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Effects of Inflation Targeting Policy on Inflation Rates and Gross Domestic Product in Ghana

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Abstract
Inflation targeting has been widely adopted in both developed and developing economies. The Bank of Ghana (BOG) formally adopted an inflation targeting regime as a major monetary policy framework in May 2007, becoming the second African country to do so after South Africa. This research paper sought to investigate the effect of inflation targeting policy on inflation rates and gross domestic product. The research adopted the quantitative method by comparing the effect of inflation targeting policy on inflation rates and gross domestic product in the pre inflation targeting period (2000-2006) and the post inflation targeting period (2007-2013). The resultsrevealed that there was a significant difference between the mean inflation rates for the two periods. The inflation rate for the post inflation targeting period is significantly less than the pre-inflation targeting period. It was also revealed that inflation targeting did not have a statistically significant effect on economic growth in Ghana. The study concluded that policy makers are encouraged to explore other policy alternative including inflation targeting regime to maximize production in the economy.
Keywords: Inflation Targeting Policy, Inflation Rates, Gross Domestic Product

1.0 Introduction

One of the primary responsibilities of Central Banks is to use various monetary policies to achieve some degree of price stability in an economy. This is true because whether central banks are governed by Monetarist or by Keynesian economists, price stability enable planners and policy makers plan within long time horizon. The price stability responsibility drive of central banks have been revealed in the works of Volcker (1983), Greenspan (1996, p.1), and Blinder (1994, p.7).Greenspan (1996, p.1), believes that the objective of central banks is to achieve price stability; a situation in which the economic agents no longer take account of the prospective change in the general price level in their economic decision making.

Many economists believe that, inflation arises when the money in circulation in an economy is more than the supply of goods and service.According to Lovoie (1996, p.535), "inflation is mainly an excess demand phenomenon, induced by an excess supply of money". In other words, inflation can be termed as a situation where too much money is following too few goods. The root causes of inflation are largely attributed to fiscal deficit-financing by government through the printing of money. To arrest the above situation, policy makers in recent times have resorted to monetary inflation targeting strategy, which is a departure from the previous fiscal policy inflation targeting regime. To affirm the above departure by central banks, Debelle, Masson, Savastano, and Sharma (1998, p.2) have reiterated that "if fiscal dominance exists, inflationary pressures of a fiscal origin will undermine the effectiveness of monetary policy by obliging the central bank to accommodate the demands of the government, say, by easing interest rates to achieve fiscal goals".

The term inflation targeting entered into mainstream economics when in 1990 New Zealand embarked on a wide-range economic and governmental reforms that sought to define performance measures and systems of accountability for all government departments. The reforms initiated under the Reserve Bank Act of 1989 established three policy frameworks dubbed inflation targeting.

The first framework established dialogue between the central bank and the government concerning criteria of measuring the central bank's performance. The main yardstick established under the first framework was price stability or inflation targeting. The second framework granted the Reserve Bank power to pursue its assigned goal without government interference (that is the Reserve Bank must be independent). The last framework established means of accountability whereby the goal is made public and the Governor of the Reserve Bank is held accountable for the bank's performance.

According to Rochon and Rossi (2006) since the adoption of inflation targeting in New Zealand in 1990 and Canada in 1991, a number of countries have now adopted an inflation targeting regime.In fact the Keynesian economists believe that inflation targeting is the best alternative when it comes to influencing inflation expectations.As the name suggests,inflation targeting puts price stability as the primary objective of the central bank, and the inflation target provides what is known as the nominal anchor for monetary policy framework.Because the policy framework clearly specifies the inflation objectives and a clear commitment to achieving them, it helps to anchor the public's inflation expectations,as well as the expectations of future inflation to influence prices and wages thereby improving the general economy.The above situation leads many Central Banks to believe that the best contribution that monetary policy can make to growth is to provide a low and stable inflation environment that is conducive to sustainable long-term growth.

Inflation targeting regime proponents have argue that, the policy strategy leads to more credible, transparent, accountable and a better management of inflation. Kydland and Prescott (1977) and Gordon (1983) have all attested to the above assertion by saying that, the more independent central banks are the more they are able to reduce the rate of inflation. Contrary to the above, inflation targeting policy strategy is not universally shared as more central banks have not moved to adopt the strategy. In the United States, the debate over the adoption of inflation targeting policy option has resulted in many economists like Friedman (2004) and Mishkin (2004) saying that, inflation targeting places too much emphasis oninflation rates to the detriment of other monetary goals. Stigliz (2008) has also stated that, inflation targeting is being put to the test, and it will almost certainly fail.

According to Epstein (2002) during the last decade, central banks in developing countries have also increasingly adopted monetary policy approaches that focus on lowering the rate of inflation with little regard to their impact on "real factors" such as poverty, employment, investment or economic growth. The reason for the adoption of inflation targeting in developing countries is that, over time, as inflation rises the cost of goods and services increase, and the value of the local currency falls because consumers are not able to purchase the same quantity of goods and services they previously could. Drawing from this, it is relevant to control inflation in order to reduce the unit of a currency that is used to purchase fewer goods as time progresses.

The Bank of Ghana (BOG) formally adopted an inflation target in May 2007, becoming the second African country to do so after South Africa. The adoption of inflation targeting policy regime has therefore increased transparency and accountability of the BOG, which has now resorted to publishing inflation reports. It must however be noted that almost seven (7) years after the adoption of inflation targeting by the BOG little research has been conducted to review the effectiveness of this policy in stabilizing the general price level. However as the policy of inflation targeting spreads, many policy makers are asking, is inflation targeting the best policy option for Ghana? On several forums, the BOG has justified the inflation targeting policy regime, saying that it is the best policy option towards tackling Ghana's two decades inflation challenges. This assertion is however not surprising since the BOG is the custodian of the policy. Based on the above arguments, conducting research into Ghana's inflation targeting policy is the only justifiable option that can reveal scientifically, the effects of inflation targeting policy on inflation rates, and how significantly it has affected GDP growth.

In addition, the authors also believe that many researches on inflation targeting policy regime have tended to be concentrated in the industrialized economies. Among these researches are Walsh (2009), Mishkin and Schmidt-Hebbel (2007), Sheridan (2005), Vega and Winkelried (2005) and Wu (2004). Though other studies have given evidence from developing countries perspectives, these have been concentrated in the Latin American regions. Little evidence has however been obtained from an African perspective. Moreover, many of this empirical evidence have focused on the effects of inflation targeting policy regime on inflation rates and inflation expectations. Hardly have most researches relate the effects of inflation targeting policy regime on GDP growth.

The authors believethat, by researching into the effects of inflation targeting policy regime on inflation rates and GDP growth in a specific environment (Ghana) will bridge the gap in knowledge between evidence in the industrialized world, and other developing countries. This will therefore contribute to the existing knowledge in the field of inflation targeting. This study has been organized into six sections, this include the introduction, theoretical and empirical literature review, methodology, results, discussion, and finally recommendation and conclusion.

2.0 Literature Review

Inflation is the condition of generalized excess demand, in which too much money chases too few goods. Similarly Lovoie (1996) defined "inflation as mainly an excess demand phenomenon, induced by an excess supply of money"(p.535).

Both definitions above are causal. In the first case inflation is traced to demand in the goods market; in the second inflation is explained as the result of a change in the money supply. In recent discussions Friedman (1970) has popularized the monetarist causal definition as follows;"Inflation is always and everywhere a monetary phenomenon… and can be produced only by a more rapid increase in the quantity of money than in output" (p.24).

It can be deduced from the definitions above that inflation occurs in an economy when too much money is chasing too few goods and services over a period of time.

2.1Theories of Inflation

2.1.1 Monetarist View

According to Johnson (1982, p.239) the monetarist view of inflation is associated with and ultimately causally dependent on a rate of increase of money supply significantly in excess of the rate of growth of real output; the difference between the two rates being the rate of inflation. The theory, it should be noted, does not assert that inflation is attributable to monetary ignorance or mismanagement; monetary expansion and the consequential is a method of taxing the holder of money to which may well be driven by political circumstances, in full knowledge of what they are doing. The theory rests on the proposition that there is a stable relation between real income and the amount of real purchasing power the public wants to hold in monetary form; that this money-to-income relation is inversely related to the expected rate of inflation, the erosion of the purchasing power of money through inflation constituting an important element of the cost of holding money; and that in the long run people will come to expect the rate of inflation induced by the authorities through their policy respect to monetary expansion.

The assumption that the public form expectations about inflation, adjust them in the light of experience and acts on these expectations in its behavior, is a crucial difference between the quantity approach to inflation and the currently dominant Keynesian approach.

2.1.2Keynes' view of the functions of a central bank

According to Keynes's General Theory (1936, p.159) money is neither in the short run nor the long run, neutral. Keynes general theory, therefore, suggested that any monetary policy framework that dictated the quantity of money or the rate of interest in a system will impact directly on real economic outcome. Consistent with the above therefore, Keynes suggested that central banks have two primary functions. The first function is the provision of liquidity in the system, and the second function is the determination of inflation rate.

With the above suggestions in mind, Keynes (1930) stated that "bank credit is the pavement along which production travels, and the bankers if they knew their duty, would provide the transport facilities to just the extent that is required in order that the production powers of the community can be employed at their full capacity" (p. 220).

The above view implies that central banks are expected to extend credit into the economic system as cheaply as possible so long as the economy has significant idle resources. The second function of the central bank suggested by Keynes (1930) is that, the central bank must ensure financial stability and orderliness in the nation's financial markets thereby ensuring that money and output are in equilibrium both in the short and long runs.

2.1.3 Elements of Inflation Targeting

> "Inflation targeting is a recent monetary policy strategy that encompasses five mainelements; a public announcement of medium-term numerical targets for inflation,an institutional commitment to price stability as the primary goal of monetary policy, to which other goals are subordinated, 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, increased transparency of the monetary policy strategy through communication with the public and markets about the plans, objectives, and decisions of the monetary authorities, and increased accountability of the central bank for attaining its inflation objectives". (Mishkin 2001, pp.117-27)

The advantages associated with inflation targeting is that, the concept is considered to be transparent and the cooperation among stakeholder eliminates uncertainties concerning future inflation rates. Another advantage associated with inflation targeting is that the system is flexible and the central bank can act well before any incidence of inflation happens. Lastly the policy framework increases accountability on the part of the central bank since all stakeholders are aware of the central bank's goals. Among the inflation targeting participants, inflation rate of zero and two percent is considered appropriate.

2.2 Empirical Literature Review

In various studies, Vega and Winkelried (2005), Batini and Laxton (2007) and Schmidt-Hebbel (2007) all revealed that there were significant and positive effects of inflation targeting among inflation targeting samples that included developing countries. For example in their study, Vega and Winkelried (2005), sampled 109 inflation targeting countries of which 23 are developing countries, using the propensity scoring methodology they revealed lower inflation rates when inflation targeting policies were implemented. This is however consistent with earlier conclusions of Corbo et al. (2000), Neumann and von Hagen (2002), and Petursson (2004). In a recent study, Goncalvas and Salles (2008), revealed that inflation lowered from 17% to 6.55% among inflation targeting developing countries between the pre and post inflation era. Consistent with the above Ball and Sheridan (2005) concluded that there were statistically and economically significant reductions in inflation among sampled inflation targeting countries surveyed.

3.0 Methodology

This study uses the quantitative research method and the nature of the research design is causal. Secondary data was collected from the Bank of Ghana (BOG) on monthly inflation rates from 2000 to 2007(April), representing the pre-inflation targeting policy era; and 2007 (May) to 2013 representing the post-inflation targeting policy era. The choice of the particular months is as result of the Bank of Ghana announcing officially in May 2007 that it was now practicing inflation targeting. Annual Gross Domestic Product (GDP) was also collecting for the pre and post inflation targeting policy era.

3.1 Population and Sampling

The study population was all monthly inflation rates and annual GDP at purchase value from 2000 to 2013.The total sample size of the study is eight years (2003-2010). Since inflation targeting policy started in 2007, a seven year sample (2000 -2006) was taken for the pre-inflation era, and corresponding seven years (2007-2013) was also sample for the post inflation.

3.2 Data Analysis

The data obtained was analyzed using tests of mean differences and regression. The first analytical technique of t-test was employed to ascertain the differences in mean inflation between the pre and post-inflation targeting period. Regression was used to ascertain the effect of pre-inflation on GDP as well as the effect of post-inflation on GDP. A dummy variable was used to capture the effect of inflation targeting on economic growth. Thus, the model specified to capture the effect of inflation targeting on economic growth for this study is of the form:

$$Y_t = \alpha + \beta_1 Inf + \beta_2 IT + \varepsilon_t \qquad (1)$$

Where Y represents economic growth, *inf* represents annual inflation rate. *IT* represents the dummy variable for the inflation targeting. It takes a value of 0 from 200-2006 and a value of one from 2007 to 2013. All the results are assessed at the 5% level of significance.

4.0 Presentation of Results

This section presents the results from the t-tests and the regressions from the data collected.

To achieve the research objective of whether there is significant difference between the inflation rate for the pre and post inflation targeting policy periods, table 5.1 revealed there is significant difference between the mean inflation rates for the two periods at the 5% level of significance. The inflation rate for the post inflation targeting period is significantly less than the pre-inflation targeting period.

Table 5.1Paired Samples Test of Pre and Post Inflation Targeting

	Mean	**Std Dev**	**Std Error**	**T-value(p-value)**
Pre IT –Post IT	2.05	0.2989	0.08291	24.77(0.000)

This is supported by inflation figures over the period which had consistent decline in inflation to the point of the consistently witnessing single digit inflation over a period of over fourteen (14) months. It must be noted that single-digit inflation was never achieved during the period of the post inflation targeting.

Table 5.2:Effect of Inflation Targeting on GDP
Dependent Variable: GDP_GROWTH
Method: Least Squares
Sample: 2000 2013
Included observations: 14

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLATION	-0.110813	0.087699	-1.263565	0.2325
IT	2.115329	1.528880	1.383581	0.1939
C	7.437998	2.104813	3.533805	0.0047

R-squared	0.405453	Mean dependent var	6.615010
Adjusted R-squared	0.297353	S.D. dependent var	2.887917
S.E. of regression	2.420768	Akaike info criterion	4.793456
Sum squared resid	64.46128	Schwarz criterion	4.930397
Log likelihood	-30.55419	Hannan-Quinn criter.	4.780779
F-statistic	4.750740	Durbin-Watson stat	2.344252
Prob(F-statistic)	0.027283		

To determine the inflation rate after the inflation targeting policy and its effects on GDP from 2000 to 2013, a test of hypothesis was conducted using the model specified in the methodology. Even though the results indicated that a reduction in inflation will lead to an increase in economic growth, inflation did not contribute significantly to the GDP. In addition, the dummy variable introduced to capture the effect of inflation targeting on economic growth, did not statitistically affect economic.

5.0 Discussion of Results

The specific objective of this study is to evaluate the effect of inflation targeting policy on inflation rates and its effect on GDP growth. From the results above, it can be said that inflation targeting policy has positive effect on inflation rates in Ghana. Since during the inflation targeting policy regime, inflation reduced substantially. Though inflation did not reduce to the ranges between zero and two percent as prescribe by proponents of inflation targeting regime, in the Ghanaian situation the reduction was statistically significant.

The above scenario is however consistent with the very objective of inflation targeting policy which suggests that, inflation targeting puts price stability as the primary objective of the central bank, and the inflation target provides what is known as the nominal anchor for monetary policy framework.Because the policy framework clearly specifies the inflation objectives and a clear commitment to achieving them, it helps to anchor the public's inflation expectations,as well as the expectations of future inflation to influence prices and wages thereby improving the general economy. The above situation leads many Central Banks to believe that the best contribution that monetary policy can make to growth is to provide a low and stable inflation environment that is conducive to sustainable long-term growth. The Ghanaian results is also consistent which research conducted by Walsh (2009) which revealed that inflation was lower among inflation targeting countries than for their counterparts in the non-inflation targeting countries.

Similarly the study compared GDP growth in pre and post inflation targeting policy periods. In the Ghanaian situation the reduction in inflation rates associated with inflation targeting did not have a significant effect on GDP growth for both periods. This therefore suggests that a reduction in inflation does not necessarily translate into economic growth.

6.0 Conclusion and Policy Implication

The study investigated the effect of inflation targeting on inflation rates and gross domestic product in Ghana using seven (7) years pre-inflation period (2000-2006) and seven (7) years post inflation period (2007-2013) data. Using a quantitative method the study investigated the causal effects of inflation targeting policy on gross domestic product. The study assessed the effect of inflation targeting policy on inflation rates and gross domestic product. The study found that inflation targeting policy has an effect on inflation rates since the reduction in inflation rate during the post inflation period is statistically significant. In the case of inflation targeting and gross domestic product, inflation targeting does not have substantial effect on gross domestic product, since the result is not statistically significant.

Policy makers are encouraged to critically consider the issue of inflation targeting in Ghana. Though inflation targeting is able to stabilize prices to some extent, it does not fully translate into economic growth. Policy makers are encouraged to explore other policy option including the current inflation targeting policy option currently pursed.

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