAP from 1999 was updated in 2003. Between the years 2003 and 2007 (the year of the inflation-targeting regime adoption) a significant improvement in the evolution of Ghanaian financial market has been registered. Table 3.3 clearly shows that the reforms undertaken by the government have had a positive impact on the financial market. Among other factors indicating successful evolution of the financial system belong: the growth of the Ghanaian financial sector in 2007 was 6.3% compared to 4.5% in 2002; the depth of the financial market measured as a ratio of M2/GDP

[27] Carare et al. (2002), pg. 15

[28] FSAP was introduced in May 1999 to promote the soundness and to increase effectiveness of financial markets in the IMF and the WB member countries.

reached 43% at the end of 2007; and last but not least the banking sector in Ghana represented 72.4% of the whole financial sector in 2007.

Table 4.3 Financial soundness indicators in Ghana

Year	2004	2005	2006	2007
Capital				
Regulatory capital to risk-weighted assets	10.0	12.6	13.2	14.8
Tier1capital to risk-weighted assets	8.8	11.3	11.7	13.6
Asset quality				
Nonperforming loans to total loans	12.8	10.2	6.3	5.4
Nonperforming loans to regulatory capital	14.8	6.8	2.3	4.8
Earnings (Profitability)				
Return on assets	6.4	4.8	4.9	3.7
Return on equity	49.6	38.1	40.0	35.8
Interest margin to gross income	50.1	51.9	52.9	46.1
Liquidity				
Ratio of net loans to total deposits	54.9	66.7	71.8	78.6
Liquidity ration	74.3	68.7	61.1	53.4
Share of FX deposits in total deposits	27.9	25.6	28.1	31.8

Source: Bank of Ghana data
Available at: http://www.imf.org/external/pubs/ft/survey/so/2008/CAR052208A.htm

Even if the situation concerning the financial market in Ghana was found to be acceptable to adopt the inflation-targeting regime, the transformation process is not complete and further steps will have to be made. There is still place for improvement in the area of microfinance and rural banking, and further, pension and insurance systems will have to be deepened. Also the government's Financial Sector Strategic Plan is supposed to deal with new financial instruments that emerge and problems that we discuss in the section *3.2 Monetary policy in Ghana prior to IT.*

Chapter 5

Evaluating inflation targeting in Ghana

Before we delve deeper into the issue of inflation targeting in Ghana, we need to determine what we can and what we cannot conclude considering the fact that inflation-targeting regime was adopted only 3 years ago. Our thesis should be looked upon as an overview of what should be improved rather than an empirical study of what have been done so far. The next point that should be clearly understood is what we can expect from the monetary policy evolutions in Ghana. As Svensson (2001) points out, in the long term monetary policy can influence only nominal variables – there is no central bank that would be able to positively influence the growth rate of real variables such as gross domestic product or unemployment. The only thing that the central bank can do is to reduce the variability of these real variables. Due to this fact, more and more central banks have declared price stability to be their primary objective.

In this evaluation, we will focus on the following aspects of monetary policy in Ghana[29]:

- Forecasting and analysis methods
- The Bank of Ghana external communication
- The fulfillment of the Bank of Ghana goals

We decided to thoroughly scrutinize forecasting methods and external communications of the Bank of Ghana since we assume that there is still place for improvement in these two areas. We believe that amelioration would lead to a better performance of the inflation targeting regime. Evaluating inflation targets should not be the only part of the overall IT evaluation, but still it is important.

[29] The list of the issued that are addressed in this evaluation is based on the monetary policy evaluation carried out by Giavazzi and Mishkin (2006).

5.1 Forecasting and analysis methods

In this section we will try to address the question of whether the Bank of Ghana's technical expertise is sufficient for a well-functioning regime of inflation targeting. It is clear that the Bank of Ghana simply cannot compare to the research level of institutions such as the Swedish Riksbank, the Bank of England or the Reserve Bank of New Zealand. This is given by the long-standing tradition of these institutions and also by the fact that they can recruit PhD graduates either in the International Job Market or in the local universities. In 2003 the Bank of Canada carried out an analysis of the number of PhD graduates working in research departments of central banks[30]. According to the results of this study, the highest number of PhD graduates is in the Bank of England 74, Banca d'Italia 51, Riksbank 40. The composition of the researchers in the Bank of Ghana and the number of PhD graduates is unknown to the author of this thesis. But given the circumstances, we can assume that the number is lower. This assumption is based on the fact that the Bank of Ghana is not able to attract many PhD graduates from reputable universities and therefore it has to rely on Ghanaians citizens who undertook their studies abroad; and graduates from local universities. Another aspect of how to evaluate the monetary policy is to look on the research that particular central banks produce. Here, again, the Bank of Ghana cannot compare to such institutions such as the top institutions[31].

A fundamental aspect of inflation targeting practice represents forecasting of inflation. Central banks use a variety of models and some of them are very sophisticated and advanced. Alichi et al. (2009) point out that the Bank of Canada has been using models for inflation forecasts since 1970's, the Reserve Bank of New Zealand have followed at the beginning of 1990's when it adopted the inflation/targeting regime. Alichi et al. (2009) also adds that *the development of the Forecasting and Policy Analysis Systems at the RBNZ, Norges Bank and Czech National Bank made it possible for them to adopt very high levels of operational transparency, including the publication of an endogenous path for the policy rate*[32]. In this section we will shortly discuss a model for full-fledged inflation targeting proposed by Alichi et al. (2009). This should help us understand how the monetary policy under the inflation-targeting framework is formed.

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[30] Guérard-Langlois et al. (2005)
[31] Just out of curiosity, the Federal Reserve Bank of Minneapolis has the best researcher, second is the New York Fed and then the Bank of England (Giavazzi & Mishkin, 2006, pg. 61)
[32] Alichi et al. (2009), pg. 6.

The presented model deals with the implementing of inflation forecast targeting in an emerging, low-income country. The model can be described by the following four equations[33]:

1. **The output gap**:

$$ygap_t = \beta_{ld}\, ygap_{t+1} + \beta_{lag}\, ygap_{t-1} - \beta_{RRgap} RRgap_{t-1} + \beta_{zgap} zgap_{t-1} + \beta_{USgap}\, ygap_t^{US} + \varepsilon_t^{ygap}$$

This equation relates the current gap to expected (the first on the right side) and past gaps (the second), the real interest rate gap, the real exchange rate gap, and the foreign output gap. ygap is the output gap, $ygap_{max}$ is the maximum output gap possible, RRgap is the real interest rate gap in percentage points, zgap is the real exchange rate (an increase is a depreciation, in percentage points), and $ygap_{US}$ is the foreign output gap. The output gap is a deviation from the trend. If the output gap is positive then it indicates that the actual output is higher than the trend[34].

2. **Phillips curve**

$$\pi_t = \alpha_{\pi ld}\pi 4_t^e + (1-\alpha_{\pi ld})\pi 4_{t-1} + \alpha_{ygap}\left[ygap_{t-1} / (ygap_{\max} - ygap_{t-1})\right] ygap_{\max} + \alpha_z\left[z_t - z_{t-1}\right] + \varepsilon_t^{\pi}$$

The Phillips curve relates inflation to past and expected inflation, the output gap, and changes in the exchange rate. π is the month-on-month inflation rate transformed into years, π4 is the four-quarter change in the CPI, $\pi 4_t^e$ is the forward looking component of inflation (based on past and future inflation), and z is the real exchange rate.

3. **Exchange rate equation**

$$z_t = \delta_z z_{t+1} + (1-\delta_z) z_{t-1} - \left[RR_t - RR_t^{US} - \rho_t^*\right]/4 + \varepsilon_t^z$$

The exchange rate equation imposes uncovered interest parity (IP), the arbitrage condition that real interest rates (on investments in different currencies) will be equalized across countries, up to a country risk premium. RR^{US} is the foreign real interest rate and ρ is the equilibrium risk premium. The first two terms on the right hand represent agents' real exchange rate expectations.*

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[33] Alichi et al. (2009), pg. 7

[34] Instead of the trend, an equilibrium GDP can be used.

4. **Monetary policy loss function**

$$Loss = \sum_i \omega_1 \left(\pi 4_i - \pi^*\right)^2 + \omega_2 ygap_i^2 + \omega_3 \left(rs_i - rs_{i-1}\right)^2$$

We can see that the monetary policy loss function in this model is represented by squared deviations from the inflation target, squared output gap and squared one-quarter changes in the policy interest rate. ω_i represents the weight the policy-makers give to each member of this equation. In comparison to the Chapter 4 where we introduced monetary policy loss function with only two members: deviations from the inflation target and squared output gap. In this model we also consider changes in the policy interest rate. This is due to a simple fact that policy-makers prefer low variability of interest rate. We need to realize that the interest rate set by the central bank is a short term rate. On the other hand the market interest rate, that has an impact on the evolution of economy, does not operate on such short-term basis. To enable a smooth transmission of the change in the policy interest rate into the market interest rate, low variability of this policy interest rate is desirable (and for that reason, central bankers change interest rates only deliberately). Therefore, low variability in the policy interest rate enables financial markets to incorporate the expected evolution of the central bank's interest rate into the long-term interest rate and they eventually respond more easily to the changes in the policy interest rate.

Using this model, Alichi et al. (2009) attempt to determine the optimal path of inflation reduction in Ghana. They conclude that if the inflation reduction in Ghana is to be smooth, then a significant increase in the interest rate during the first year of the disinflation program is highly expected. Based on monetary policy research, there is strong evidence suggesting that a persistent pursuit of the long-run inflation target will gain credibility for the central bank. As pointed out by Alichi et al. (2009), gaining credibility for the Bank of Ghana will be the most important aim to reach. In low-income countries, people tend to assume that inflation rates will stay as high as the recent ones, in other words they assume that the inflation trend is not going to change. The second important conclusion for the conduct of inflation-forecast targeting in Ghana is that supply shocks play an important role in the monetary policy – the model simulations show that various supply shocks can have important effects on the disinflation rate. On one hand, positive supply shocks can help to speed up the disinflationary process or rather, the same results of disinflationary process can be achieved by lower level of interest rates then it would be needed without a positive supply shock. On

the other hand, negative supply shocks represent a serious threat for the Ghanaian economy. This is particularly due to low credibility which will cause that the shock will last longer even if an appropriate policy action is taken[35].

Nowadays, the Bank of Ghana has been working on the evolution of a more complex macroeconomic model. Up to now, the bank has been using several models – the inflation forecasts have been derived from Auto-Regressive (AR) Process and The Error Correction Forecast Model (ECFM). The final decision is based partly on the results of these models and on considerations of the Monetary Policy Committee.

5.2 The Bank of Ghana external communication

Within the inflation-targeting framework, communication with the public is extremely important part of the process. To quote the current Chairman of the United States Federal Reserve Ben S. Bernanke (2003): "… major element of best-practice inflation targeting (in my view) is the communications strategy, the central bank's regular procedures for communicating with the political authorities, the financial markets, and the general public." Bernanke (2003) also adds that central bank's communication strategy is firmly connected to the concept of the central bank's transparency and generally includes the following aspects: public announcement of the policy goals (i.e. what is intended to be done with inflation), open discussion of the bank's policy framework (ideally with a schedule for achieving the central bank's objective), and public release of the central bank's forecast.

It is the Monetary Policy Committee that makes a decision about the new monetary policy. This committee meets every other month and each meeting usually lasts three days. During these three days, the members of the MPC thoroughly analyze the macroeconomic situation and discuss the evolution of various economic indicators that are presented to them by the BOG's staff. After that, another series of discussion follows and that leads to a conclusion about the central bank's policy interest rate. The members of the MPC reach the conclusion by consensus (Amoah & Zakari, 2008).

After the final decision is made, it needs to get to the public. The Bank of Ghana publishes several reports focusing on various aspects of the Ghanaian economy evolution:

[35] The problem of insufficient central bank's credibility and its consequences for monetary policy were discussed in the second chapter of this thesis of this thesis (2.1.3 Credibility of monetary policy).

1. **World Economic Outlook (WEO) & External Sector Developments**

In the first section, the Bank of Ghana provides an analysis of the world economy (specifically global GDP growth, global inflation, and the impact of the world economy on developing countries). The reason why the BOG does that is at hand – Ghana is a small open economy and therefore dependable on the evolution of the world economy. Next, the discussion concerning monetary policy of several central banks follows. The evolution of inflation and particular interest rates are described. Specifically it concerns the following central banks: US Federal Reserve, Bank of Japan, European Central Bank, Central Bank of Chile, Bank of England, Bank of Canada, South African Reserve Bank, and Central Bank of Turkey. In the second section, external sector developments are analyzed. The BOG evaluates the commodity markets and it mainly focuses on gold, cocoa and oil. All of these are important Ghanaian exporting articles. A brief discussion of exchange rates evolution, remittances, and selected currency movement follow. The whole report is 25 to 35 pages long, being published 3 to 5 times a year.

2. **Monetary and Financial Developments**

In this report, the review of developments in monetary aggregates is presented. Variables such as reserve money, money supply (quarterly and annual developments), foreign currency deposits (which measures dollarization of the economy) are analyzed. Also quarterly and annual credit developments to the private sector as a share of GDP, an evolution of the BOG interest rates and finally stock market developments are presented. The length of this report exceeds 10 pages and it is published 3 to 5 times a year.

3. **Fiscal Developments**

The fiscal sector report describes the fiscal side of the economy. An overview of total revenues from taxes and grants is presented – this revenue is divided into groups referring to specific taxes and the evolutions of these groups is the given. The next section describes the expenditure side of the state budget. The report concludes with the analysis of the public debt and its financing. The report exceeds 10 pages and is published 3 to 5 times a year.

4. **Financial Stability Report**

This report evaluates current credit market conditions in Ghana. In the first section, supply of credits to enterprises and demand for credits to enterprises are evaluated. Terms and conditions for getting a credit are then briefly discussed. The situation for households is

analyzed in an equal measure as the one for enterprises. The second part of the report analyses banking sector developments. In this part, aspects such as banks' assets and liabilities structure together with banks' investments, their profitability and the composition of banks' income are analyzed. The number of pages in this report exceeds 20. The report is released 3 to 5 times a year.

5. Inflation Outlook

In the inflation outlook and analysis report, the main aspects of inflation and GDP growth are analyzed. The report again starts with the overview of the world economy developments, and then it proceeds with the description of domestic economy developments. The evolution of inflation during the past quarter is evaluated, and then the outlook and the assessment of risks to inflation are provided. The outlook for GDP growth is the last part of the report. The length of this report is around 10 pages and it is published 3 to 5 times a year.

All of these five reports released by the Bank of Ghana contribute significantly to the transparency of monetary policy conducted by the central bank of Ghana and in fact also to its accountability since these two notions are connected. The author of this thesis considers as a main drawback of the BOG's communication process the lack of forecasts in the Inflation Outlook report. In this report, I would expect a thorough forecast of the evolution of inflation. Instead, there is an assessment of threats that could possibly have an adverse effect on inflation, and then the following outlook: *Projections from the May 2009 MPC round indicated that inflation could begin to decline from a peak of around 20 percent early in the second quarter of the year and towards the target range of 12.6 – 16.6 percent at the end of the year and then to a range of 6.7-12.7 percent by the end of June 2010*[36]. The Bank of Ghana has not revealed the analytical methods behind the process of inflation forecasting so we cannot draw any conclusion about the reasons of this drawback in the Inflation Outlook report.

Every other month, the Bank of Ghana also provides a Press release. This is a short summary of major aspects concerning the economy of Ghana. The following areas are included in the summary: Global developments, Inflation and Output, Fiscal Developments, Interest rate structure, Banking sector developments, External sector developments, and

[36] Inflation Outlook and Analysis, July 2009, Volume 4 No.4, Monetary Policy Report, Bank of Ghana.

Summary and Outlook. This summary is released every other month and enables the press to transmit the information concerning the Bank of Ghana's decisions and past evolutions.

5.3 Fully-fledged inflation targeting in Ghana

Ghana started targeting inflation in 2002. Five years later, in May 2005, it was announced by the Governor of the Bank of Ghana, Dr. Paul A. Acquah, during a press briefing by the Monetary Policy Committee that Ghana had moved on to fully-fledged inflation targeting (IFT). This move meant that the Bank of Ghana begun with public announcement of its inflation target so that it could form public expectations.

Inflation targets in Ghana are set jointly by the Bank of Ghana and by the Ministry of Finance (see the Figure 5.1) and revisions are made on annual basis.

Figure 5.1 Inflation targets in the world

	Since	Target set by:	Instrument independent	Current target (per cent)/2	Target variable
Australia	1993	Government & central bank	Yes1	2–3 (b)	CPI
Brazil	1999	Government	Yes	4.5 ±2.0 *3(p)*	CPI
Canada	1991	Government & central bank	Yes1	2 ±1 (p)	CPI
Chile	1990	Central bank	Yes	2–4 (b)	CPI
Colombia	1999	Central bank	Yes	3.5–5.5 */4*	CPI
Czech Republic	1997	Government & central bank	Yes	2–45 (b)	CPI
Ghana	2002	Government & central bank	Yes	7 - 9 */7*	CPI
Hungary	2001	Government & central bank	Yes	4 ±1 (p)	CPI
Iceland	2001	Government	Yes	2.5 ±1.5 (p)	CPI
Israel	1991	Government	Yes	1–3 (b)	CPI
Mexico	1995	Central bank	Yes	3 ±1 (p)	CPI
New Zealand	1990	Government & central bank	Yes1	1–3 (b)	CPI
Norway	2001	Central bank	Yes1	2.5 (p)	CPI
Peru	2002	Central bank	Yes	2.5 ±1 (p)	CPI
Philippines	2002	Government & central bank	Yes	4–5 (b)	CPI
Poland	1998	Central bank	Yes	2.5 ±1 (p)	CPI
Republic of Korea	1998	Government & central bank	Yes1	3 ±1 (b)	UND /6
South Africa	2000	Government & central bank	Yes	3–6 (b)	CPIX
Sweden	1993	Central bank	Yes	2 ±1 (p)	CPI
Thailand	2000	Central bank	Yes1	0–3.5 (b)	UND /6
U.K.	1992	Government	Yes1	2 (p)	CPI (HICP)

Source: Amoah & Zakari, 2008, pg. 17

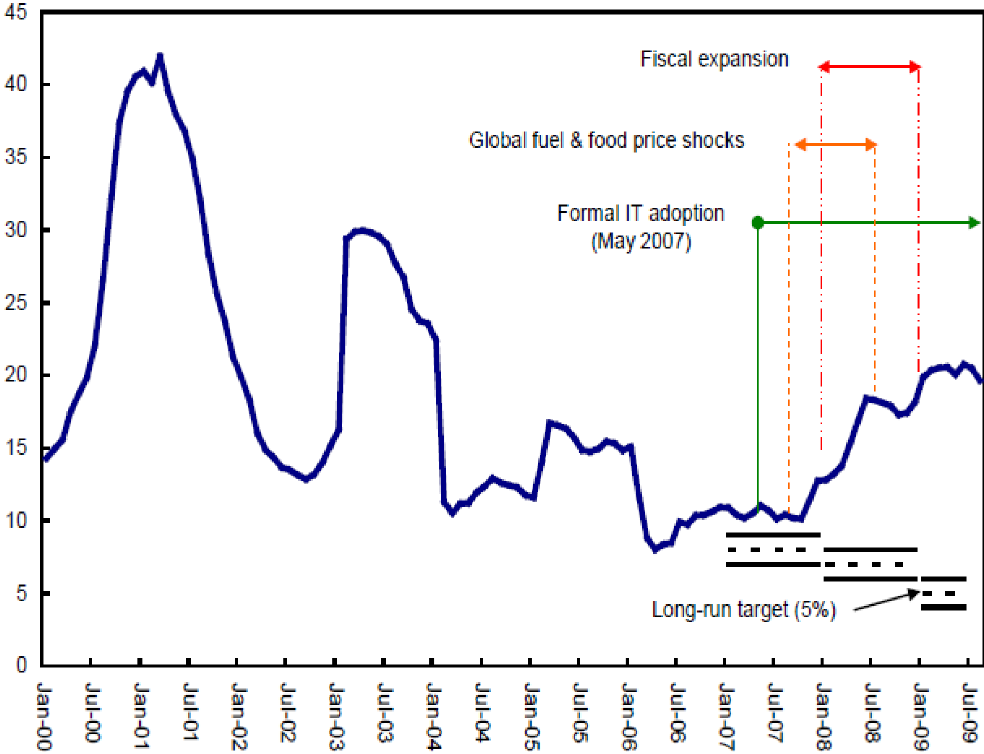
When the Bank of Ghana decided to start targeting inflation (2002), in the medium term the Bank of Ghana wanted to keep inflation within 8 to 12 percent. The timeframe for achieving the declared inflation target was from 18 to 24 months. The so-called inflation-timeframe is the time needed for inflation to return to the previous level of inflation from which it was diverted due to a macroeconomic shock that hit unexpectedly the Ghanaian economy. The 18-

24 timeframe is caused by lags between the change of the monetary policy instrument and the monetary policy action[37].

The Bank of Ghana uses the Consumer Price Index (CPI) excluding prices of petrol and energy as its target variable. Here Ghana makes no big exception as many of other inflation-targeting countries target the core CPI as well (Heintz & Ndikumana (2010). The reason for targeting inflation based on the CPI excluding petrol prices and utilities is that energy prices fluctuate significantly and represent a non-monetary source of inflation (Heintz & Ndikumana (2010). Although we are not able to completely get rid of the effects caused by energy prices fluctuation, we can at least mitigate its effect by excluding those components (petrol and utilities) that affect the CPI directly.

When the Bank of Ghana adopted the fully-fledged inflation-targeting in May 2007, it declared a medium-term target of 7-9 percent inflation and a long-run target 4-6 percent. As we can see in the Figure 5.2, very soon after the implementation of IFT global fuel and food price shocks hit the Ghanaian economy. As soon as these shocks started to fade away, expansionary policy pursued by the Ghanaian government led to a subsequent increase

Figure 5.1 Ghana: CPI Inflation, 1/2000 – 7/2009 (year-on-year, percent)



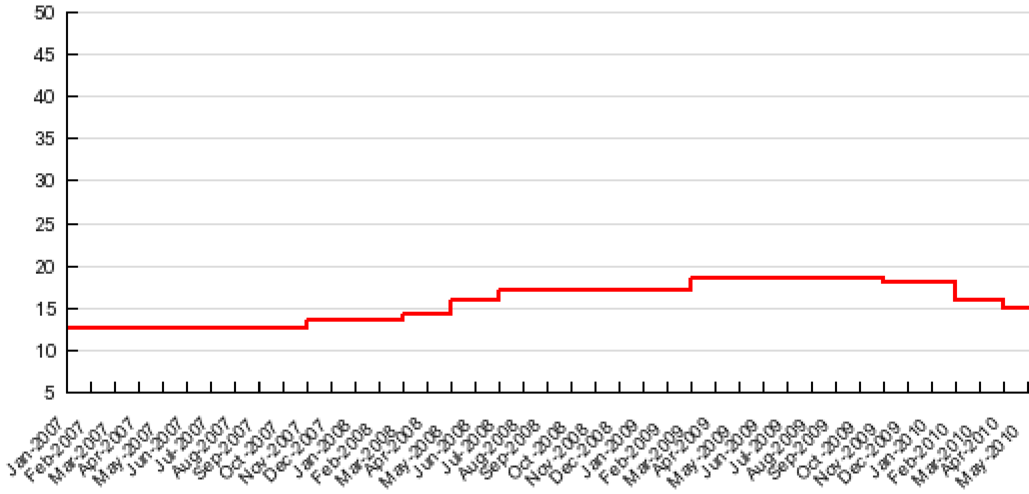
Source: Alichi et al. (2009), pg. 4

[37] Bank of Ghana website: www.bog.gov.gh

in the level of inflation. As a consequence of these events, the level of inflation began diverging from the targeted value (see the Figure 5.2). As pointed out by Alichi et al. (2009), missed targets during the initial disinflationary process are not uncommon and by any means do not indicate malfunction of inflation targeting.

As far as the monetary policy instrument is concerned, the Monetary Policy Committee of the Bank of Ghana uses the prime rate (precisely *the Bank of Ghana Prime Rate*) to steer the monetary policy.[38] This prime rate serves as the rate for which the Bank of Ghana provides loans to commercial banks. As a consequence, the prime rate has an impact on the short-term money market rates, lending and deposit rates. In the Figure 5.1 we can see the evolution of the prime rate during the past three years. Following the information from the last Press release (April 2010), the Bank of Ghana decreased its key policy rate to 15 percent.

Figure 5.2 Prime interest rate 01/2007-05/2010



Source: the Bank of Ghana

This decrease was the Bank of Ghana's reaction to decreasing level of inflation and the satisfactory process of disinflation. In March 2010, inflation was 13.32 percent and set on a decreasing trend. The Bank of Ghana expects inflation to continue going down and approach the short-term target of 9.2-11.2 percent. Above the Bank of Ghana interest rate, the BOG

[38] Ghana's Monetary Policy Framework, available at the Bank of Ghana webpage: http://www.bog.gov.gh/privatecontent/public/File/Monetary%20Policy%20Framework.pdf

also uses reserve requirements, open market operations, repurchase and reverse repurchase agreements, and auctions of government debt instruments of various maturities[39].

[39] The Monetary Policy Setting in Ghana – ISSUES AND PROSPECTS: ISSER - MERCHANT BANK ANNUAL LECTURE, delivered by Dr. PAUL A. ACQUAH, The Governor of the Bank of Ghana, June 14th 2005

Chapter 6

Conclusions

In this bachelor thesis I discuss evolutions of the monetary policy in Ghana during the past two decades. Ghana was chosen as it is the only sub-Saharan country that is practicing the fully-fledged inflation-targeting regime. In African low-income countries high levels of inflation have always been a major source of hardship for local policy makers. The Ghanaian case was supposed to illustrate the possible path for other developing countries that are unsuccessful and in fact unable to apply monetary targeting due to inability to predict money demand which stems from the evolution in financial markets.

In the second chapter I present the theoretical framework for evaluating monetary policy as proposed by Svensson (2009a). The notion of credibility is also discussed to a certain extent as it appears to be a very important factor (precondition) for monetary policy and inflation-targeting regime in particular.

The goal of the third chapter provides an introduction to the developing country of Ghana. I present a historical overview of inflation dynamics throughout the Ghanaian history. Based on research carried out by Barnichon & Peiris (2008), Heintz & Ndikumana (2010) I identify the growth rate of M2, the changes nominal exchange rate, and supply-side shocks as the main sources of inflation in Ghana.

In my analysis of monetary policy before the year 2002 in which inflation-targeting regime was adopted, I focus on identifying the main causes that led to the Bank of Ghana's inability to curb increasing levels of inflation. The main cause of the central bank's failure to steer inflation could be considered the central bank's inability to estimate the demand for money.

Then I proceed with a brief description of inflation-targeting regime in general. More important is the next subchapter in which I assessed the preconditions of inflation targeting in Ghana. It is obvious that Ghana managed to move forward as far as the Bank of Ghana's legislative setting is concerned. The main challenge of the Bank of Ghana is to build up its credibility to anchor public expectations. Unfortunately, the BOG did not manage to succeed in this task during the initial periods of fully-fledged inflation targeting as the country was hit

by two adverse shocks – increase in global food and fuel prices. The subsequent expansionary policy only deteriorated the situation and the rate of inflation in Ghana moved away from declared targets. However, the recent trends in inflation suggest that the Bank of Ghana set its inflation rate well on the disinflationary path.

I conclude that inflation targeting, if flexible enough and if the preconditions are fulfilled, can be the right option even for developing countries as it is the case in Ghana. This is a supporting argument for other developing countries such as Botswana and Nigeria that also consider adopting of the inflation-targeting regime for their monetary policy framework.

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Předpokládaný název BP:

What is the optimal monetary policy for Ghana?

Charakteristika tématu, současný stav poznání, případné zvláštní metody zpracování tématu:

This paper aims to analyze monetary policies adopted by the Bank of Ghana in 2007 as a response to rising inflation in the country. To achieve the price stability, the Bank of Ghana, as the only second national bank in Africa, chose to apply the method of inflation targeting. We will try to determine whether this decision was appropriate due to specific conditions of a developing country, especially the vulnerability to external shocks and the need to manage the exchange rate. We will also address the issue of inflation targeting bearing in mind the economic slowdown in the world which will have impact on Ghanaian economy.

Struktura BP:

1. Introduction
2. Sources of inflation in Ghana
3. Price stability or growth?
4. Inflation targeting – optimal monetary policy for Ghana?
5. Summary

Seznam základních pramenů a odborné literatury:

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