

Analysis of the Impact of the Budget Deficit on Inflation in the Democratic Republic of Congo as one of the Developing Countries

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Abstract

In developing countries, budget deficits are often the result of expansionary fiscal policies, instability of export earnings as a result of erratic fluctuations in commodity prices. The state's inability to compensate for this decline by increasing revenue from other sources or reducing spending growth sufficiently affects the formulation and implementation of macroeconomic management policies. Thus, many of these countries like the Democratic Republic of Congo resort to borrowing to cope with the increase in public spending or simply to maintain them at their level. The Democratic Republic of Congo is not immune to the problems related to the budget deficit and the growth of public spending faster than revenue. Since 1980, more pronounced budget deficits have begun to appear in the general state budget. This article analyzes the impact of the budget deficit on inflation in the Democratic Republic of Congo as one of the developing countries. The estimation of the effects of the deficit and fiscal policy variables in the reaction functions of the Central Bank of Congo and in the long-term rate equations for the country shows that this impact is not automatic and may vary from one country to another. country in development vocality to another.

JEL codes: E44, E52, E6.

Keywords: budget deficits, exchange rate, inflation, variables, deflation

INTRODUCTION

1. Problematic

Inflation is still one of the major factors that is disrupting a country's economy. Indeed, up to the present day inflation is at the source of the expensive and bad life characterized notably by the general increase of prices on the market and the decrease of the purchasing power. The Congolese economy is among the poorest African economy, despite its many and varied resources. Considered however as a geological scandal, the soil and the subsoil do not however make it possible to erase the paradox of a potentially rich country but the poor population in reality. Corruption in the administration quickly established itself, in spite of the important potential of the country, and that with a hand of the authority put on the economy for personal interest. Despite a succession of economic plans funded by Bretton Wood's international institutions, and fiscal imbalance, inflation and public debt have only grown under the regime of the second republic, which was unable to cope to the payment of his debt.

As a result, all the credit lines offered by the IMF and those of the World Bank came to an end in February 1992 and July 1993, respectively, in the 20th century. The management of the currency in this country remained uncontrolled and the inflation galloped up to four figures, that is to say 9000% at the beginning of 1993, and even 5 figures 23.400% in 1994. In this country, the revival of economic development also depends on the consolidation of the financial system. The role of the latter is among others: - the mobilization of savings and credit, - the transformation of liquid assets into illiquid assets, - the pooling and transformation of individual risks. During our study, we noticed that the debt of the public treasury with the Central Bank of Congo, the highest deficits of the

public enterprises and their priority access to the credit created) slowings (or then slowed down) the financing of the expenses private sector. Banks accumulated doubtful debts that were difficult to recover, and they were controlled by the State outside the criteria of efficiency and good management. The decline in economic activity has limited deposits, resulting in a cumulative process. In the same period the financial bankruptcy has retroacted on the economy and on the public finances². The state budget in this country remains in deficit since 1980 from the 20th century to the present day. This is explained by both the low level of revenue and the inconsiderate expansion of expenditures. Indeed, despite the reinstatement of the 1993 taxation of imports of pharmaceuticals, spare parts, raw materials and capital goods suspended since 1991, were recorded again during this period, and despite a weak mobilization of recips[BOUQUIN H., 1992, p. 21]. On the other hand, the public expenditure developed very quickly notably to finance the cost of political adjustment.

This counter-performance in revenue and the reckless expansion of public spending will result in chronic budget deficits during the same period of our observation. For example, in 1992 the budget deficit reached 22% of GDP and in 1994 the budget deficit reached 15% of GDP. In order to finance budget deficits, the government has not found anything better than to resort to banks and in particular to the Central Bank. It should be added that modern history has been marked by a phase of very high inflation which has left important traces in the developed countries and especially in Germany which suffered hyperinflation after the First World War. The consequences are that monetary leaders in Europe in particular have put the fight against inflation at the heart of the missions of the European Central Bank. In the years 1983 and 1989, the oil shocks made fear for a moment the return of this hyperinflation with disastrous consequences on the real economic sphere. In the Democratic Republic of Congo, for example, some organizations, such as the FAO, maintain that inflation reached catastrophic levels of 6000% in 1993 and 8.800% in 1994.

However, it declined sharply in 1995 (370%) [Salin, 1991, p. 175]. But the new civil war of 1998 interrupted these efforts, causing a further rise in prices. In 1999, prices climbed 284.9%. The financing needs of the public sector were then estimated at 8.8% of GDP [Polepole, 2004, pp .18-21]. This trend of overheating domestic prices is at the root of the dollarization of the economy and the disruption of the financial system. The importance of three-digit inflation has contributed to the depletion of household purchasing power and significantly reduced the ability of firms to create jobs. This situation of unbridled price increases for goods and services eventually reinforced the correlation between inflationary pressures and the exchange rate surge. All these factors have the effect of making the Democratic Republic of Congo the country where the cost of living is among the highest in the world because of hyperinflation [Olenghankoy M.J, 2002 pp. 49-50]. The impact of inflation on developing countries and the Democratic Republic of Congo in particular find the explanation on the one hand in various macroeconomic variables such as the financing of the state budget deficit, exchange rate movement, income redistribution. To deepen this study, we start from the following questions:

1. What is the impact of the budget deficit on inflation in the Democratic Republic of Congo, in other words is inflation in the Democratic Republic of Congo explained by the budget deficit?
2. Would inflation in the Democratic Republic of Congo be explained by other variables?

In order to provide some answers to these concerns, we have made the following assumptions:

2. Assumptions

The implementation of a series of questions necessarily leads to hypotheses. These are born from the questions asked at the level of the problematic. In response to the above questions, we have made the following assumptions:

- 1) Inflation in the Democratic Republic of Congo would be explained by the budget deficit,
- 2) The increased instability of the Congolese economy, inflation in the Democratic Republic of Congo would be explained by other variables such as: GDP, the money supply and the exchange rate.

3. Choice and interest of the subject

Focusing on the implications of the budget deficit for inflation in the DRC, our work has both a scientific and a social interest. From the scientific point of view, it is an application, an attempt to put into practice the scientific knowledge acquired for the purpose of finding solutions to the problems facing the DRC. From a social point of view, in

determining the impact of the budget deficit on inflation in the Democratic Republic of Congo, even theoretical, we believe that we will have expanded the database that can allow our authorities to make decisions in the sense of economic growth.

4. Delimitation of the subject

The scientific rigor requires that all work be limited in time and space. We limited our study to a period from the year 1970-2005. In space, our study is limited only to analyzing the case of the Democratic Republic of Congo.

5. Methodology of the work

As part of this work, we used the statistical method, through the processing of data using software Eviews, on a time series, we will be able to arrive at an interpretation of the results obtained and finally, we will draw conclusions.

6. Subdivision of work

In addition to the introduction and conclusion, our work is divided into three parts. The first part deals with the theoretical consideration, the second part presents the determinants of inflation. And finally, the third part focuses on the empirical estimation of the relationship between inflation and budget deficit.

Part 1. Theoretical considerations

Inflation is a monetary phenomenon. It is therefore absurd - which is often spoken of as inflation, not to mention money. But besides the monetary phenomenon other variables are likely to influence inflation. It is in this sense that this part deals with a review of the literature in order to stigmatize the theoretical relationship between these variables and inflation.

1.1. The currency, prices and inflation

The explanatory theory of the determinants of the general level of the prices rests on three pillars[G. N. MANKIWI, 2003, pp.104]:

- The factors of production determine the level of production Y;
- The money supply determines the nominal value of the PY production;
- Therefore, the price level P is none other than the ratio of the nominal value of the production PY to the level of production.

In other words, the productive capacity of an economy determines real GDP, the quantity of money determines nominal GDP, and the GDP deflator is the ratio of nominal GDP to real GDP. This theory explains what happens when the central bank modifies its money supply. Since the speed of circulation is assumed to be constant, any change in the money supply induces a proportional change in nominal GDP. Since the factors of production and the production function have already determined real GDP, the change in nominal GDP necessarily represents a change in the level of prices. As a result, the quantitative theory implies that the price level is proportional to the money supply. Since the inflation rate is the percentage change in the price level, this price level theory is also a theory of the rate of inflation. Indeed, the quantitative theory of the currency establishes that the Central Bank, which controls the supply of money, controls the same fact, as a last resort, the rate of inflation. If the Central Bank presents the stability of the money supply, the price level will also be stable. If the Central Bank is rapidly increasing the stock of money, then the price level will also increase rapidly. For this purpose, Mankiw presented a model on the impact of current and even future money supply on the price level. We propose to present it below to better understand the quintessence of the relationship. To the extent that the amount demanded of real cash balances depends on the cost of holding these cash balances, the price level is dependent on the supply of money both contemporary and future. To avoid mathematical complications, we posit that the money demand function is linear in the natural logarithms of all variables. The money demand function is:

$$m_t - p_t = y(P_{t+1} - P_t) \quad (1)$$

With:

- m_t : is the logarithm of the quantity of money at time t,
- p_t : is the logarithm of the price level at time t,
- y : is a parameter that governs the sensitivity of money demand to the rate of inflation.

By the property of logarithms, $m_t - p_t$ is the logarithm of real money balances and $(p_{t+1} - p_t)$ is the rate of inflation between period t and period t + 1. This equation shows that if inflation increases by one percentage point, the real money holdings decrease by $y\%$. The expression presented above is based on a series of assumptions. First, the level of production is excluded as a determinant of money demand, which amounts to assuming it constant. Moreover, by including the inflation rate in the equation rather than the nominal interest rate, we assume the constant real interest rate. In addition, by incorporating actual

inflation rather than expected inflation, perfect expectations are assumed. These assumptions are simplistic but they allow us to show the relevance of the relationship. The resolution of equation (1) makes it possible to draw the following expression:

$$P_t = \frac{1}{1+y} m_t + \frac{y}{1+y} p_{t+1} \quad (2)$$

This equation indicates that the price level is a weighted average of the contemporary supply of money and the price level of the next period, and this level will be determined in the same way as the level of contemporary prices. So we have :

$$P_{t+1} = \frac{1}{1+y} m_{t+1} + \frac{y}{1+y} p_{t+2} \quad (3)$$

Using equation (3) to replace p_{t+1} in equation (2), we obtain:

$$P_t = \frac{1}{1+y} m_t + \frac{y}{(1+y)^2} m_{t+1} + \frac{y^2}{(1+y)^2} P_{t+2} \quad (4)$$

Equation (4) indicates that the contemporary price level is a weighted average of the contemporary money supply, the money supply of the next period, and the price level of the next period. Again, we determine the level of prices in $t + 2$ in the same way as in equation (2)

$$P_{t+2} = \frac{1}{1+y} m_{t+2} + \frac{y}{1+y} p_{t+3} \quad (5)$$

Substituting (5) in equation (4), this leads to:

$$P_t = \frac{1}{1+y} m_t + \frac{y}{(1+y)^2} m_{t+1} + \frac{y^2}{(1+y)^3} m_{t+2} + \frac{y^3}{(1+y)^3} p_{t+3} \quad (6)$$

Since the mechanism is understood, equation (2) can continue to be used as a substitute for the future price level. If we do it indefinitely, we end up with the following equation:

$$P_t = \frac{1}{1+y} m_t + \frac{y}{1+y} m_{t+1} + \frac{y^2}{1+y} m_{t+2} + \frac{y^3}{1+y} m_{t+3} + \dots \quad (7)$$

Where the points in parentheses "... " denote an infinite number of similar terms. According to equation (7), the contemporary price level is a weighted average of the contemporary money supply and all future money offers. Note the importance of y , the parameter that governs the sensitivity of real money balances to inflation. The weights of the future money offers follow a geometric progression at the

rate $\frac{y}{1+y}$.

If there is little, so $\frac{y}{1+y}$ the same is true and the weights regress rapidly.

In this case, the contemporary supply of money is the first determinant of the price level (indeed, if y is zero, we obtain the quantitative theory of money: the price level is proportional to the contemporary supply of money. currency and future money offers are of no importance).

If, on the contrary, there is high, so $\frac{y}{1+y}$ is close to 1, and the weights only regress

Slowly:

$$m_t - p_t = -y(E_{R+1} - p_t) \quad (8)$$

Where E_{R+1} is the anticipated level of price. Equation (8) tells us that real money balances depend on expected inflation. The approach described above allows us to write that:

$$P = \frac{1}{1+y} m_t + \frac{y}{1+y} E m_{t+1} + \frac{y^2}{1+y} E m_{t+2} + \frac{y^3}{1+y} E m_{t+3} + \dots \quad (9)$$

Equation (9) indicates that the price level depends on the contemporary supply of money and advance money offers. Some economists use this model to show the importance of the credibility of the monetary authorities if we want to put an end to hyperinflation. The contemporary level of prices depends on both contemporary and future monetary masses. Inflation is a function of both current and future monetary growth. We can put an end to hyperinflation only by reducing the growth of the money supply, not only today, but also in the future. In turn, expectations depend on the credibility of the monetary authorities, that is, on people's belief that the central bank really wants to implement a new monetary policy that is more focused on monetary policy. price stability. How can a central bank build credibility in times of hyperinflation? Most often by eliminating the underlying cause of hyperinflation, namely the need for seigniorage. This is why a credible change in monetary policy is often the basis for an equally credible reform of fiscal policy. Typically, this takes the form of a reduction in public spending and a strengthening of the political independence of the central bank. The reduction in public spending reduces the need for seigniorage today and the increased independence of the central bank should enable it, in the future, to better withstand the seigniorage demands that the state is addressing.

Part 2. The determinants of inflation in the Democratic Republic of Congo

2.1. The evolution of inflation rate in the Democratic Republic of Congo

The rate of inflation reflects an increase in the general level of prices, that is to say, an increase that can push economic agents to get rid of monetary assets in favor of real assets (durable goods and valuables). The graph below shows the rate of inflation that occurred in the Democratic Republic of Congo in the period from 1970 to 1985.



Figure 1. Evolution of the rate of inflation from 1970 to 1985
 Source: Directed by the author based on data from the National Statistical Instiyute and the Ministry of Finance.

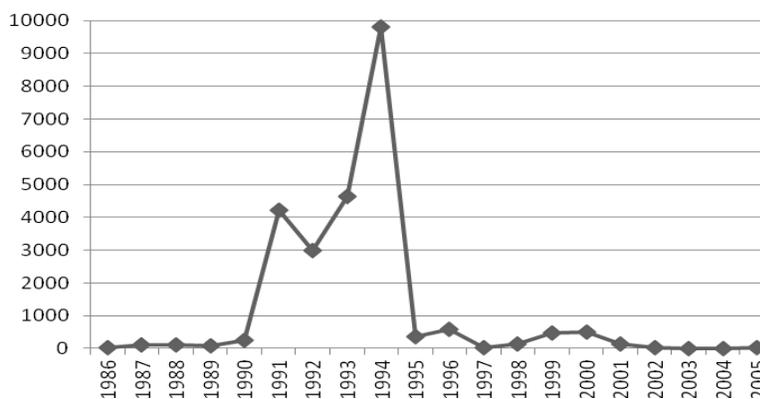


Figure 2. Evolution of the rate of inflation from 1986 to 2005
 Source: Directed by the author based on data from the National Statistical Instiyute and the Ministry of Finance.

The Democratic Republic of Congo has experienced periods of very marked inflation, where we have reached three-digit inflation, while for other periods this rate has been double-digit. For a good graphic presentation, we split the period in two to present this evolution. As can be seen in Figure 1, moderate growth was observed between 1980 and 1983. This rate averaged 9.875%. However, from 1983 an accelerated increase is observed because the rate goes from 24,5% in 1983 to reach 36,8% in 1990. This situation could be attributed on the one hand to the measures of zairianization and on the other hand the oil price shock that led to the rise of certain inputs. In 1990 there was a significant fall in the rate of inflation as this rate rose from 99% to 36.8%. From this period there is a relative stability but this one does not last long because in 1993 this rate reaches 100,8%. From 1993, SAPs are introduced, Zaire moves to a flexible exchange rate regime. The economy responded positively to these reforms. Growth picked up and the inflation rate dropped from 77% in 1993 to 24% in 1995. But by the end of 1996, an increase in public spending was derailing the adjustment programs and some of the liberalization policies were revised. In June 1999, with the help of the IMF, the government made one last effort to stabilize the economy. However, inflation fell slightly. We also note that for the Democratic Republic of Congo, the 90s of the 20th century was the most disastrous with regard to the rate of inflation. Because this period is characterized by 4-digit inflation. Indeed it is a period characterized by a strong political instability, looting and destruction of economic growth. High budget deficits were observed and their financing was carried out either by external debt or by monetary creation. The foreign debt has dominated and House for which this country is so indebted. For example, there are various unsuccessful monetary reforms that will increase hyperinflation. Between 1990 and 1994, the rate rose from 264.9% to 9796.9%, or an annual average of 5030.9%. In 1997, with the rigor of the new government, we managed to stabilize this rate at 13.7%. But with the resumption of the civil war, this rate will quickly reach 134.8% in 1998 and 511.2% in 2000. It is from 2001 that the country knows a relative political and economic stability. The inflation rate dropped again until 2005.

2.2. Evolution of the Budget deficit in the DRC

The budget deficit is the overtaking of the final budgetary expenses (civil expenses, ordinary and in capital, military expenses) on the fiscal resources and assimilated [Silem. , Op. Cit., p.227]. The public deficits are the expression, for the public centers of decision, of an excess of expenses compared to the final receipts [Abraham-Frois, Op. Cit. , p. 113]. We will not be able to visualize all the evolutions in a graph, to do this we are obliged to split into two periods.

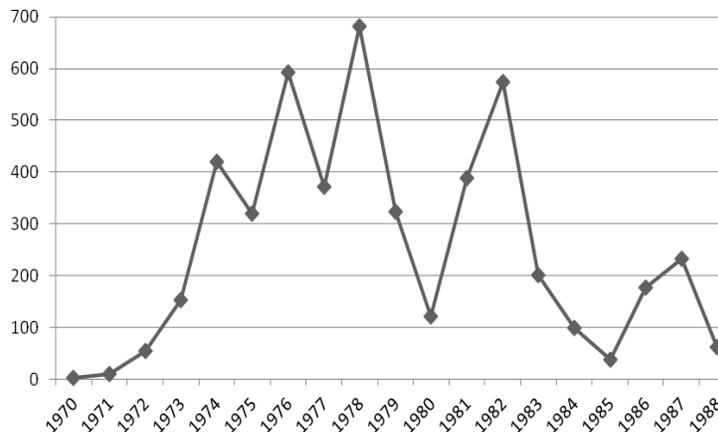


Figure 3. Evolution of the budgetary deficit of the DRC during the years 1970 to 1988

Source: Directed by the author based on data from the National Statistical Instiyute and the Ministry of Finance.

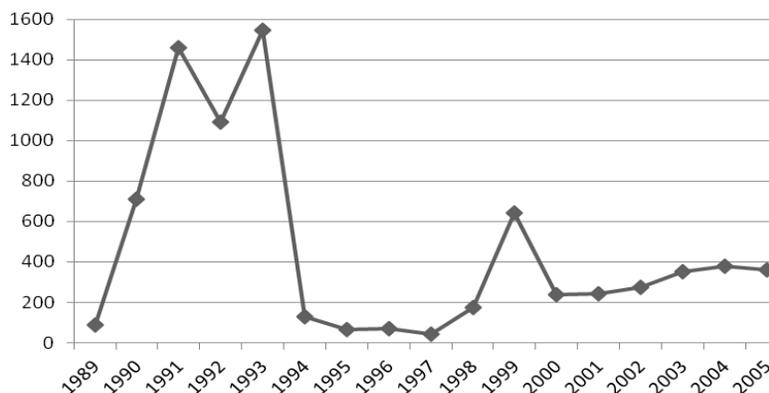


Figure 4. Evolution of the budgetary deficit of the Democratic Republic of Congo during the years 1989-2005

Source: Directed by the author based on data from the National Statistical Institute and the Ministry of Finance.

As we see in figures 3 and 4 presented above, the Democratic Republic of Congo has always had budget deficits. The management of Public Finances is the Achilles tendon of the Congolese economy. The volume of net claims on the state regularly exceeds 92% of the total money supply. Only about 5% is spent on credit to the economy. The situation of this aggregate is complicated by the fact of the commitment and the execution of the expenses without really worrying about the budgetary receipts. The rate of coverage of expenditure by ordinary revenue hardly exceeds 20%, the rest being pure inflation financed by the monetary emissions which unbalance the currency and the market of goods and services. Expenses increase by 2800% from one year to the next.

The decline in contribution revenues is due to the sluggishness of the economy following looting in late 1991 and early 1993, which led to the destruction of the production tool and the shutdown of several sectors of activity. It is enough to observe the evolution of GDP growth rate to be convinced. Despite this sluggish revenue spending has picked up, especially the wage heading that running costs that tend to align with the development of inflation. Hence the unpredictability of the erosion of purchasing power leading to incessant wage demands [Bakumanya B.-M., 2008, pp. 61-63]. This state of affairs seems to indicate the impossibility of a balanced management of public finances without the prior revival of domestic production based on the restoration of favorable conditions for private investment. To cope with the many public spending expenses, the government derives resources from taxes. Faced with the challenge of keeping the budget balance, the government finds it impossible to balance their expenditures with the revenue from different taxes, which usually implies a budget deficit. It is observed in the developing country where the system of tax collection, where institutions and capital markets are less developed, the fiscal imbalance is often the basis of inflation and hyperinflation. Through the figures above, we were able to visualize how the budget deficit of the Democratic Republic of Congo has changed.

2.3. Evolution of the money supply in the Democratic Republic of Congo

The money supply is a monetary aggregate that is usually assimilated to M2, that is to say, to the set of claims constituted by money supply (M1) and quasi-money (M2-M1). However, the notion remains very constraining for the specialists who then consider the money supply like all the credits likely to be controlled by the central bank [KISONIA M., Op. Cit., pp.36-38]. The definition of money supply is an accounting definition that falls within the nomenclature conventions. The money supply as currently defined by the European Central Bank (ECB) includes liquid assets that are likely to be converted immediately into a currency without significant risk of capital and therefore represent potential means of payment that can be realized, without any effect. loss of value or surplus value. The decomposition of the money supply into aggregates M1, M2, M3 is based on the greater or lesser ease of conversion into money of their components. This induces a more or less stable holding behavior of these assets by non-financial agents. The current classification of the elements of the money supply thus no longer refers as the classifications prior to 1986 to the banking or non-banking constitutional status of issuing financial intermediaries but to the monetary and financial behavior of non-financial agents [BERNIER et al. , ed. Dunod, 2001, pp.23-25]. The evolution of the money supply in the Democratic Republic of Congo is represented by the following graph which will be divided into two graphs due to space:

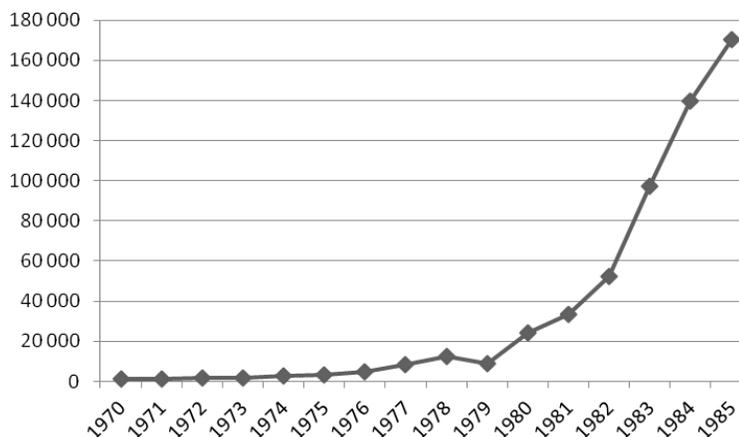


Figure 5. Evolution of the monetary mass of the Democratic Republic of Congo from 1970 to 1985

Source: Directed by the author based on data from the National Statistical Institute and the Ministry of Finance.

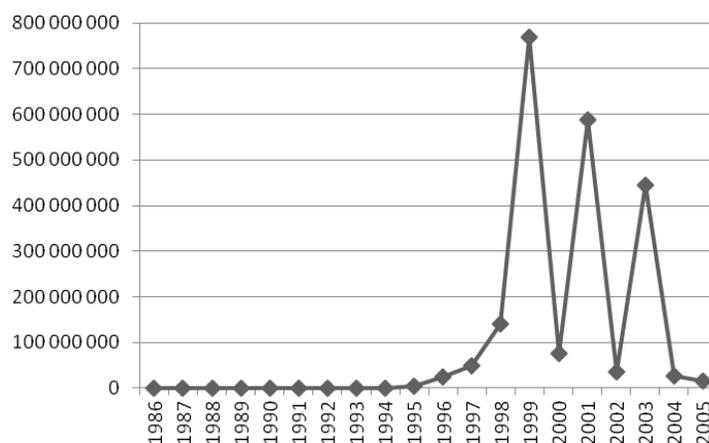


Figure 6. Evolution of the monetary mass of the Democratic Republic of Congo from 1986 to 2005

Source: Directed by the author based on data from the National Statistical Institute and Ministry of Ministry.

The Congolese monetary situation remains marked over the past decade as before by an increasing trend in the nominal money supply. This instability of the monetary situation has been strengthened, to a large extent by the weakening of public authority in the aftermath of independence. The changes in the democratic process that began in 1990 were accompanied by lax budget management, which enshrined the monetization of the budget deficit. The money supply then experienced an evolution at nominal growth rates exceeding any level compatible with the monetary stability requirements to which the authority in charge of monetary policy in any modern economy is held. This meteoric rise is certainly not unrelated to the mode of financing to which the State has practically accustomed for more than 15 years. The repercussions of such an evolution have been disastrous on the general level of the domestic prices of the goods and services whose increase has significantly reduced the purchasing power of the consumers if not the consumption itself [LONGATTE and al. , Ed. Dunod, 2001, pp. 40-41]. The evolution of real M1 saw a slight decrease from 1994 to 1997, then a stability from 1998 to 2000 and a rise from 2001 to 2004. The evolution of real M2 was almost similar, but since 1996, it has experienced a up to 2005. During this period, we witnessed the rapid disinflation program, with in the foreground the non-use of money creation to finance the public deficit. Thus it may be noted that the theses of the quantitative theory of money which link inflation to the growth of the quantity of money would not be far from being corroborated for the case of the Democratic Republic of Congo.

2.4. The gross domestic product

The gross domestic product is a measure of domestic production[Bofoya , 2001, p.3], that is, of all goods and services produced in a given period (usually the year). GDP is closely related to the notion of value added. It represents two components: market and non-market. It can be evaluated at current prices or at constant prices[Bernier et al. , ed. Dunod, 2001, p.28]. We will divide it on two graphs.

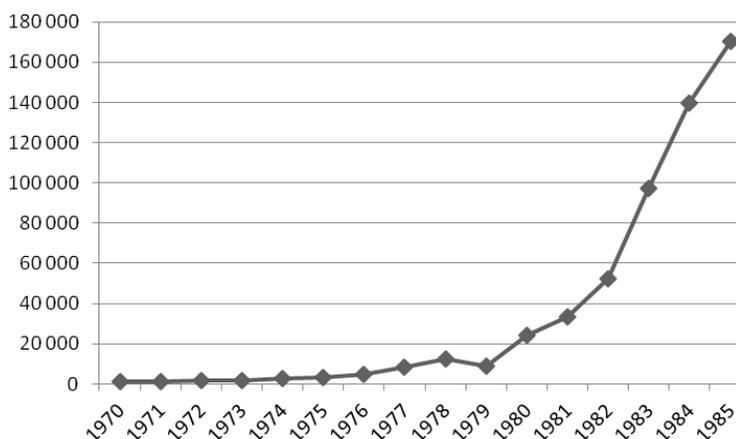


Figure 7. Evolution of the monetary mass of the Democratic Republic of Congo from 1970 to 1985

Source: Directed by the author based on data from the National Statistical Institute and the Ministry of Finance

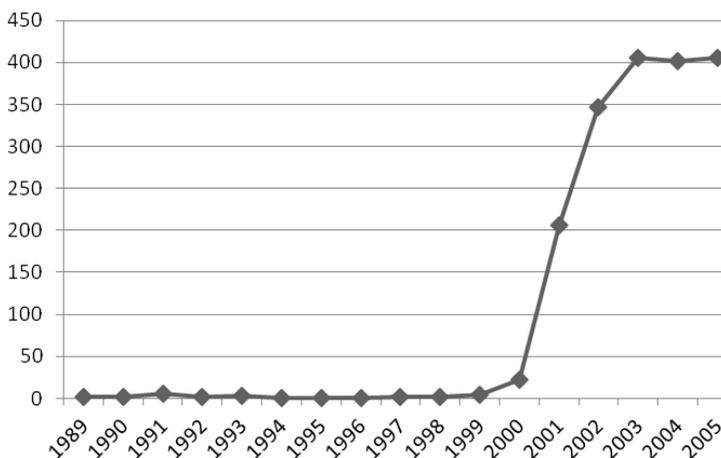


Figure 8. Change in exchange rate of the Democratic Republic of Congo from 1989 to 2005

Source: Directed by the author based on data from the National Statistical Institute and the Ministry of Finance.

The gross domestic product is the main measure of domestic production. Built on a criterion of territoriality, its calculation consists in adding the productions of all the resident, national or foreign economic units. French national accounts distinguish between market and non-market productions. Market production is the production that is usually traded on a market. Non-market output is obtained from factors usually traded on a market and is sold at a price that is at least less than half its production cost. It consists essentially of services rendered by the authorities for free or almost. Market output of firms is measured by their added value, the difference between the value of goods and services produced and the value of goods and services purchased from other firms. As the added values are recorded without taxes, the calculation of the PIB at the market price is obtained in the following way[Kikandi K., 2004, pp. 19-22].

Market GDP = Sum of value added of resident enterprises + VAT + Customs duties.

Merchant GDP = Sum of value added of resident enterprises + VAT + Customs duties.

By deducting consumption of fixed capital from GDP, ie the economic depreciation of capital goods, we obtain the net domestic product (PIN). The definition of production adopted by the national accounts eliminates domestic activities and the underground economy. On the other hand, it includes non-market output, which can not be measured at its cost of production, mainly wages and salaries.

GDP = market GDP + non-market GDP

Over time, the weight of non-market output increased in total output at the expense of market output. Today non-market production accounts for about 17% of GDP[Mabi Mulumba, 2001, pp.126-128]. By analyzing the Congolese economy brings out four economic cycles since 1965, namely[Silem A. et al. , 2004, pp. 92-93]:

- The years of growth of 1965-1973 with an average real rate of 7%. This period is characterized by an expansion of the order of 7% on average. Like most African countries, this growth is driven by favorable prices for commodities such as copper, cobalt, diamonds and other commodities (agricultural products) on which the country is dependent. External dependence predisposes the Democratic Republic of Congo to global market turmoil. It is therefore not a coincidence that these years have been supported by a good level of copper on the world market, especially since the economy is concentrated on the export of commodities and more particularly copper from which 60 % of export earnings. In 1973, the Congolese economy was declining as a result of the downturn in world economic conditions and a decline in the term of trade of around 8%: copper and cobalt prices fell on the one hand and oil prices and other imported inputs rose, precipitating the economy into another phase;
- The crisis years of 1975-1982, characterized by an annual GDP growth rate of 1.9% on average. In the absence of adjustment of economic policy to remedy the deterioration of the terms of trade, the combination of the fall in copper prices and the rise in the price of oil will cause successive imbalances in the balance of payments. Budget deficits are taking place and will be financed by a strong expansion of domestic credit followed by external indebtedness. These deficits and especially their mode of financing will fuel the inflationary process. The GDP denominates substantially as it appears in the figure above. While Congo's GDP was about twice as much as the Ivory Coast or Cameroon in 1970, ten years later these countries doubled their GDP catching the Democratic Republic of Congo and even exceeding it;
- The years of structural adjustment of 1983-1990 where the annual growth rate of the GDP was on average barely 0.8%, If the presence of the International Monetary Fund and the World Bank is perceptible since the end of the 70s in the Democratic Republic of Congo it was in fact in 1983 that structural adjustment programs were applied in order to positively influence the trend of the Congolese economy[Olenghankoy, 2002, pp.102-103]. During this period we observe a modest growth due to the relatively strict corset of the recovery measures imposed on the Congolese economy. But as the growth observed during this period results from the measures dictated by the external environment without benefiting from a sincere adherence emanating from within, they could only temporarily calm the situation.

- Years qualified as "economic decline" from 1991 when the growth rate was -6.5%. And so quickly in 1991 the economy plunges into a darker phase that some writers describe as economic slump. The year 1991 marks the beginning of a spectacular fall in GDP. The latter decreases by around -6% on average between 1991 and 2000. With the socio-political stability that the country has been experiencing since 2001, growth seems to be on the rise again. Since 2001, real GDP and real money demand have been growing year by year, while inflation is still falling, although it remains higher than most countries' inflation. the region: 15.5% in 2005 against 2% in Congo Brazzaville, 2.9% in the Central African Republic and Cameroon, 12.1% in Rwanda, 4.5% in Burundi, 10.5% in Uganda, .. (ADB, OECD, 2005).

2.5. Exchange rate evolution

It is clear that the effects of international trade on production, consumption and welfare depend heavily on the international price relationships that are established. It is for this reason that we are very interested in the terms of exchange, that is, the ratio of the price of a country's exports to the price of its imports. The terms of trade are thus equal to the ratios of two indices as follows:

$$T = \frac{P_x}{P_m}$$

With: P_x – export price index (domestic price)
 P_m – import price index (foreign price)

Given the extrovert nature of the economy of the Democratic Republic of Congo which has allowed the realization of an economic surplus upon the accession of the country to independence, this extroversion will prove a source of transmission of economic shocks. Can we note that in the years 73-74, the national economy was affected by the international situation, accompanied by the deterioration of the terms of trade. During the same period, the price of copper, the main export product, fell and at the same time the price of oil and many other inputs imported into the country increased. Figures 9 and 10 below show the evolution of the terms of the Congolese economy.

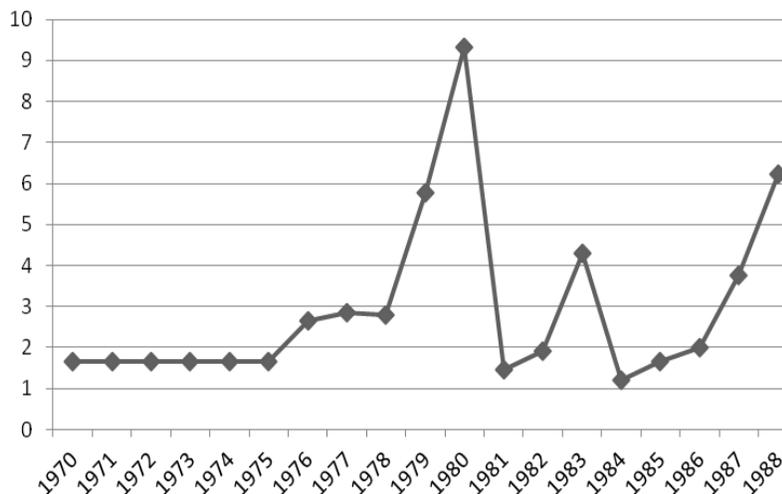


Figure 9. Evolution of rate changes by the DRC from 1970 to 1988

Source: Directed by the author based on data from the National Statistical Institute and the Ministry of Finance.

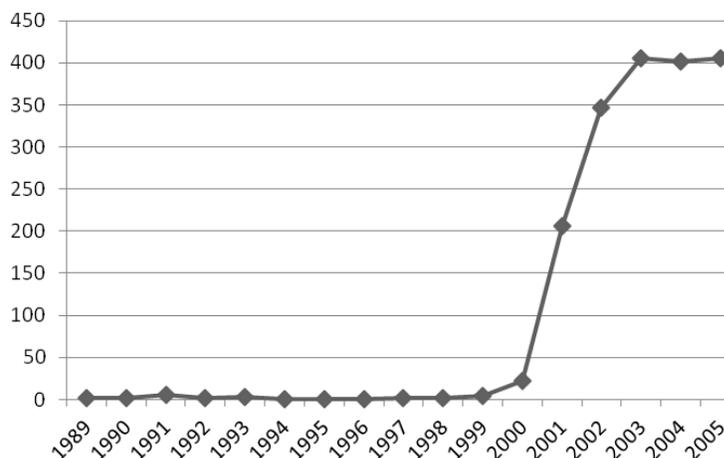


Figure 10. Change in exchange rate of the DRC from 1989 to 2005

Source: Directed by the author based on data from the National Statistical Institute and the Ministry of Finance.

The determination of the exchange rate first reflects the equilibrium of the money market. Moreover, developed during the 1970s, in particular by Franklin [Abraham-Frois G. et al., 2002, pp. 73-74], the monetary theory of exchange is within the framework of the flexible exchange rate regime. The starting point for monetary reasoning is demand, considered the most stable and important macroeconomic relationship. This function depends, in a classical way, on income, prices and interest rates.

$$M = P \cdot (Y, i) \text{ et } M^* = P^* \cdot L(Y^*, i^*)$$

- Where:
- **M** and **M*** are the stocks of domestic and foreign currency,
 - **P** and **P*** the general level of domestic and foreign prices,
 - **Y** the level of real income
 - **i** the interest rate
 - **L ()** the demand function of actual balances.

The determination of the exchange rate is thus explained by the relative changes between countries in the monetary masses, real incomes and interest rates. The exchange rate, which is the relative price of currencies, is determined by the money supply which is controlled by the monetary authorities on the one hand, and by the behavior of the holders of cash on the other hand. It appears that for given interest rates and real incomes, the rate of depreciation of the currency is equal to the difference between the growth rates of the money supply. The evolution of the exchange rate in the Democratic Republic of Congo has always followed since 1975, the trend of the rate of inflation of the national currency, due largely to the financing of budget deficits by the uncalculated increase of the money supply. Given that the different prices on the market are denominated in currencies (US dollars), the depreciation of the exchange rate has an impact on prices. Mismanagement in the practice of exchange rate policy has been the basis of distortions in the functioning of the economy as a whole. Since 1973, instead of allowing the exchange rate to be fixed according to market forces, as required by the flexible exchange rate system, the monetary authorities have been engaged in administering the exchange rate, which has led to the introduction of a rate of exchange. exchange rate, reflecting the reality of the market[Bakandeja wa Mpungu G., 2002, pp.3-4]. Thus, following the fixed exchange rate regime, we see the same exchange rate over a longer period.

As can be seen, the immediate result of these distortions has been, on the one hand, the development of the informal economy and, on the other hand, the recording of a shortfall in the revenues of the state budget. In

addition, the floating exchange rate system adopted by the Democratic Republic of Congo since 1983 has not yielded the expected results in terms of holding the currency. Practiced in an environment characterized by the shortage of foreign exchange and where there is a strong propensity to import, this system has liked speculation on the currency and thus favored the rise in prices linked to expectations on the evolution of the exchange rate on the part of economic operators. It should be noted that the DRC's international trade has never been in a good position, due to the non-competitiveness of domestic prices in the face of foreign prices. It should be noted, however, that the Democratic Republic of Congo only exhibits raw products, which have not undergone any processing, but imports the same products because they have undergone a transformation and therefore with certain added value. From 1988 we are seeing a resulting improvement in the double effect of an increase in copper and cobalt production, followed by their better prices on the international market. But with the budget deficit as well as the precariousness of the service of the public debt, the term of the exchange will not tend to shake overnight.

Part 3. Empirical estimation of the relationship between inflation and budget deficit

This part of the work is devoted to the focus of this study. He proceeds to the statistical analysis of the variables studied and to the estimation of his model as well as the economic interpretation. Finally, proposals for economic policies will be made with a view to achieving a desirable level of inflation in the Democratic Republic of Congo. Note that the econometric estimation of the long-run model by the Ordinary least squares method (OLSM) is done here using software E.

3.1. Methodological approach to analysis

The methodology of data processing and analysis has been econometric, especially since the variables taken into account are quantifiable and the series is chronological. We selected some variables that explain the evolution of the Congolese economy in terms of growth. Since our interest is focused more on the impact or consequence of budget deficit on inflation in the Democratic Republic of Congo, we are part of the variables that characterize inflation in the Democratic Republic of Congo [Bahekwa A.M., 2005, pp. 112-114]. We have brought together theory in relation to inflation and its causes in a general way and particularly of the Democratic Republic of Congo. We have talked about inflation, the various variables, including budget deficits, money supply, gross domestic product and the exchange rate, before representing their evolution on charts. The data in relation to these variables were taken from the World Bank's ROOM CD, we considered the period from 1970 to 2005. These data were processed by the software Eviews 5.0 used in econometrics. Eviews 5.0. is a version of Eviews software that can process time series data on the computer. We have inserted the collected data, the software has processed them and developed an estimate of the equation of our model; this allowed to successively identify the progressive approximations tested and also of this equation towards a most expressive model of the meaning of the variables. To present the model, we started from the DFA (Enhanced Dickey-Fuller) test, that is ADF in English (Dickey-Fuller augmented) which enabled us to detect the stationarity of the variables before making the estimation of the model. It involves testing hypotheses based on quantified observations of reality and measuring the relationships that may exist between the different variables.

3.2. Presentation of the study model

Concept on the model

A model is a presentation of a theory which takes the form of a set of hypotheses on the relations which links the variables chosen by the one who constructs it and which supposes links of causality between it [Bosekota, 1999, p. 175].

It is a formal presentation of a phenomenon in the form of equations whose variables are economic quantities. Thus any model is inevitably an implication of the reality by which one seeks to seize the fundamental features of the system [Silem A. et al. , 2004, p. 137] .

The model usually has two kinds of ingredients:

- A set of equations that express the supposed links between the variables;
- A classification in two categories of the variables retained by the model: the endogenous variable and the exogenous variable (s).

In general, a model comes from a theory that assumes a causal link. One of his aims is to simplify the theory in order to check its coherence. It is thus necessary to test the validity of a theory by confronting the facts [Avon D.

2004, pp. 34-36] . In econometric language, the set of equations of a model as derived from the theoretical literature is called the structural form of this model. To be explicit this form must be specified. Our model is a multiple regression of the form:

$$\log Y_t = a_0 + a_1 \log X_1 + a_2 \log X_2 + a_3 \log X_3 + a_4 \log X_4 + u_t$$

Where:

- Y_t : – Inflation rate
- X_1 – The budget deficit
- X_2 – The money supply
- X_3 – The exchange rate
- X_4 – The GDP
- u_t – The error term

The coefficients a_1, a_2, a_3, a_4 , are assumed positive.

There may be other variables that may explain the inflation we seem to ignore. Taking into account this hypothesis of the ignorance of the other variables is found in the model by the introduction of the term of error u_t . This model relates the rate of inflation to the determinants of inflation such as budget deficit, GDP, exchange rate and money supply. Inflation is considered to be the independent or explained variable while other variables are dependent or explanatory. This relationship allows us to focus on the impact of fiscal deficit on inflation in the Democratic Republic of Congo. The error term groups three types of errors[Bofoya, 2001, pp. 170-172]:

- An error of specification: that is to say the fact that the only explanatory variables are not sufficient to account for the totality of the explained phenomenon;
- Measurement error: that is, the data do not accurately represent the phenomenon;
- A sampling fluctuation error: that is, one sample to another, the observations are slightly different.

Note also that the data used to estimate the GDP growth rate equation are mainly derived from the statistics of the Central Bank of Congo and those of the World Bank. The study will be done with annual data.

3.3. Estimation of the analysis model

In this part, we proceed to the statistical analysis of the variables, in order to avoid a model estimation with a lot of error. The use of time series leads to search for regularities in the past values of the series. We will begin by explaining the estimation method.

A. Estimation method

There are several methods for estimating the parameters of a model: the ordinary least squares method, the maximum likelihood method, the method of moments, ... The ordinary least squares method is often applied in the linear adjustment . Drawing a graph on which the explained variable is plotted on the y-axis and the explanatory variable (s) on the x-axis and linking the observation slices, we obtain a scatter plot which can be adjusted using a right. The model parameters (or estimators) are obtained by minimizing the distance squared between each observation and the line thus obtained, hence the name of ordinary least squares (OLS) estimators[Antonin, 1999, p.82]. Our sample consists of one dependent or explained variable (the inflation rate) and four explanatory variables (budget deficit, money supply, GDP and exchange rate), observed each over 36 years (from 1970 to 2005). We therefore have 36 observations for each of these variables.

B. Test of classical hypotheses of linear regression models

The estimated parameters are the subject of a number of classical assumptions[Guerrien, 1997, pp. 26-28]:

H_1 : X_t values are observed without error;

H_2 : $E(u_t) = 0$;

H_3 : $E(u_t) = 0$ (with $j \neq 0$); the errors are uncorrelated (or unrelated);

H_4 : $E(u_t) = \sigma^2$, the variance of the error is constant (homoscedasticity)

H_5 : $Cov(X_{tk}, u_t) = 0$, the error is independent of the explanatory variables;

H_6 : The matrix $(X'X)$ is regular and the inverse matrix $(X'X)^{-1}$ exists;

H₇: (X'X) / T tends to a non-singular finite matrix;

H₈: T > k + 1, the number of observations is greater than the number of explanatory series plus the constant. The violation of these classic assumptions is problematic. Assumptions H₃ and H₄ successively state that the errors are uncorrelated (or independent) and that the error variance is constant (homoscedasticity). When H₃ is violated, we are therefore in the presence of autocorrelation of errors. The estimators remain unbiased but are no longer at minimum variance.

3.3.1. Stationarity of variables

A. Variable concept

To proceed with the estimation of our model, we will first report the stationarity of the variables to be used. This is necessary because economic and financial variables are rarely realizations of stationary processes [Kalhi U., Ed. de Boeck, 1999, pp.17-19]. Non-stationarity may well concern more than second-order moments. Dickey Nelson and Plosser [Romer, 1997, pp. 14-15], the cases of non-stationarity on average are analyzed from two types of processes: TS process (trend Stationary) which represents the processes characterized by a non-stationarity of deterministic nature and DS process (Difference Stationary) which represents processes whose nonstationarity is stochastic in nature. In the first case, the data is marked by a general trend. It is then appropriate to introduce a Trend or a general trend in the model; In the presence of the second case, if the orders of integration of the variables are different, it is necessary to differentiate them in order to make them stationary. But to put in relation variables whose orders of integration are different, without making them stationary, can only lead to false regressions or fallacious regressions. Indeed, the TS and DS processes are characterized by very different behaviors and they should be distinguished. After a shock, a TS process returns to its pre-shock level, whereas a DS process never comes back. It is therefore also understood that, from an econometric point of view, the identification and characterization of non-stationarity is just as fundamental. To do this, we will use the Dickey-Fuller (DF) test and the Augmented Dickey-Fuller (ADF) test.

A. Procedure and application of the stationarity test [Pihon, 1991, pp. 75-76]

Dickey and Fuller consider three basic models for the X_t series, t = 1, 2,3, ... T:

1. Model [1]: model without constant or deterministic trend:

$$(1 - \tilde{\pi}L) X_t = \hat{a}_t$$

2. Model [2]: model with constant without deterministic trend:

$$(1 - \tilde{\pi}L) (X_{t-1}) = \hat{a}_t$$

3. Model [3]: model with constant and deterministic trend:

$$(1 - \tilde{\pi}L) (X_t - \hat{a} - at) = \hat{a}_t$$

In each of the three models, we assume that \hat{a}_t is a white noise: \sim , L is the delay operator; X_t is the variable whose stationarity is tested; $\tilde{\pi}$, \hat{a} and \hat{a}_t are parameters. If $\tilde{\pi} = 1$, it means that one of the roots of the delay polynomial is equal to 1. We say that we are in the presence of a unit root. In other words, X_t is a non-stationary process and nonstationarity is of a stochastic nature (DS process). We test the null hypothesis of unit root (X_t is integrated of order 1, that is to say non-stationary) against the alternative hypothesis of absence of unit root (X_t is integrated of order 0, that is, stationary).

In practice, models are estimated in the following form:

- 1) Model [1]: $X_t = \tilde{\pi}X_{t-1} + \hat{a}_t$

- 2) Model [2] : $X_t = \tilde{\pi}X_{t-1} + \hat{a}_t$

- 3) Model [3] : $X_t = \tilde{\pi}X_{t-1} + \hat{a} + at + \hat{a}_t$

With for each model, $\tilde{\pi} = \tilde{\pi} - 1$ and \sim .

We then test the null hypothesis $\tilde{\pi} = 0$ (non-stationarity) against the alternative hypothesis $\tilde{\pi} < 0$ (stationarity) by referring to the values tabulated by Fuller (1976) and Dickey and Fuller (1979, 1981). Since the critical values are negative, the decision rule is as follows: If the calculated value of the t-statistic associated with $\tilde{\pi}$ is lower than the critical value, we reject the null hypothesis of nonstationarity. If the calculated value of the t-statistic associated with $\tilde{\pi}$ is greater than the critical value, we accept the null hypothesis of non-stationarity.

It is important to note that the test is not performed on all three models. The Dickey-Fuller test should be applied to only one of the three models. In practice, we adopt a sequential strategy in three stages:

- Step I: We start by applying the test on the model 3. We can reach two results:
 - If the trend is not significant, we move to model 2;
 - If the trend is significant, we test the null hypothesis of unit root:
 1. If $\hat{\alpha}$ is not significantly different from 0, then X_t is non-stationary. In this case, it must be differentiated and restart the procedure on the series in first difference.
 2. If $\hat{\alpha}$ is significantly different from 0, X_t is stationary. In this case, the procedure stops and you can work directly on X_t .

- Step II: This step should only be applied if the trend in the previous model is not significant. Model 2 is estimated:

- If the constant is not significant, we go to model 1.
- If the constant is significant, we test the null hypothesis of unit root:

1. If $\hat{\alpha}$ is not significantly different from 0, then X_t is non-stationary. In this case, it must be differentiated and restart the procedure on the series in first difference.

2. If $\hat{\alpha}$ is significantly different from 0, X_t is stationary. In this case, the procedure stops and you can work directly on X_t .

- Step III: This step should only be applied if the constant in the previous model is not significant. Model 1 is estimated:

1. If $\hat{\alpha}$ is not significantly different from 0, then X_t is non-stationary. In this case, it must be differentiated and restart the procedure on the series in first difference.

If $\hat{\alpha}$ is significantly different from 0, X_t is stationary.

To try to reduce the number and put it in the form of elasticities, we put them in logarithmic form generated by the computer. The variables on which these tests will be carried out are as follows:

1. *linf*: natural logarithm of inflation rate;
2. *ldfb*: Natural budget deficit logarithm;
3. *lmm*: natural logarithm of the money supply;
4. *lpib*: natural logarithm of GDP;
5. *ltc*: Neperian logarithm of exchange rate.

We will present the results of these tests in the following table:

Table 1.: Results of the ADF test on the variables *linf*, *ldfb*, *lmm*, *lpib*, *ltc*

Settings Parameters	t- tab	Variables				
		<i>linf</i>	<i>ldfb</i>	<i>lmm</i>	<i>lpib</i>	<i>Ltc</i>
		t-calc.	t-calc.	t-calc.	t-calc.	t-calc.
$\hat{\alpha}(3)$	1,96	-0,33	-1,86	-1,33	2,11	1,39
$\hat{\epsilon}(3)$	1,96	2,22	1,56	1,98	-1,98	-0,51
$\hat{\alpha}(3)$	-3,54	-1,98	-1,43	-1,57	-2,02	-1,49
$\hat{\alpha}(2)$	1,96	2,28	0,12	1,45	-	1,18
$\hat{\alpha}(2)$	-2,95	-2,36	-0,38	-0,97	-	-1,07
$\hat{\alpha}(1)$	-1,95	-0,61	-1,05	1,30	-	-0,55
$\hat{\alpha}(3,1)$	1,96	-0,87	-1,19	-0,67	0,09	1,02
$\hat{\epsilon}(3,1)$	1,96	0,83	0,64	1,04	0,69	-0,55
$\hat{\alpha}(3,1)$	-3,55	-3,65	-4,18	-2,79	-1,67	-4,44
$\hat{\alpha}(2,1)$	1,96	0,09	-0,95	0,93	-1,28	0,78
$\hat{\alpha}(2,1)$	-2,95	-3,60	-3,98	-2,87	-1,8	-4,33
$\hat{\alpha}(1,1)$	-1,95	-3,66	-3,87	-2,75	-1,3	-4,29
$\hat{\alpha}(3,2)$	1,96	-	-	-	-0,71	-
$\hat{\epsilon}(3,2)$	1,96	-	-	-	0,64	-
$\hat{\alpha}(3,2)$	-3,55	-	-	-	-4,56	-
$\hat{\alpha}(2,2)$	1,96	-	-	-	0,00	-
$\hat{\alpha}(2,2)$	-2,95	-	-	-	-4,55	-
$\hat{\alpha}(1,2)$	-1,95	-	-	-	-4,63	-

Source: Prepared by the author on the basis of data from Ministry of Finance of the Democratic Republic of Congo

The numbers we see in parentheses in the first column refer to the different models of Dickey-Fuller. (3), (2) and (1) respectively mean Dickey-Fuller Model No. 3, No. 2 and No. 1. (3.1), (2.1) and (1.1), (3.2), (2.2), (1.2) mean the same thing but taking the first difference and the second difference variables. We therefore conclude that all the variables are stationary in first difference, with the exception of the *lpib* which must be differentiated twice. So, *linf*, *ldfb*, *lmm*, *ltc* ~ (1) and *lpib* ~ (2). We note here that all the variables are integrated of order = 1. this pushes us directly to pass of co-integration.

B. Concept on Co-integration

Statistical methods of econometrics are applicable only to stationary series. Satisfaction with the stationarity test of the variables is the sine qua non condition for the application of the OLS method. In general, regression of non-stationary series leads to a non-stationary error vector, that is, having infinite variance. However, when the series are cointegrated, the error vector becomes stationary and statistical inference remains possible. However, student tests do not follow the usual distribution. We call co-integrated variables X_t, Y_t a combination of integrated variables of order «d, b», such that the regression residual: $Z_t = X_t + \beta Y_t$ is integrated of order (d, b), $0 < b = d$. According to Engle and Granger (1987), when two series are co-integrated CI (1,1), it is possible to derive a short-term dynamic representation with a long-term Z_{t-1} recall term. This is called "error correction model". it is the relationship between the deviations of these two variables from their long-term equilibrium level.

C. Model estimation at LT

To estimate the relationship of LT the series are co-integrated, there is no particular problem. The Mco is applied. And if we work on a large sample, the Mco estimator has a remarkable property: it is the "super-convergence". This property says that in the presence of co-integrated variables, the Mco estimator of the co-integrating vector converges rapidly towards its true value, and the speed of convergence is higher than in the usual case. In this case, all standard hypothesis verification tests are irrelevant.

- Verification of LT model by OLS

The equation is as follows: $linf = c + ldfb + lmm + lpib + ltc$

: Logarithm of exchange rate = constante + log deficit budget + log deficit budzet + logarithm of GDP + logarithm of exchange rate

Table 2: Long-term cointegration model

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	1.426.746	2.936.682	0.485836	0.6305
LDFB	0.211740	0.121827	1.738039	0.0921
LMM	-0.128423	0.192848	-0.665932	0.5104
LPIB	0.148796	0.069915	2.128.256	0.0414
LTC	-0.208781	0.225682	-0.925114	0.3621
R ²	0.372599	Medium dependent variable		4.393642
R ² adjusted	0.291644	Akaike Criterion		3.998543
Sum of square of residue	87.04341	Schwarz criterion		4.218476
Log of likelihood	-66.97377	F-statistic		4.602542
DW	0.723983	Probability(F-statistic)		.0049300

Source: Prepared by author based on Ministry of Finance data

Here, we want to know if an explanatory variable in the model is really significant, that is, contributes to the explanation of the endogenous variable.

It should be determined whether its regression coefficient is significantly different from zero for a threshold of = 5%. We find at this level that the variables: the money supply, the exchange rate and the constant are not significant. From

where we will proceed to the elimination of these variables, starting with the constant which will be followed by the money supply and at the end the rate of exchange. The equation looks like this:

$$\text{loginf} = 1.426746 + 0.211740\text{logdfb} - 0.128423\text{logmm} + 0.148796\text{logpib} - 66.97377\text{logtc}$$

Removal of the constant C and the result is reported in the table below:

Table 3.: Removal of the constant

Variable	Coefficient	Std. Error	t-Statistic	Probability
LDFB	0.255882	0.080182	3.191248	0.0032
LMM	-0.079831	0.162903	-0.490050	0.6274
LPIB	0.143088	0.068093	2.101373	0.0436
LTC	-0.144034	0.179942	-0.800443	0.4294

Source: Prepared by author based on Ministry of Finance data

With regard to this table, we find that after removal of the constant C, the coefficient of determination goes from 37% to 36% (see Appendix) and the money supply is not significant.

Removal of the Money Supply

Table 4.: Removal of the money supply

Variable	Coefficient	Std. Error	t-Statistic	Probability
LDFB	0.217422	0.016237	13.39051	0.0000
LPIB	0.111752	0.023134	4.830602	0.0000
LTC	-0.202292	0.133515	-1.515124	0.1393

Source: Prepared by author based on Ministry of Finance data

It appears from this table that after removal of the money supply, the exchange rate is also not significant.

Finally, we remove, the exchange rate.

Table 5.: Removal of the variable exchange rate

Variable	Coefficient	Std. Error	t-Statistic	Probability
LDFB	0.214133	0.016395	13.06088	0.0000
LPIB	0.092620	0.019750	4.689682	0.0000

Source: Prepared by author based on Ministry of Finance data

Looking at this table after removing the variables that were not significant, we say that in the long run, the fiscal deficit and GDP variables have a positive effect on inflation. In other words, inflation is explained by these two variables at LT. Hence the equation is of the form:

$$\text{loginf} = 0.214133\text{logdfb} + 0.092620\text{logPIB} + \text{LT}$$

This prompts us to test our hypothesis on the influence of fiscal deficit on inflation. After analyzing the estimation model, we present our hypothesis tests of our variables.

Let's test the hypothesis:

4) $H_0: a_4 = 0$

$H_1: a_4 > 0$ ou $a_4 < 0$

5) $H_0: a_5 = 0$

$H_1: a_5 > 0$ ou $a_5 < 0$

1) $H_0: a_1 = 0$

$H_1: a_1 > 0$ ou $a_1 < 0$

2) $H_0: a_2 = 0$

$H_1: a_2 > 0$ ou $a_2 < 0$

3) $H_0: a_3 = 0$

$H_1: a_3 > 0$ ou $a_3 < 0$

At the threshold of $\alpha = 5\%$, the value of the t-student table at $(n-k-1)$ d1 is 1.96, ie. $t_{17}^{0,196} = 1,96$

At LT we find that this estimate gives aberrations. The money supply and the exchange rate are not significant. As we see on money supply (t-calculated = 0.66 < t-table = 1.96 and probability = 0.51 > 0.05) and for the exchange rate (t-calculated = 0.93 < t-table = 1.96 and the probability = 0.36 > 0.05). Nevertheless, the parameters related to the budget deficit and the GDP present the expected signs according to the theory. The results of this estimate are not satisfactory. The R_2 is only 37%, the D -W statistic here is 0.72. From where we will proceed to the model with correction of error. Long before we first recover the residue to test its stationarity.

The verification of residue stationarity.

Table 6.: Residual stationarity test

Parameters	t- tab.	remaining
		t-calculation
\ddot{a} (3)	1,96	-0,30
\ddot{e} (3)	1,96	0,41
\ddot{o} (3)	-3,54	-2,86
\ddot{a} (2)	1,96	0,31
\ddot{o} (2)	-2,95	-3,03
\ddot{o} (1)	-1,95	-3,07

Source: Prepared by author based on Ministry of Finance data

We see here that the residue is stationary in level with a single delay, without trend or constant.

D. Estimation of the error correction model at CT

D(LPIB,2)	0.761034	0.149293	5.097593	0.0000
RES(-1)	-0.321895	0.097266	-3.309451	0.0023
R ²	0.555208	Medium dependent variable		0.050480
R ² adjusted	0.541308	Akaike Criterion		2.659134
Sum of square of residue	25.27892	Schwarz criterion		2.748920
Log of likelihood	-43.20528	DW		2.304354

Source: Prepared by author based on Ministry of Finance data

We see here that this final regression satisfies an important characteristic: the coefficient \tilde{n} (called restoring force towards the equilibrium) associated with the error correction term ε_{t-1} must be both significant, systematically negative and included between 0 and 1 in absolute value. Let $\tilde{n} = -0.32$

The model is explained at 55% at CT, that is to say that at LT these variables can not evolve together while at CT, these variables can evolve together. Hence inflation is explained by GDP in the short term and its equation is as follows:

$$\text{loginf} = 0,76\log \text{ PIB} - 0,32u_t.$$

E. Macroeconomic impact of fiscal adjustment

It is essentially the way in which it is financed that determines to what extent a public sector deficit is reconcilable with broader macroeconomic objectives.

The very uneven macroeconomic performance obtained by the Democratic Republic of Congo during the adjustment reveals the importance of public finance management [Aglietta M., 2010, pp. 58-59]. The Congolese government's choice to finance public deficits through monetary creation has led to a worsening of inflation. It emerges that during the phase of strict application of the adjustment program in which the State has more or less controlled its expenditures, the DRC has achieved good results, as it did between 1984-1986. During this period, the combination of the various measures concerning the rationalization of expenditures and the maximization of state revenues made it possible to reduce the budget deficit to 3.3% of GDP, compared to 2.1% over the same period 1981-1983. This exceptional fiscal adjustment in the post-independence history of the DRC's public finances has reduced the government's net recourse to domestic credit: 1.1% of GDP compared with 3% in the previous period. As a result, the monetary counterpart had fallen significantly and inflation had stabilized at 40.6%. This macroeconomic performance will soon prove to be ephemeral because of the rapid deterioration of public finances due to the cessation of the adjustment program in 1986, to 2.4% in 1987 to reach the record level of 6.3% in 1988. According to the criterion of the world bank [Olenghankoy M.J., 2002, pp.56-58], the budgetary policy is judged:

- Good or satisfactory: if there is a budget surplus or if the overall budget deficit including grants represents less than 1.5% of GDP,
- It is considered quite good: if the deficit is between 1.5 and 3.5%;
- it is considered bad: if the deficit is between 3.6 and 7.0%;
- and bad if the deficit is 7.1% or more.

To better inform the rest of our developments, we first give an overview of the technical or conventional problems related to the design of tools for measuring fiscal imbalances.

1. The concept of budget deficit: meaning and measurement.

Budget deficits indicate how much public spending exceeds revenues and hence how much the budget is increasing domestic demand. The quality of a fiscal policy is often measured in terms of budget deficits. One of the

most important aspects of fiscal policy is the measurement of this deficit. The correct way of measuring depends on the purpose. The most obvious is to measure the net drain of the public sector on resources, which in turn affects the external deficit, inflation, domestic interest rates and taxes. A good indicator would be the net use of financial resources by the public sector, ie public sector borrowing requirements (PSEB). These EPSs represent the total expenditure surplus on the revenue of all the public authorities to be financed by new net borrowing of the repayment of the previous debts. In other words, the consolidated deficit of the public sector or the overall budget deficit. Expenditures include public service salaries, purchases of goods and fixed capital formation, interest and debt payments, transfers and grants. The revenues include proceeds from taxes and royalties, interest on public assets, transfers, surplus holdings of state-owned enterprises, and sales of public assets. All public finance experts agree that there is no more comprehensive measure of the deficit than this indicator of public sector borrowing needs, but this is sometimes misleading. In a country with high inflation, such as the Democratic Republic of Congo, part of public sector borrowing is offset by the decline in the real value of outstanding debt. One way to measure the deficit of the public sector, in this case, is to consider the evolution of the real debt. The operating deficit is like the BEP minus the part of the interest payments that correspond to inflation. In other words, it is the adjusted deficit of inflation. In practice, nothing prevents the finances from remaining indefinitely in deficit. However, the primary balance must eventually become positive in order to cover at least a portion of the interest payable on the current debt.

2• The main indicators of fiscal adjustment in Congo

The overall fiscal deficit, including grants, is the current indicator of Congolese fiscal policy. It corresponds as we have defined above in the definition of the BEP. It indicates the volume of the resource that the State should borrow to restore balance. In the case of the Democratic Republic of Congo, this concept is essential because, as domestic and external borrowing possibilities are limited, the overall deficit indicates the extent to which the state risks resorting to inflationary financing or financing the deficit through domestic resources by creating other distortions (payment arrears to public sector providers or starting the printing press). It should be noted that, according to this indicator, the Democratic Republic of Congo improved its fiscal position during the strict implementation phase of the adjustment program between 1982-1987, rarely the overall deficit including grants -5.4% of GDP in 1982 to -2.2% in 1987 and -0.7% in 1984. The primary deficit is the other indicator of fiscal adjustment. The evolution of the deficit or primary balance is of great importance given the weight of Congolese external debt in the state budget. This shows the capacity of the state to self-finance its current expenses and its own investments. It thus highlights the possibility (or the impossibility) of the State once its internal expenses paid to honor or to clear its debts. On average, the primary deficit as a percentage of GDP declined during the fiscal adjustment phase. And this is more than the overall budget deficit because interest payments have increased, losing some of the benefit of the efforts that have been made to reduce the overall deficit.

3• The main limits of the conventional method of measuring the public deficit.

The analysis of the finance policy raises a number of difficulties that should be taken into account as well in the calculation that in the interpretation of the budget deficits some that seem relevant in the Congolese context are described below.

A. The public sector should include central, provincial and municipal governments, decentralized agencies and public enterprises. Often conventional deficit measures only cover central government. This can give a very false picture of the reality when the other public authorities are largely deficit or surplus.

B. In the overall deficit measure, financial intermediaries in the public sector are often excluded because of their special nature as financial agents. It is therefore often the case that public expenditures that subsidize banking systems or solve financial crises are not taken into account in the conventional method of measuring the public deficit. It must be stressed that financial crises present a serious dilemma for governments: they need to stabilize the economy and thus reduce the budget deficit, but they need to make substantial transfers to safeguard the viability of the financial system, especially the central banks.

C. In the Democratic Republic of Congo, the Central Bank of Congo has suffered, in recent years, heavy operating losses due to the production of banknotes (need by the level of hyper-inflation). A deficit correction is to ignore the effect of temporary factors such as the gap in national income, commodity prices and interest rates relative to their long-term trend, and phenomena such as tax amnesties.

• The role of the policy of recovery of the situation of the Congolese crisis.

Whatever one may say, the current crisis in the Congo, although obviously socio-economic, is above all a political one, insofar as it is politics that commands, before it is really at the service of this one. In these introductory notes, we will try to show the role of politics in the fight against inflation. In general, it must be recognized that inflation is

irreversible or inevitable for all countries in the world, even the most economically powerful. But inflation must be at a socially acceptable level, that is to say at a level where the devaluation of the national currency does not reach 20° in comparison with gold or the standard currency such as the dollar. . Beyond this threshold, we are witnessing so-called galloping inflation that is difficult to control. Politics, political action or more practically the government is better situated and has the monopoly of action for the resolution of galloping inflation, the economic operators being themselves torn by pursuit of selfish interests. Most of the measures to be taken are of a technical nature that we can not spread as part of this analysis. It is important to remember that inflation is the translation of an imbalance characterized by the exclusive increase in the circulation of the national currency in the country, which causes the general rise in prices and decreases the purchasing power of this currency. of the population that uses it. Returning to the possible action of the political power to control inflation, we can mention some avenues available to the government to fight effectively against inflation. These include the mobilization of production and the actions to be taken on the supply, the demand and the currency itself.

CONCLUSION

Here we are at the end of our work on the impact of budget deficit on inflation in the Democratic Republic of Congo from 1970-2005. The purpose of this work is to see the influence of fiscal deficit on inflation during this period, but also to know the influence of other macroeconomic variables such as money supply, GDP and the exchange rate. In addition to the introduction and the general conclusion, our work has included three chapters. The first chapter focused on theoretical consideration, the second chapter presented the determinants of inflation. And finally, the third chapter focused on the empirical estimation of the relationship between inflation and the budget deficit.

We started from a problem which is the impact of the budget deficit on inflation. From this problem, we have identified two questions that have been the basis of our investigations:

1. What is the impact of the budget deficit on inflation in the Democratic Republic of Congo, in other words is inflation in the Democratic Republic of Congo explained by the budget deficit?
2. Would inflation in the Democratic Republic of Congo be explained by other variables?

In relation to these questions, we have formulated the following hypotheses in order to answer the concerns recorded in the problematic:

1. The budget deficit would have a significant impact on inflation in the Democratic Republic of Congo.
2. The increased instability of the Congolese economy over inflation in the Democratic Republic of Congo would have a direct relationship with the money supply, the exchange rate and GDP.

After analyzing the data by the Eviews software we found the following results:

The fiscal deficit and GDP variables explain Inflation in the long term and in the short term inflation is explained by GDP. From what precedes, it follows that our two hypotheses are all verified. From the above, turned a look at the Congolese economy and comment on this result in the end to give some suggestions. But then, a constant in the life of the country for thirty years, the waste of resources and budget laxity. The Democratic Republic of Congo sank from 1991 into a serious political, economic and social crisis following the looting that the country experienced at the beginning of the year and political tensions. As a result, inflation becomes violent. In this hostile economic and monetary environment, domestic production has fallen significantly. Both private and public economic operators have sought to follow by taking refuge in the informal economy. Basic infrastructure is either destroyed or in disrepair.

The criminalization of the economy reached its climax with the dizzying production of banknotes. As a result, much of the currency issuance escapes the official monetary circuit. The central bank can no longer play its role of monetary authority and cashier of the state. Financial intermediation is declining and the country is facing several monetary spaces. The destabilization of the country was perpetuated from 1996 to 2002 by two wars inherent to the internal political situation in the Democratic Republic of Congo in Rwanda, Burundi and Uganda. Thus, to bring out the country of the crisis, economic and political reforms were tried several times but they did not achieve in all the success that could be expected. Various measures have been taken by the various governments that have succeeded each other since the 1980s to:

- restore macroeconomic balances;
- restore an orthodox management of public finances;

- control the scheduling centers of treasury operations;
- restore the budget as a privileged instrument of public finance management;
- restructure public companies,

Moreover, the decay of the state and the lack of an honest administration, a minimum of justice and security lead the country into anarchy. However, the short period from 2001 to 2003, which translates into relative price and exchange rate stability, accompanied by an improvement in the GDP growth rate, shows, in our view, that macroeconomic equilibria can be restored rapidly, broken financial mismanagement when there is a real political will of adjustment. In short, the deterioration of the economic situation is characterized by the disorganization of the production tool and the contraction of tax revenues. The systematic use of the currency issue in the face of the shortage of foreign exchange to reduce budget deficits in a questionable distribution logic that causes the indexation of domestic prices at the parallel exchange rate. Certainly, development at a price and the responsibility of the state is obvious. It is difficult, however, to develop without growth, because the widening of the range of possibilities offered to man is not achieved without material means. As a result, accelerating economic growth is the top priority for policymakers around the world. In fact, the realization of a harmonized development of the economy is, today, in most countries, the fundamental objective of economic policies: it is in this perspective that must now be defined any budgetary strategy, both at the level of its operative mechanisms than that of the actions promoted by it. Through these theories and the review of the empirical literature, we have modeled the determinants of inflation in the Democratic Republic of Congo, focusing our analyzes on the effect of fiscal deficits. We wanted to know whether the objective of economic recovery through the fiscal policy applied in Congo, has actually been effective.

The analysis of the results of the econometric estimation allowed us to confirm that budget deficits have a positive and significant impact on the rate of inflation. The analysis of the results of Mco's long-term model estimation led us to the following propositions:

- The increase in the budget deficit leads the State either to resort to the billboard, the treasury bill or the loan, which leads us to conclude that the budget deficit is considered as the foundation or the very basis of inflation because by using the billboard it still causes a huge mass of money, plus there is a large mass of money in circulation, plus there is increase in inflation rate.
- It should also be noted that the public authorities must do their utmost to control the exchange rate in order to give value to the national currency and, on the other hand, to encourage foreign investors to come in large numbers,
- The Congolese state must leave the central bank the autonomy to manage money.

To put an end to our work, it is worth remembering that we can not claim to have exhausted the substance of this subject. We make ourselves available for any comments or suggestions related to the effectiveness of our research.

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Résumé

Dans les pays en voie de développement, les déficits budgétaires sont souvent la conséquence de politiques fiscales expansionnistes, de l'instabilité des recettes d'exportation consécutives à des fluctuations irrégulières des cours des produits de base. L'incapacité de l'Etat de compenser cette baisse par une hausse des recettes provenant de d'autres sources ou de réduire suffisamment la croissance des dépenses affecte la formulation et la mise en oeuvre des politiques de gestion macro-économique. Ainsi, beaucoup de ces pays font recours à l'emprunt pour faire face à l'accroissement de dépenses publiques ou tout simplement pour les maintenir à leur niveau. La République Démocratique du Congo n'est pas à l'abri des problèmes liés au déficit budgétaire et à la croissance des dépenses publiques plus rapide que celle des recettes. Depuis 1980, les déficits budgétaires plus prononcés ont commencé à se manifester dans le budget général de l'Etat. Cet article analyse l'impact du déficit budgétaire sur l'inflation en République Démocratique du Congo. Cet impact du déficit budgétaire sur l'inflation repose principalement sur l'hypothèse de plein emploi, le type de politique budgétaire menée, surtout les causes de l'inflation et les anticipations des agents la concernant. L'estimation des effets des variables du déficit et politique budgétaire dans les fonctions de réaction de la Banque centrale du Congo et dans les équations de taux de long terme pour le pays montre que cet impact n'est pas automatique et peut varier d'un pays en voie de développement à l'autre. Malgré le programme d'ajustement structurel (PAS), et depuis les années 90 au Congo, qui proposait une diminution sensible des dépenses de l'Etat et aujourd'hui la bonne gouvernance qui est le reflet de la bonne gestion des affaires publiques, on remarque toujours l'existence des déficits budgétaires.

JEL codes : E44, E52, E6