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## BALANCE OF PAYMENTS CRISES UNDER FIXED EXCHANGE RATE IN COLOMBIA: 1938-1967\*.

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### Abstract

Between 1938 and 1967, including the Bretton Woods period after 1947, Colombia pegged its currency to the dollar. Although the exchange rate was fixed, the peso was devaluated more than 12% on six occasions. The devaluation episodes were complex, traumatic, highly politicized and had costly macroeconomic effects. The Bretton Woods agreement stated that countries could only devalue their exchange rate in the presence of fundamental imbalances driven, for example, by structural terms of trade deterioration. However, this paper states that in Colombia, the imbalance in the money market was a key factor in explaining the exchange rate crises during the period. The paper is organized as follows: first, a simple theoretical model of a small open economy with imperfect capital mobility is described in order to examine the possible causes of nominal devaluations; second, a narrative approach is used to describe the economic circumstances that surrounded each of the devaluation episodes; finally, a set of econometric tests are used in order to identify the key variables behind the macroeconomic imbalances that preceded each exchange rate crisis. The results show that the external imbalances were mainly associated with the imbalances in the money market. Terms of trade deterioration account for just a small part of current account crises.

**Key Words:** Bretton Woods, Devaluation, Fixed Exchange Rate Regime, Monetary Policy

**JEL Classification:** N16, E5, E6.

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## **CRISIS CAMBIARIAS EN COLOMBIA BAJO TIPO DE CAMBIO FIJO: 1938-1967**

### **Resumen**

Entre 1938 y 1967, lo cual incluye el período de Bretton Woods después de la Segunda Guerra Mundial, Colombia fijó su tipo de cambio al dólar. A pesar de que el régimen cambiario operó bajo el esquema de fijación del tipo de cambio, el peso fue devaluado oficialmente en más de 12% en seis ocasiones. Los episodios de devaluación fueron complejos, traumáticos, con un alto componente político e implicaron ajustes macroeconómicos costosos. El acuerdo de Bretton Woods sostenía que los países podían devaluar sus monedas sólo en presencia de desequilibrios fundamentales como resultado, por ejemplo, de caídas estructurales de sus términos de intercambio. Sin embargo, este trabajo sostiene que los desequilibrios en el mercado monetario fueron determinantes en la explicación de las crisis cambiarias durante el período de cambio fijo. El ensayo está organizado en tres partes. Primero, se plantea un modelo teórico simple para una economía pequeña y abierta con movilidad imperfecta de capitales en el que se puedan analizar las posibles causas de las devaluaciones nominales. En segundo lugar, se emplea un enfoque narrativo para describir las circunstancias económicas que rodearon cada una de las devaluaciones: así como la revisión de evidencia cualitativa de la época. Finalmente, se realiza un conjunto de ejercicios econométricos para identificar las variables determinantes de los desequilibrios macroeconómicos que precedieron cada crisis cambiaria. Los resultados muestran que los desajustes externos estuvieron primordialmente asociados con desequilibrios en el mercado monetario. Los movimientos adversos en los términos de intercambio explican sólo una pequeña porción de las crisis cambiarias.

**Palabras clave:** Bretton Woods, devaluación, régimen de cambio fijo, política monetaria.

**Clasificación JEL:** N16, E5, E6.

*The close relation between changes in the stock of money and changes in other economic variables, alone, tells nothing about the origin or the direction of origin of either or the direction of influence. The monetary changes might be dancing to the tune called by independently originating changes in the other economic variables; the changes in income and prices might be dancing to the tune called by independently originating monetary changes; the two might be mutually interacting, each having some elements of independence; or both might be dancing to the common tune of still a third set of influences. A great merit of the examination of a wide range of qualitative evidence, so essential in a monetary history, is that it provides a basis for discriminating between these possible explanations of the observed statistical covariation.*

Milton Friedman and Anna J. Schwartz  
*A Monetary History of the United States, 1963.*

## **I. Introduction**

### **I.A General Overview**

On September 1931, the conversion of the Central Bank's (*Banco de la República*) bills was suspended, ending the Gold Standard exchange rate system that had been in effect since the creation of the Central Bank in 1923<sup>1</sup>. Since then, one of the goals of the Central Bank's policy was to stabilize the exchange rate. After some years of controlled flotation, in 1938 *Banco de la República* Board of Directors pegged the exchange rate to the American dollar at \$1.75 pesos, beginning a period in which the economic authorities committed themselves to defend the fixed parity with the American currency. This exchange rate system functioned for almost thirty years, until March 1967 when a crawling peg regime was adopted.

The first challenge to the exchange rate system occurred during World War II when the paralysis of imports, brought about by significant foreign reserves accumulation, created strong devaluation pressures. After World War II, the period was defined by a new international monetary system with the signing of the Bretton Woods Agreement. This new system abolished the Gold Standard, leading to a fixed parities policy (adjustable) relative to the American dollar<sup>2</sup>.

The parity was adopted under the assumption that floating exchange rates had caused speculative instability and that more rigid systems required increased monetary discipline. However, the system created the possibility for the economies that had transitory deficits in their current account to obtain loans by the recently created International Monetary Fund (IMF). The system also allowed the countries to modify their fixed parities under adverse structural

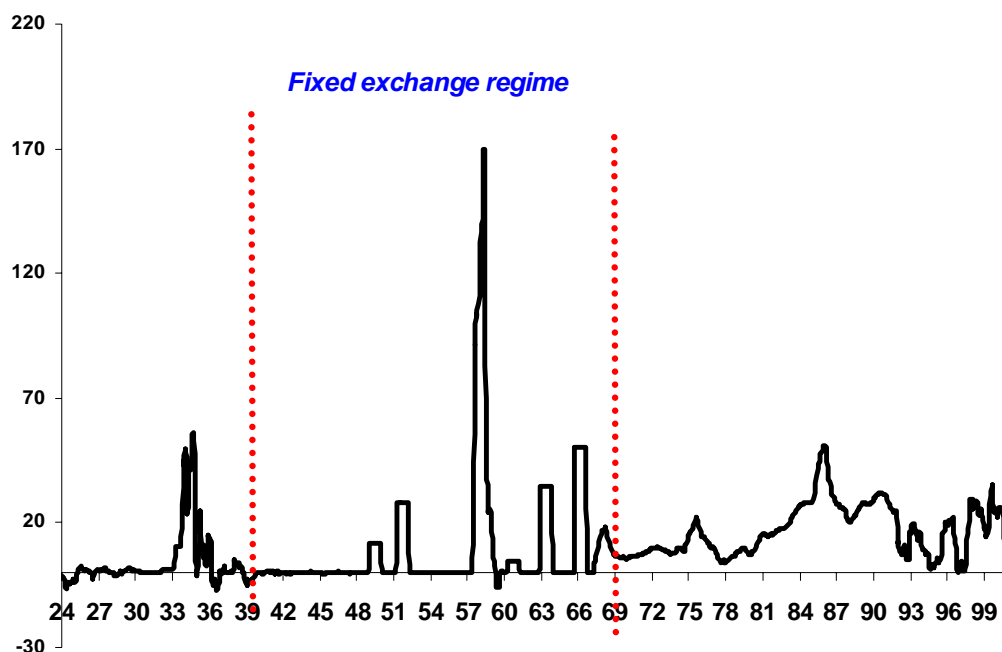
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<sup>1</sup> The creation of the Banco de la República in 1923 allowed the return to the Gold Standard that had tried to be restored since the end of the Guerra de los Mil Días (Thousand Days War). The gold support of the bank bills in circulation – convertibles in gold – and in deposits was determined in 60%. More details, Sánchez, et.al (2005).

<sup>2</sup> Under the Bretton Woods system the American dollar was anchored to an invariable price related to gold. Moving from a "Gold Standard" to an "Exchange Gold Standard" regime, where the United States was liable for maintaining the value of the dollar related to gold.

changes in the external sector caused by, for example, a continuous fall in their terms of trade<sup>3</sup>.

Figure 1. 1 Annual Nominal Devaluation (%) in Colombia: 1925-2003



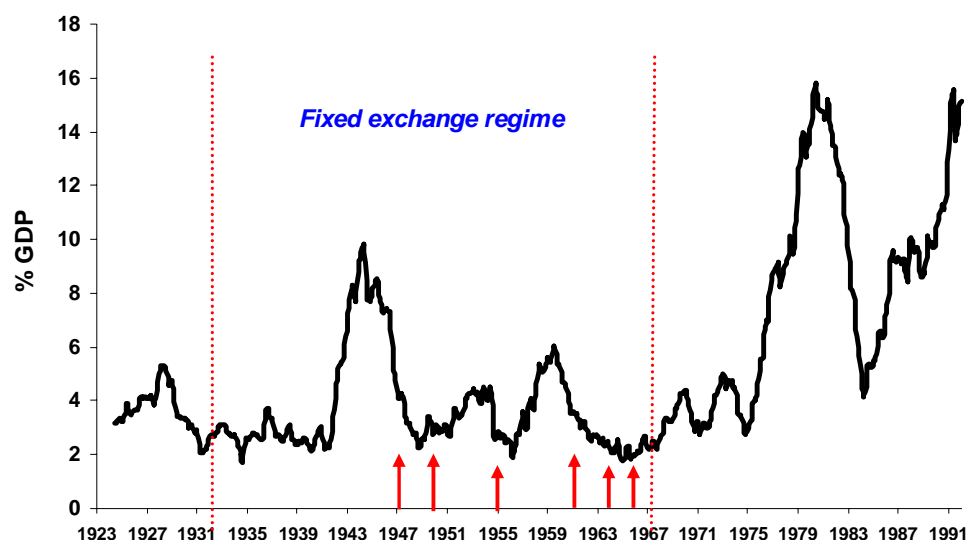
Source: Principales Indicadores Económicos y Wiesner(1978)

Eichengreen (1996) describes the arrival of the Welfare State and the politicizing of monetary and exchange decisions as the main characteristics of the Bretton Woods period. He emphasized that the internal objectives, especially the commitment of maintaining full employment, began to prevail over others, such as the protection of the exchange rate and price stability<sup>4</sup>. Therefore, after World War II, the fixed exchange rate (adjustable) served to correct the external disequilibrium through its devaluation without suffering a long and costly adjustment through deflation. However these devaluations were accompanied by speculative influxes in the exchange rate and balance of payments crisis.

<sup>3</sup> It is important to emphasize that the Bretton Woods Agreement was not sufficiently clear on this issue as it never defined what a fundamental disequilibrium meant (Krugman and Obstfeld, 1997).

<sup>4</sup> The recessive and deflating policy of the Central Bank, which had solved the payment deficit under the Gold Standard, was not acceptable from the political point of view. Under the Gold Standard when a country had an external deficit an adjustment mechanism operated automatically through gold and price flows. The deficit reduced the amount of money and credit, creating deflation and recession, and depreciating the exchange rate in real terms. This reduced the demand for imports and reestablished the external equilibrium. The Central Bank played an important role in this mechanism because the reduction in the amount of money occurred through policies that restricted exchange rate increments.

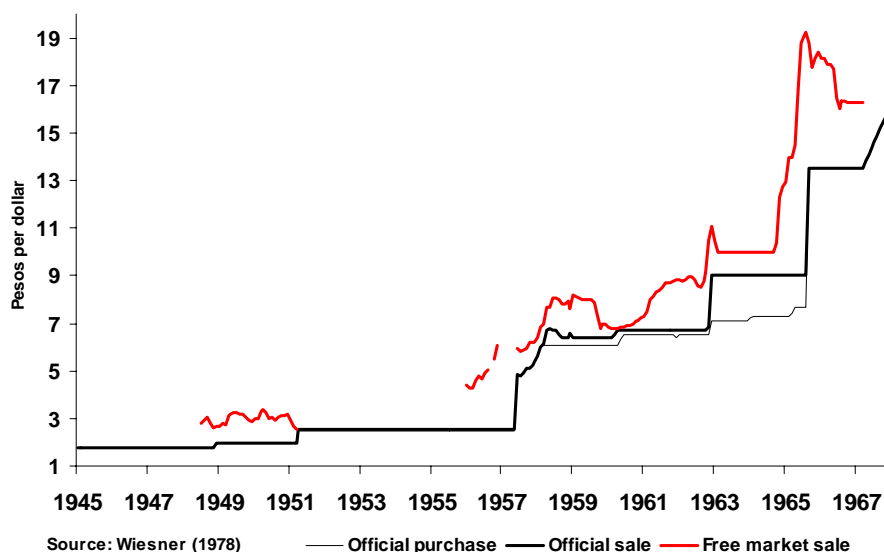
Figure 1. 2 Relation between International Reserves and GDP in Colombia



Note: Arrows point out the months when devaluations took place. Source: GRECO(2002) y Principales Indicadores Económicos.

Six important devaluations (more than 12%)<sup>5</sup> took place in Colombia during the fixed exchange period, as shown in Figure 1.1. These exchange adjustments appear to be more pronounced than those that took place during other periods of exchange rate alterations. Additionally, there were other common devaluation patterns during this period. First, they were preceded by historically low levels of official reserves (as a proportion of the GDP) which validate the name “balance of payments crises” for these episodes (Figure 1.2).

Figure I. 3 Nominal Exchange Rate under Fixed Exchange Rate regime in Colombia: 1945-1967



Source: Wiesner (1978)

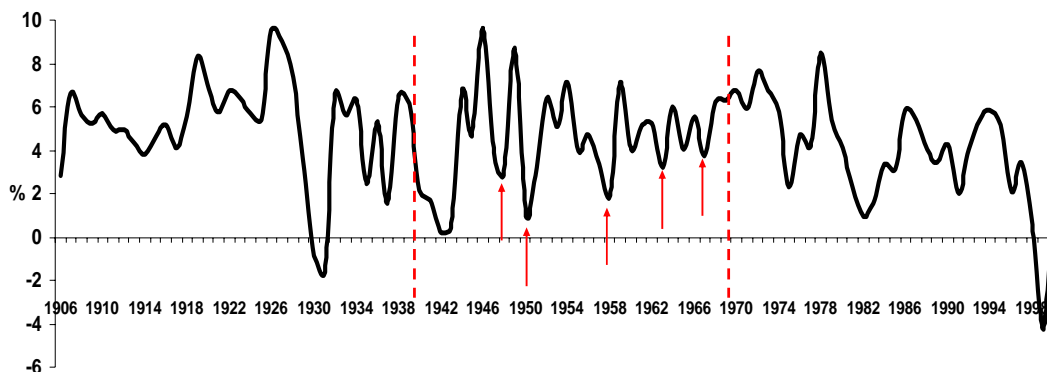
— Official purchase — Official sale — Free market sale

<sup>5</sup> For a detailed description of the history of the exchange legislation that carried every devaluation, see the Appendix.

<sup>7</sup> Edwards and Santaella (1992) discuss the most important devaluations that occurred in the developing countries (including Colombia) during the Bretton Woods period and the particular circumstances that surrounded them.

Second, the exchange rate crises coincided with the anticipated exchange rate devaluation in the parallel markets. These consisted of one or more “semi-free” markets where the price of foreign currency was determined by the dollars’ demand and supply. This was determined by selected types of imports and exports previously announced by the economic authorities (Figure 1.3). However, the the Central Bank frequently intervened in the dollar markets in order to minimize their volatility and to fix the price of foreign currency at the desired level.

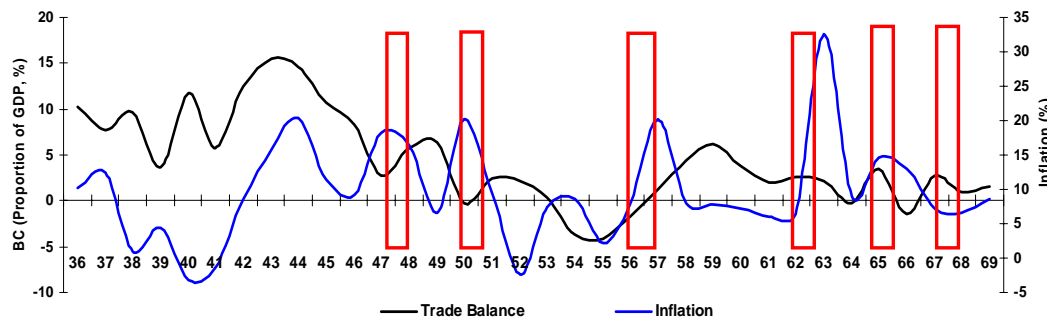
Figure 1. 4 Real Output Growth in Colombia: 1906-2000



Note: Arrows point out the months when devaluations took place. Source: GRECO

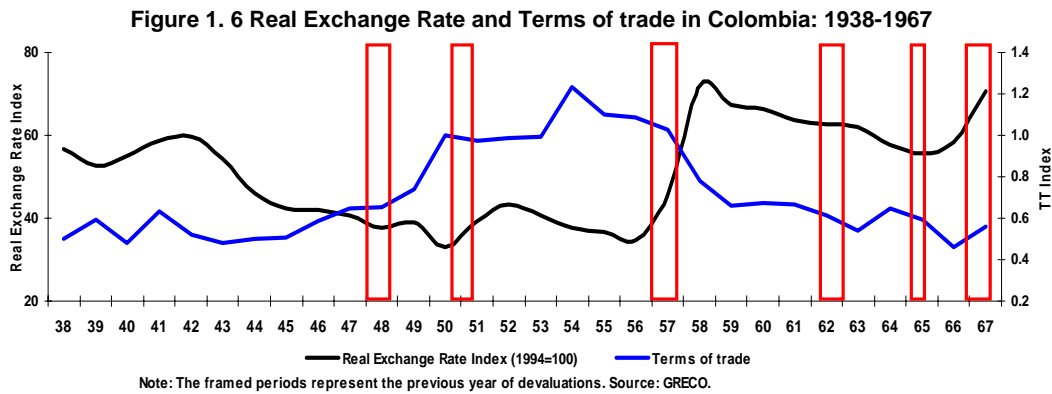
Third, the exchange rate adjustments under the parity regime were accompanied by strong fluctuations in production activity (Figure 1.4), which seemed to be preceded by falls in the current account and acceleration in inflation. (Figure 1.5)

Figure 1. 5 Inflation and Trade Balance in Colombia: 1936-1969



Note: The framed periods represent the previous year of devaluations. Source: GRECO.

However, it seems that the devaluations during this period were not systematically associated with adverse changes in the terms of trade. In fact, the first three devaluations occurred in the middle of a growth period, or at a positive level of this indicator. Finally, the adjustments of the nominal exchange rate did not appear to determine a permanent change in the real exchange rate level, except for the 1957 devaluation.



## 1.B Literature on Bretton Woods period in Colombia

Few papers have studied the exchange rate behavior in Colombia during the Bretton Woods period or the determinants of the devaluations<sup>7</sup>. Wiesner (1978) presents a detailed analysis of the Colombian fixed exchange rate and its modifications. However, he does not seem to reach a full conclusion about the general conditions that surrounded each one of the devaluations:

*In general there does not seem to be any constant rule about the sequence of the devaluations, (...). There were plenty and variable methods to stop, suspend, differ and repair the problem in which the devaluating processes do not, could not show a typical relation of causality or development sequence<sup>8</sup>.*

It is important to emphasize that the author follows a hypothesis in which coffee exports play a determinant role in the exchange rate disequilibrium during this period. He asserts *“simply, the astonishing presence of coffee in the exports debilitated the stabilization of the exchange rate in a consistent way”*; Wiesner (1978)<sup>9</sup>.

Diaz-Alejandro (1976) analyzes the devaluations and their economic effects in Colombia. He argues that the fixed exchange rate had little impact in the diversification of exports because of the instability that characterised the real exchange rate during the period. According to the author, the 1967 reform had a positive impact on exports, not because the real exchange rate rose significantly, but because it made it more stable.

Musalem (1971) explores the relation between the money market and the exchange rate disequilibrium events in Colombia during the analyzed period. The paper demonstrates the deep relationship between money demand, current account situation, and changes in the exchange rate. The author concludes that the disequilibrium, produced by crisis expectation in the balance of payments and money market, along with money creation, were the main causes of the international reserves crises<sup>10</sup>.

<sup>8</sup> Original text in Spanish.

<sup>9</sup> Wiesner does not present any quantitative evidence for this. Original text in Spanish.

<sup>10</sup> Salazar (1996). shows in further detail the monetary policy in this period.

In contrast to the Colombian historical literature (Wiesner, 1978), which associates the balance of payments crises (severe falls in international reserves) with the deterioration in the terms of trade during this period, our hypothesis states that crises were originated in the exogenous growth of money stock produced by expansive monetary policy. We follow the monetary approach of the balance of payments crises which claims that the disequilibrium in the money market leads to a loss in foreign reserves and thus, nominal devaluation<sup>11</sup>.

This paper consists of five sections, and this introduction makes up the first one. In the second section, a theoretical macroeconomic model explains the possible conditions of devaluation under the fixed exchange rate. The third section analyzes the circumstances that surrounded each devaluation using qualitative and narrative evidence on the monetary decisions. The fourth section presents the quantitative evidence on the main determinants of the exchange rate behavior during the fixed exchange rate period in Colombia. Section five concludes the paper.

## **II. A simple theoretical framework**

The model in this section is used to explain the behavior of an economy, in this case the Colombian economy, during the fixed exchange rate period. The model attempts to reproduce: (i) the main stylized fact of the devaluations, such as the previous fall of foreign reserves; and (ii) the impact of a shock to terms of trade or an expansionary demand policy, that according to the literature were both associated with devaluations.

The model is built within a Mundell-Fleming framework and assumes that the economy is small and that capital has imperfect mobility. It is represented by two markets: the goods and the money market. The equilibrium in the goods market is represented by the following equation:

$$y_t = \bar{y} + \rho(y_{t-1} - \bar{y}) - bi_t + G_t + BC_t ; \text{ with } 0 < \rho < 1 \text{ y } b > 0$$

Where,  $y_t$  represents the short-term equilibrium of income,  $\bar{y}$  the long run level (in absence of disturbances),  $\rho$  the degree of persistence of previous fluctuations around its equilibrium level,  $b$  the sensibility of income to variations of the interest rate ( $i$ ),  $G$  the public expenditure level, and  $BC$  the trade balance<sup>12</sup>. The latter is represented in the following equation as a function of the real exchange rate, the deviation of the income level, and the terms of trade:

$$BC_t = \gamma(e_t + p^* - p_t) - \beta(y_{t-1} - \bar{y}) + \lambda(P_t^X - P^*); \text{ with } \gamma > 0, \beta > 0 \text{ y } \lambda > 0$$

<sup>11</sup> Frenkel and Johnson (1976) give more bibliographic references for this approach.

<sup>12</sup> In the same way, the variation of investment, public expenditure and trade balance have to be considered as deviations of their long run level which are contained in  $\bar{y}$ .



Where  $(e_t + p^* - p_t)$  is (a linear approach of) the real exchange rate with  $e$  as the nominal exchange rate,  $p^*$  is the foreign price level and  $p_t$  is the domestic price level. Likewise,  $(P_t^X - P^*)$  is (a linear approach of) the terms of trade, where  $P_t^X$  is the price of exports. The parameters  $\gamma, \beta$  and  $\lambda$  reflect the sensibility of the trade balance to variations in the real exchange rate, economic cycle and terms of trade, correspondingly.

The money market has as its first component (a linear approach) the money demand:

$$m_t^d = p_t - \eta i_t + \phi y_t ; \text{ with } \rho > 0 \text{ y } \phi > 0$$

Where, the parameters  $\eta$  and  $\phi$  reflect the sensibility of money demand to changes in the interest rate and income, respectively.

Money supply is the second element of this market and fulfils the identity of the Central Bank balance sheet according to:

$$m_t \equiv B_t^d + e_t B_t^f = B_t^d + e_t B_{t-1}^f + BC_t ;$$

Where,  $m_t$  is the money stock level<sup>13</sup>,  $B_t^d$  the Central Bank's gross credit and  $B_t^f$  the level of official reserves (in dollars), which under fixed exchange rate increases (falls) with the trade surplus (deficit). Thus, money stock is described by the equation:

$$B_t^d + e_t B_t^f = p_t - \eta i_t + \phi y_t$$

Finally, an equation of price formation that follows a Phillips Curve augmented with expectations such as:

$$p_t = p_t^e + \varphi(y_{t-1} - \bar{y}) ; \text{ with } \varphi > 0$$

We assume that expectations are adaptative, so nominal rigidities<sup>14</sup> can be introduced into the model, such as:

$$p_t = p_{t-1} + \varphi(y_{t-1} - \bar{y})$$

With this theoretical framework, the equilibrium of the economy is the result of the simultaneous equilibrium of the money market and the goods market, as follows<sup>15</sup>:

<sup>13</sup> For simplicity a multiplier coefficient is assumed to equal one.

<sup>14</sup> In this way, the nominal rigidity introduced has as its objective to have transitory real effects of expansionary demand policies that validate its use.

<sup>15</sup> The interest rate is determined endogenously due to the assumption of imperfect mobility of capital.

$$i_t^{eq} = \frac{1}{\eta + \phi b} \{ p_t + \phi [\bar{y} + \rho(y_{t-1} - \bar{y}) + G_t] + BC(\phi - 1) - B_{t-1}^d - e_t B_{t-1}^f \}$$

$$y_t^{eq} = \bar{y} + \rho(y_{t-1} - \bar{y}) - b i_t^{eq} + G_t + BC_t$$

## II.B A shock to the Terms of Trade

As mentioned in the literature review, some authors, such as Wiesner (1978), argue that adverse variations in the terms of trade (as a result of coffee price fluctuations), appear to be one of the main explanations for the devaluations during the fixed parity period. Wiesners' hypothesis fits within the above theoretical framework. In fact, Colombia as a coffee (single commodity) exporter, when suffering adverse shocks to terms of trade, found devaluation to be a safe and effective way to return to the long run output level, thereby avoiding the long and painful macroeconomic adjustment of a deflation path.

To take into account this dynamic, an equation is introduced into the model that collects the evolution of the price of exports according to a stable long run dynamic and a random shock:

$$P_t^x = P_{LP}^x + \theta(P_{t-1}^x - P_{LP}^x) + \varepsilon_t^x ; \text{ with } 0 < \theta < 1$$

Where the export price level  $P_t^x$  is transitorily separated from its long run level,  $P_{LP}^x$ , because of  $\varepsilon_t^x$  shocks.

Assuming an adverse shock<sup>16</sup> at period  $t$  on the exports price, it leads to:

$$\varepsilon_t^x < 0$$

$$\varepsilon_{t-i}^x = \varepsilon_{t+i}^x = 0 \quad \forall i > 0$$

The fall of the trade balance and the subsequent decrease of the foreign exchange reserves are the mechanisms in which the shock is transmitted to the equilibrium income. Price rigidity is an essential element of this process because it makes the real exchange rate disequilibrium occur in the short run. Further, rigidity leads to a slower adjustment through deflation and a bigger *vis á vis* output loss in the long-run level.

Because a discrete variation of the exchange rate may accelerate the adjustment mechanism, there is need to pursue a devaluation policy. So, under the two possible exchange rate policies, the variation of income during the shock period is determined by:

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<sup>16</sup> For example, a great harvest in the international market of cereals.

$$\Delta y_t = \begin{cases} -b\Delta i_t^{TCF} + \lambda\Delta P_t^x = -b\Delta i_t^{TCF} - \lambda; & \text{Fixed Exchange Rate} \\ -b\Delta i_t^{Dev} + \Delta BC_t = -b\Delta i_t^{Dev} + \gamma\Delta e_t + \lambda\Delta P_t^x = -b\Delta i_t^{Dev} + \gamma Dev - \lambda; & \text{Devaluation} \end{cases}$$

We can observe that the effect of devaluation on output is greater under a fixed exchange rate:

$$\Delta y_t \Big|_{TCF} < \Delta y_t \Big|_{Dev}$$

$$-b\Delta i_t^{TCF} - \lambda < -b\Delta i_t^{Dev} - \lambda + \gamma Dev$$

$$b(\Delta i_t^{Dev} - \Delta i_t^{TCF}) < \gamma Dev$$

After some algebra we reach the following relations for changes in the interest rate:

$$\Delta i_t^{TCF} = -\frac{1-\phi}{\eta+\phi b} \Delta BC_t^{TCF} = \frac{1-\phi}{\eta+\phi b} \lambda$$

$$\Delta i_t^{Dev} = -\frac{1-\phi}{\eta+\phi b} \Delta BC_t^{Dev} = -\frac{1-\phi}{\eta+\phi b} (\gamma Dev - \lambda)$$

From those it is possible to prove that:

$$\begin{aligned} \Delta i_t^{Dev} &< \Delta i_t^{TCF} \\ -\frac{1-\phi}{\eta+\phi b} (\gamma Dev - \lambda) &< \frac{1-\phi}{\eta+\phi b} \lambda \\ -(1-\phi)(\gamma Dev) &< 0 \end{aligned}$$

This explains why the exchange rate policy has positive effects on the variation of the equilibrium output.

## II.C An expansive monetary policy

Another hypothesis explained in the literature review (Musalem, 1971) refers to the loss of reserves. This states that the variation of the exchange rate, in absence of shocks to the terms of trade, should be the result of money market's disequilibrium.

To fully understand this dynamic, the model introduces an expansionary monetary policy adopted by the Central Bank whose objective is to finance

public expenditure. The equation that includes the expansionary fiscal policy financed by the Central Bank's primary credit beginning in period  $t = 1$  is:

$$\Delta B_0^d = G_0 = 0$$

$$\Delta B_t^d = \Delta G_t \succ 0$$

$$\Delta B_{t+i}^d = G_i \succ 0 \quad \forall i = 1, 2, 3, \dots$$

As a result, the new equilibrium income during the shock period is affected by:

$$\Delta y_t = -b\Delta i_t + \Delta G_t = -b\Delta i_t + \Delta B_t^d$$

$$\Delta y_t = -b \left( \frac{\phi}{\eta + \phi} \Delta G_t \right) + \Delta G = \Delta G \left( \frac{\eta}{\eta + b\phi} \right) > 0$$

This explains why expansionary policy has positive effects on the variation of the equilibrium output. However, the expansionary policy may have permanent effects on the official reserves in absence of nominal exchange rate devaluation. This will be explained in the following section.

## II.D A numerical example

A simulation was done, assuming feasible values for the parameters of the model, to observe the reaction of the adjustment accounting for every analyzed shock. (Figures 2.1 and 2.2)

In the first exercise (Figure 2.1), an adverse real shock in terms of trade, due to the transitory reduction on  $P^x$ , led to a trade balance deficit and a fall in the equilibrium income. The counterpart of this is a decrease in money stock in the money market and a loss in foreign reserves. Devaluation policy allows the trade balance to improve at an increased rate through a greater depreciation of the real exchange rate. This will occur in the presence of a slow adjustment through deflation, if and only if, the exchange rate has not been devalued. This price adjustment mechanism causes the exchange rate to decrease slowly, and thereby, improves the trade balance and avoids a greater loss in foreign reserves. As a result, output decreases below its expected long run level. Output, the real exchange rate, and the trade balance return to their long run levels when the price adjustment is completed.

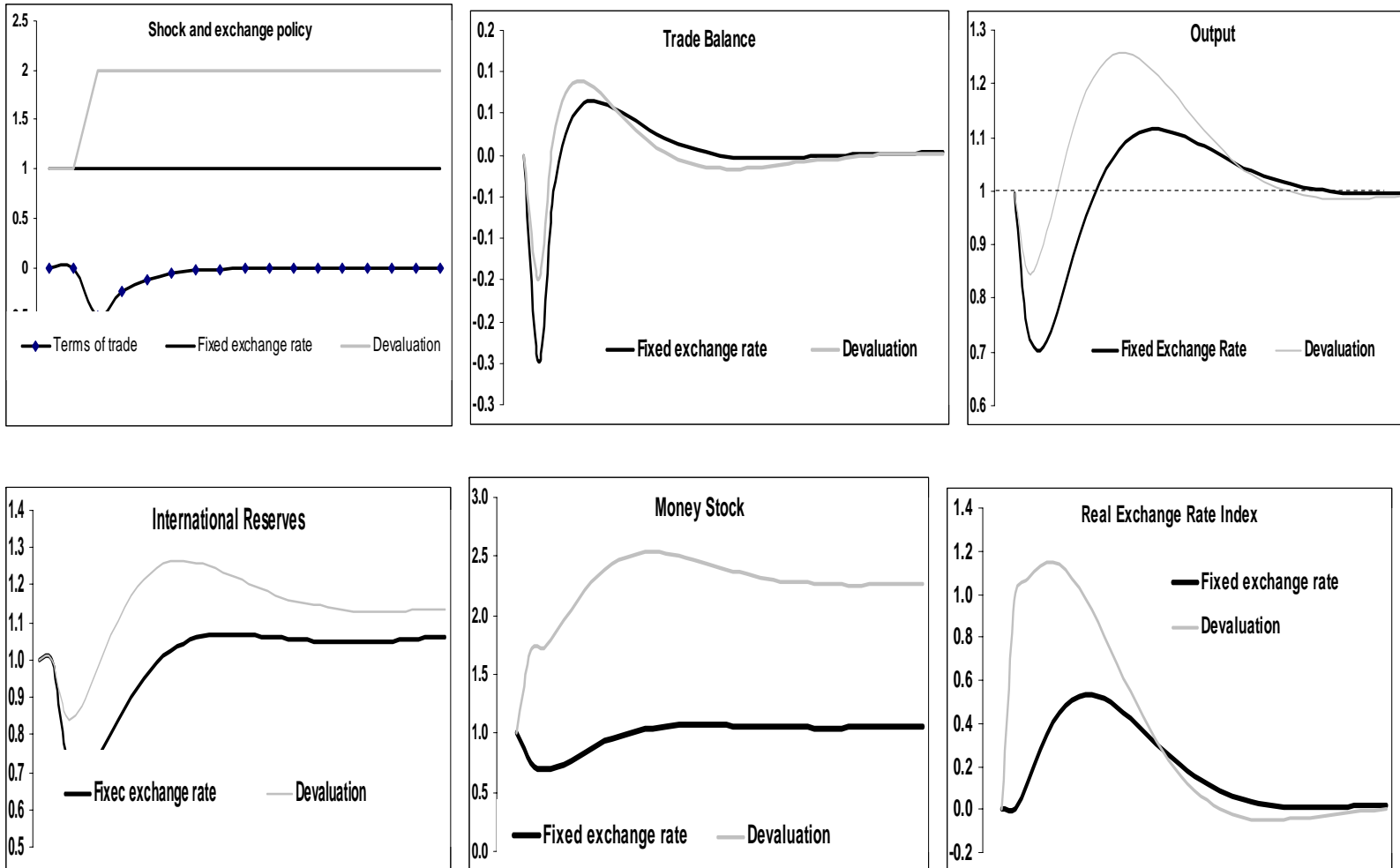
In a monetary shock scenario, the adjustment takes place through an increase in public expenditure beginning from primary issuing via the Central Bank's credit (Figure 2.2). When the price adjustment is incomplete, the fiscal impulse has real effects. On the other hand, if the fixed exchange rate is not adjusted and the price level increases, the trade balance would worsen due to real appreciation in the exchange rate. In the long run, once the price adjustment is completed and the effects on real activity have diminished, the exchange rate

remains at the appreciated level, producing a trade balance deficit and uncertain foreign reserves loss.

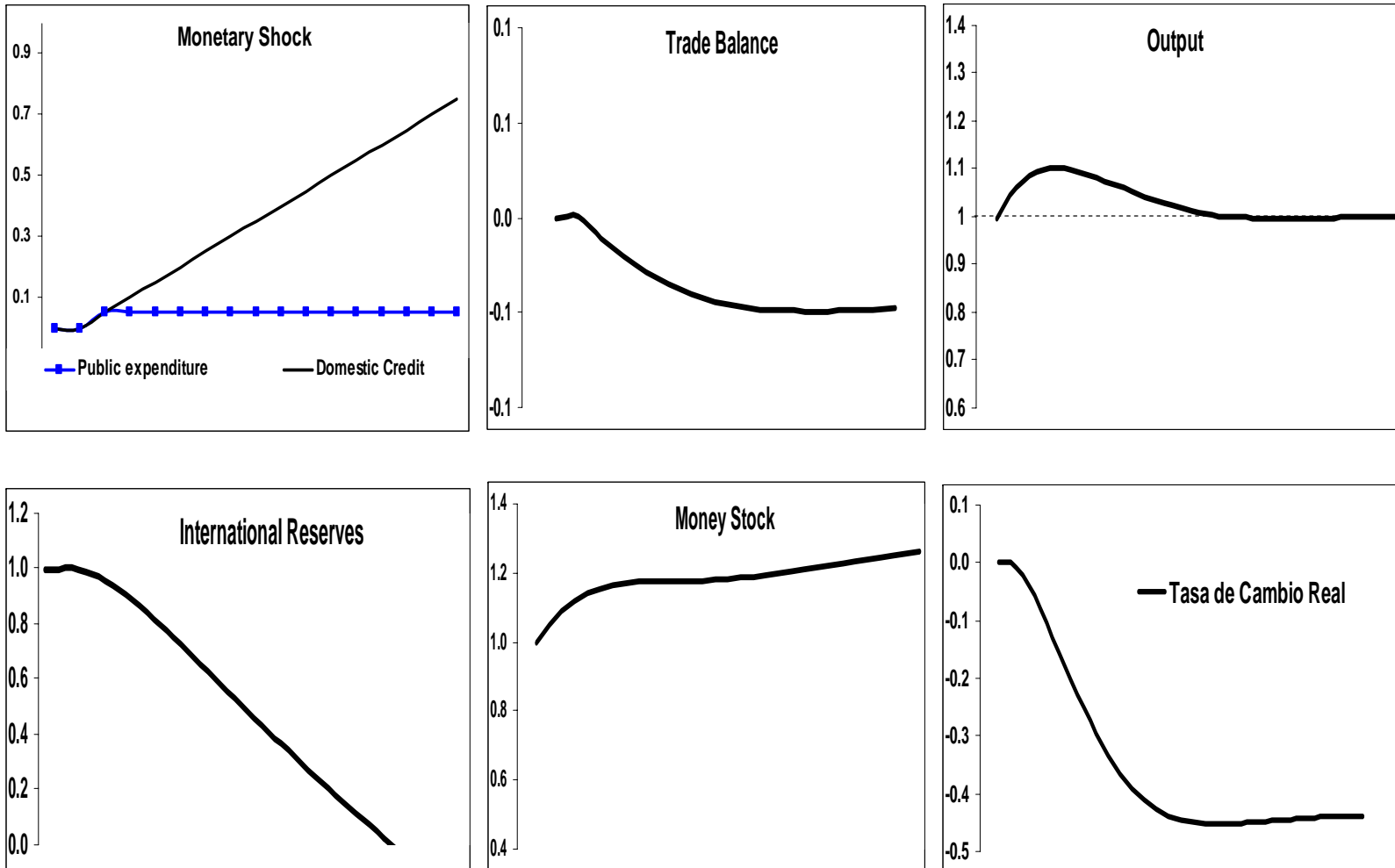
This model builds on the two possible scenarios mentioned in the literature that refer to Colombian exchange rate devaluations. First, it considers devaluation as an appropriate instrument to accelerate macroeconomic adjustment and reduce foreign reserve loss in the presence of adverse terms of trade shocks. These may result from incidents such as a decline in international coffee prices in a single good export economy like that of Colombia. Conversely, from a monetary approach, the exchange adjustments may have their origins in a persistent primary credit emission to the public (or private) sector. Although this policy had real effects in the short run, once the price adjustment was completed, the effect was null. The primary issuing resulted in a permanent loss of foreign reserves, an indeterminate appreciation of the real exchange rate, and trade deficit. These factors created the necessary conditions for the devaluation to adjust this disequilibrium again.

Throughout this paper we will work within the simple theoretical framework stated above. The next section will analyze the devaluating episodes in Colombia, and the final section will identify the main statistical links between the principal macroeconomic variables during the fixed parity period.

**Figure 2. 1 Simulation in presence of shocks to the terms of trade**



**Figure 2. 2 Simulation in presence of a monetary shock under fixed exchange rate**



### III. Devaluations during the fixed exchange rate period in Colombia

This section uses a narrative approach to provide a detailed historical review of the conditions and circumstances that surrounded the devaluations during the fixed parity period in Colombia<sup>17</sup>. We document with primary sources the monetary policy decisions, the official position of the economic authorities, and public opinion<sup>18</sup>. The analysis is also supported by descriptive statistics of money markets and external sectors that preceded each balance of payments crisis<sup>19</sup>.

#### III. A First postwar devaluation (December, 1948)

The 1948 devaluation was a consequence of the macroeconomic disequilibrium created during World War II. U.S. entry in the conflict brought a critical fall in real imports in 1942, and economic stagnation during 1943 and 1944<sup>20</sup>. This produced a trade surplus that was later followed by an increase in foreign reserves. The jump from US\$ 20M to US\$ 177M (Figure I.2) created strong pressures for the peso revaluation. However, the Alfonso López administration protected the fixed exchange rate. Alfonso Araujo, the Minister of Finance, disqualified the proposals of the peso revaluation considering them “*simple but dangerous for coffee growers*”<sup>21</sup>.

Consequently, a disagreement over the Colombian peso revaluation occurred within the Central Bank’s Board of Directors. It was considered risky to modify the exchange rate because of the upheavals and consequences that it might have had on export associations. Additionally, abolishing the fixed parity system was inconvenient due to “*the well-known benefits they had on the national economy*”<sup>22</sup>. Instead of revaluating, the authorities applied other measures such as the simplification of the imports’ control<sup>23</sup> and the sterilization of the balance

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<sup>17</sup> As explained in the international literature (Miron, 1994), the narrative approach inspired in the Friedman and Schwartz (1963) seminal paper is one of the most appropriated for the macroeconomic empirical analysis because it allows to solve the identification problem. In this particular case, the approach was identifying the exogenous economic policy episodes that had preceded the official devaluations.

<sup>18</sup> For the official position, refer to the **Actas de la Junta Directiva del Banco de la República** and the Editorial Notes of the Central Bank’s Governor in **Revista del Banco de la República**. To explain public opinion, we consulted the national newspapers and magazines of the periods that surrounded the exchange crisis episodes.

<sup>19</sup> The money market statistics are represented by monthly series of the money stock, the monetary base, the Central Bank’s gross domestic credit, and the net foreign reserves. The source of these variables was the **Revista del Banco de la República**. For variables related to the external sector, see the international coffee price, trade balance, and terms of trade.

<sup>20</sup> Having a 15% average as a proportion of the GDP since 1923, the imports fell to 7% in 1942 and did not exceed 10% during subsequent years (GRECO, 2002).

<sup>21</sup> See “Exposicion de Motivos” of the Minister Araujo to the Camera Representatives, **Revista del Banco de la República**, October 1942. Original text in Spanish.

<sup>22</sup> See **Acta de la Junta Directiva**, September 10 1942, pp. 3370-3372. Original text in Spanish.

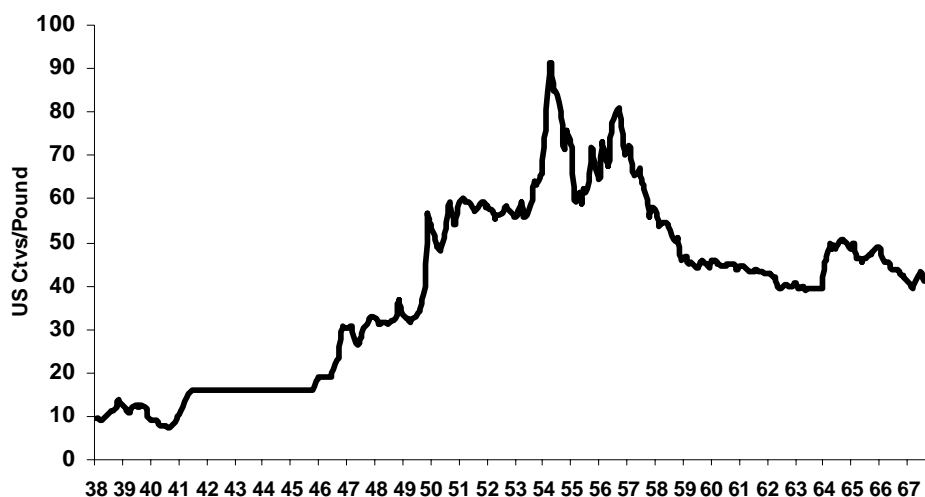
<sup>23</sup> Resolution 113 of the Oficina de Control de Cambios y Exportaciones; Decree 2580 of 1943. See **Revista del Banco de la República**, June 1942 and January 1944.



of payments surplus<sup>24</sup>. An analysis of the Central Bank's domestic credit shows that, since the middle of 1942 until 1944, the Central Bank's total credit growth presented real decreases. Particularly in 1943, the Central Bank's credit diminished 25% - the highest of the fixed exchange rate period<sup>25</sup>.

After World War II, imports increased thereby leading to a commercial deficit once again. To prevent the diminishing of reserves, a new imports control was instituted<sup>26</sup>. Despite this disposition, the raise of the international coffee price, (Figure III.1) and the recovery of the terms of trade (Figure I.6), the post-war period was characterized by a permanent fall in the reserves that accumulated during World War II. Thus, between 1946 and 1947 reserves fell from US\$ 186m to US\$ 124m. At the beginning of 1947, the Central Bank's Board of Directors believed that foreign currency devaluation was the best way to solve the problem. However, this decision was delayed by President Ospina-Pérez who opted to strengthen imports' control and promote more foreign loans.

Figure III.1 International coffee price



Source: Principales Indicadores Económicos.

Since the beginning of 1947, a monetary disequilibrium existed due to an annual growth rate in the Central Bank's credit that exceeded 50%. It was driven by credit to the financial system, and produced a duplication of the domestic credit (Figure III.2). The complaints about the restrictions<sup>27</sup> on obtaining credit from commercial banks indicated in the analysis of the 1947 Central Bank Board of Directors meeting minutes illustrates their interest in

<sup>24</sup> See *Revista del Banco de la República*, May 7 of 1943, p. 3468.

<sup>25</sup> Between 1942 and 1943, the total amount of the Central Bank's credit balance fell from \$110 millions to \$70 millions, with credit to particulars (Particulars or individuals?) and banks being the most restricted items. See *Revista del Banco de la República*.

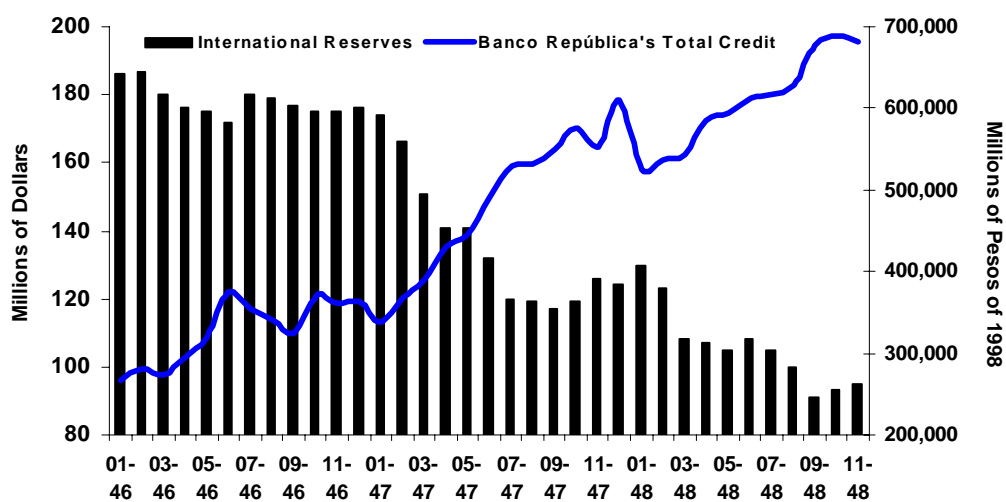
<sup>26</sup> These were stated in Resolutions 143 and 508, of 1945 and 1946, respectively. The objective was to define a rational way of using the reserves accumulated during the War period on the modernization and increment (increment or expansion) of industrial and transport equipment, and ensuring it was not squandered on consumption goods.

<sup>27</sup> See *Acta de la Junta Directiva*, April 14 of 1947, p. 4072.

increasing loans. During September of this same year, the Central Bank's total credit amount registered an annual growth of 102% - the highest throughout the period being studied (Figure III.2)<sup>29</sup>.

At the beginning of 1948, the Central Bank recognized that the sharp increase in credit during the previous year would carry inflationary consequences. Regardless, they did not appear to employ any measures to reverse the trend. The assassination of Jorge E. Gaitán in April (pre-candidate of the Liberal Party) only caused the situation to grow more complex. Public opinion was agitated and the Central Bank's expansionary credit operations continued to increase.

Figure III. 2 International reserves and Credit from the Banco de la República: 01/1946-12/1948

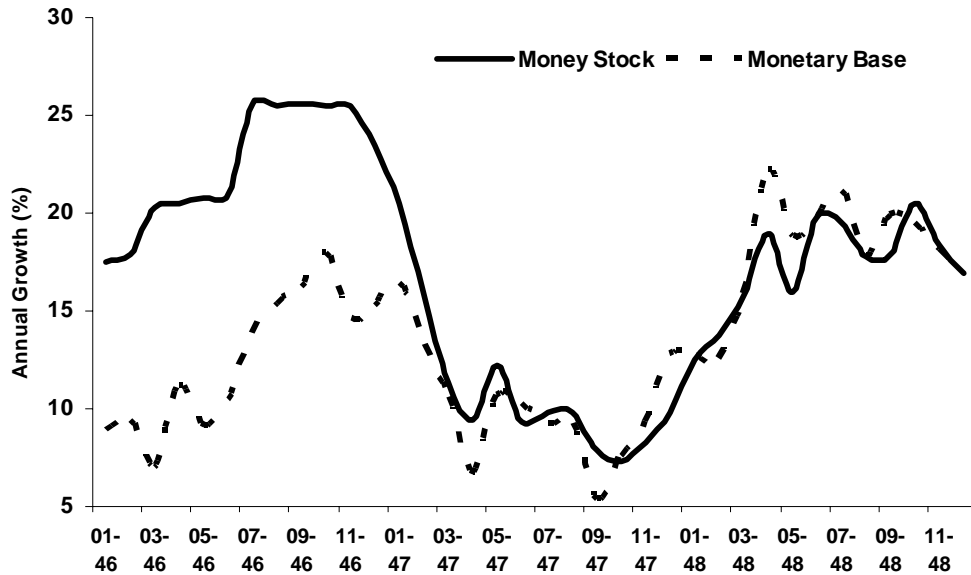


Source: Revista del Banco de la República.

The monetary growth produced by the strong primary issuing began to have effects on money stock and price growth. By the middle of 1948, annual growth in money stock reached close to 20% (Figure III.3), while inflation was approaching 16% (Figure I.5).

<sup>29</sup> Loans to National Government and commercial banks grew during that year at monthly rates closed to 5%.

Figure III. 3 Monetary Aggregates: 01/1946-12/1948



Source: Revista del Banco de la República

After the IMF approval, the government surrendered its protection of the exchange rate through Law 90. This marked the first devaluation of the post-war period and fixed the exchange rate at \$1.96 pesos per dollar - a 12% depreciation. The exchange rate system had two markets: an official market with different rates, and an exchange certificates market with fluctuating rates where the foreign currency supply of the latter came from non-traditional exports<sup>30</sup>). Law 90 won popular approval and, according to the press, was noted to help in “*solving the Colombian balance of payments and its exchange rate problems*”<sup>31</sup>.

### III.B Second devaluation (March, 1951)

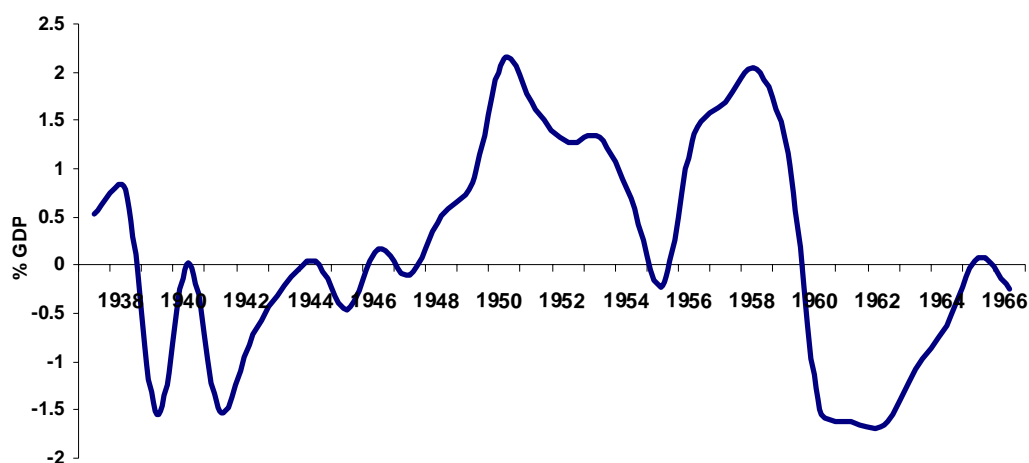
After the 1948 devaluation, domestic credit in the financial system was temporarily stabilized, thereby allowing the government to avoid the monetary expansion that occurred over the previous two years. By April 1949, the annual growth in money stock was down to 12%, and by July, domestic credit for banks had decreased by 16%. However, consistently high international coffee prices (Figure III.1)<sup>32</sup> helped to reverse the downward trend of the official reserves that had been taking place over the previous five years (Figure I.2). Furthermore, the decrease in administrative expenses and the increase in tax revenue (Figure III.4) added to budgetary improvements.

<sup>30</sup> The information registered on press reports that Government and IMF will keep working to get the unification and simplification of the exchange system. Even of IMF’s approval, it did not like the differential exchange rate system. See **El Espectador** (newspaper), December 17 of 1948.

<sup>31</sup> See **El Espectador**, December 17 of 1948. Original text in Spanish.

<sup>32</sup> As a result of a bad harvest in Brazil.

Figure III. 4 Central National Governments Fiscal Balance: 1938-1967



Source: Junguito y Rincón(2004)

With the stabilization of the money market and the experience of the previous devaluation, the Central Bank's Governor explained the need for focusing the government and private parties' actions according to the situation of national resources, instead of resorting to emission policies as in previous periods, and to focus credit to banks for productive purposes, as an alternative to speculative ones<sup>33</sup>.

The public safety problems due to political unrest were repeated at the end of 1949. Following the November presidential elections, the government declared that public security was at risk. Such political turmoil caused significant monetary consequences as the public suddenly withdrew their savings, and caused abnormal growth in money demand. The Central Bank reacted by quickly increasing loan operations. According to the Central Bank's Governor, this demonstrated the "institutions *frank and decided support of the financial system complying one of the main functions of this organism*"<sup>34</sup>.

Due to the circumstances, credit to the financial system increased from \$84m in July of 1947, to \$226m in December of 1950, an annual growth rate of close to 90%<sup>35</sup>. Once again, this had direct effects on money stock with growth rates approaching 30%. In the last trimester of 1950, inflation reached the highest level of the period, surpassing 27%. With these new events, foreign reserves returned to a state of decline (Figures III.5 and III.6).

<sup>33</sup> See Editorial Notes in **Revista del Banco de la República**, July and September 1949.

<sup>34</sup> See Editorial Notes in **Revista del Banco de la República**, October and November 1949. Original text in Spanish.

<sup>35</sup> Besides this item became the most important within the Central Bank's domestic credit (Sánchez, et.al. 2005).

Figure III. 5 International Reserves and Banco de la República Credit: 01/1949-06/1951

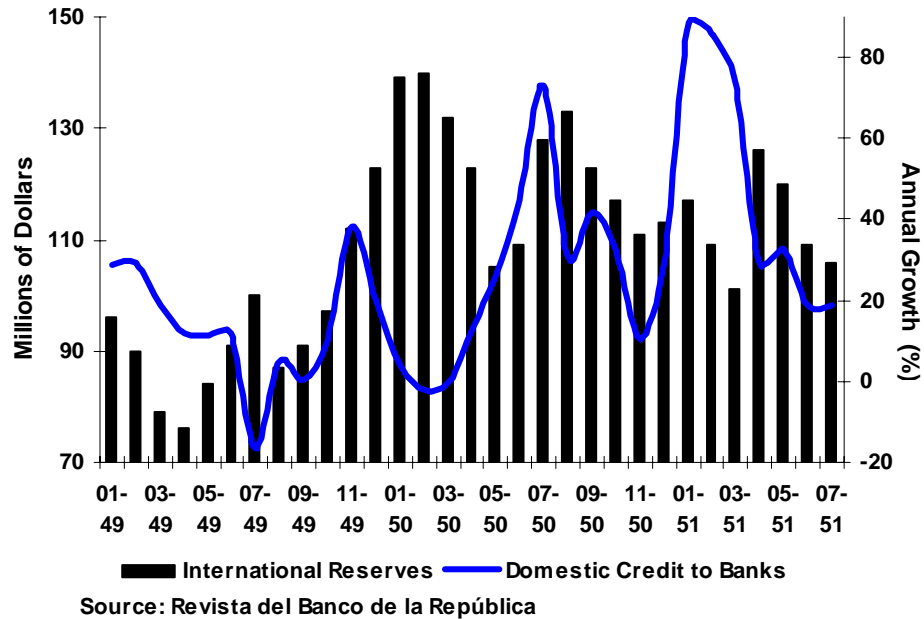
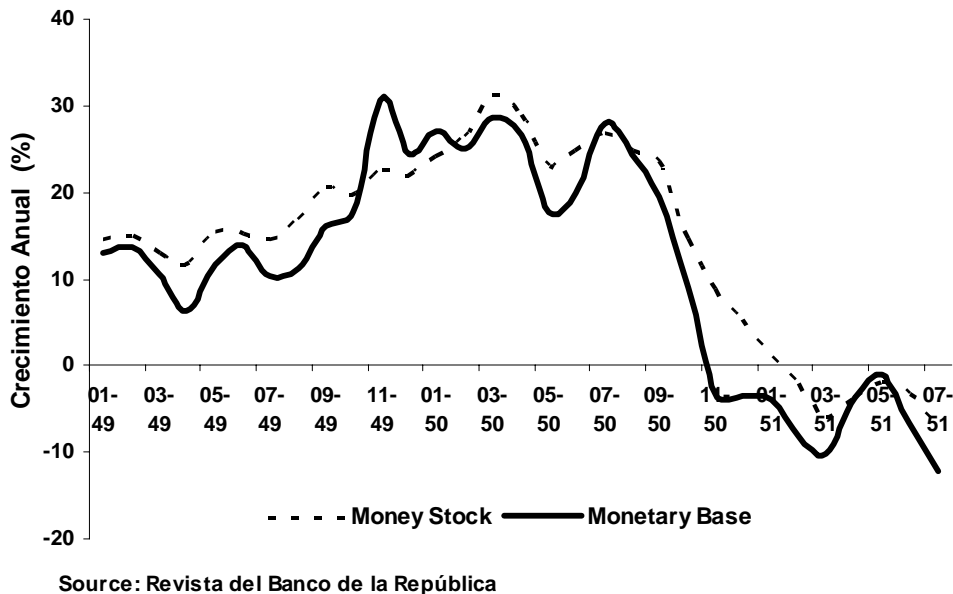


Figure III. 6 Monetary Aggregates: 01/1949-06/1951



In August of 1950, the new president, Laureano Gómez, appointed Antonio Álvarez as the Minister of Finance. The economic team was charged with implementing a series of decisions that aimed to stabilize the money market. Consequently the Government and the Central Bank acted in accordance with private investors to reach an inter-banking agreement consisting of an extra-official limitation to credit known as the “Pacto de Caballeros” (Salazar, N., 1996).

During the next nine months, the agreement was fulfilled and despite measures taken by the Central Bank to resist the quick fall of liquidity<sup>36</sup> (Figure III.6), quickly proved to have a highly restrictive effect on money circulation. Money contraction, produced by “Pacto de Caballeros”, had recessive consequences. Real output growth was 1.1%, the lowest level of the last seven years<sup>38</sup>. The useless decisions that tried to change the effects of the agreement highlighted the need to introduce more effective instruments in Central Bank interventions<sup>39</sup>. Along with the monetary system reform, a second devaluation was later instituted at 28%.

Through Decree 637 on March 20, 1951, a propensity for a simpler exchange rate system was presented. The certificate market was abolished and it was instituted that all foreign currency sales and purchases would be done through the Central Bank at fixed rates of \$2.51 and \$2.50, respectively. Coffee foreign currency sales and purchases were an exception in which 75% was settled at an exchange rate of \$1.95 and the remaining 25% at an exchange rate of \$2.50 (an average of \$2.08). However these decisions led to protests from the coffee associations as they felt they were getting “*discriminatory and unfair*” treatment<sup>40</sup>. Therefore, in less than three years, a new devaluation took place that reversed both real appreciation of the exchange rate (Figure I.6) as well as Central Bank reserve losses (Figure I.2).

### III.C The “Mega-Devaluation” (June, 1957)

After a coup in mid 1953, General Gustavo Rojas-Pinilla took over as president. During the first two years of his dictatorship, economic growth was led by a rise in coffee prices from US\$0.51 to US\$0.91 (Figure III.1). The new government was forced to face the strong money stock and price growth produced by an accumulation in reserves (Figure I.2). With inflation reaching a two digit level for the first time since 1951, restrictive policies applied on imports were relaxed<sup>41</sup>.

In response to the coffee price dropping to US\$ 0.59 in March of 1955, the dictator requested a complex tributary, trade, and exchange legislation focused on abolishing the external disequilibrium instead of devaluation. By May, the free dollar market was opened and importers were permitted to use it without

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<sup>36</sup> The measures of the Bank included a restriction to the bank reserve requirement level. See Sánchez, et.al. (2005).

<sup>38</sup> The electricity production growth index for industrial uses shows, for the first time since 1941, negative growth during an important period of the second semester. Source: **Revista del Banco de la República**.

<sup>39</sup> On April 5, 1951, the Extraordinary Decree 756 was implemented giving the Central Bank special powers to use credit, exchange and monetary policy to stimulate proper conditions for the “development of the Colombian economy.” This both increased former capabilities and created new means of intervening in money and credit regulation.

<sup>40</sup> See **El Tiempo** (newspaper), March 18 of 1951.

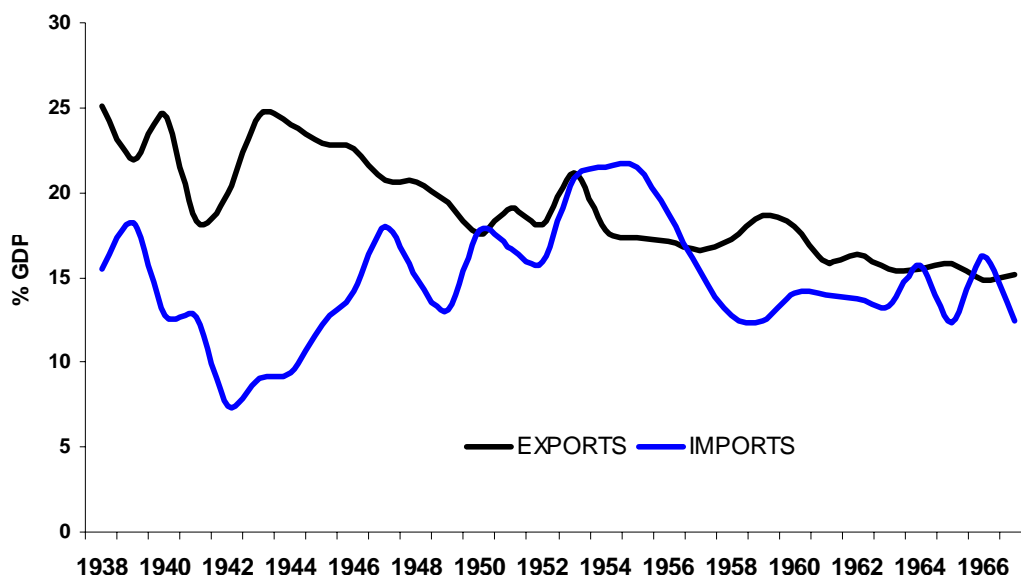
<sup>41</sup> An example of these policies was the Extraordinary Decree 513, February 19, 1954, in which a list of forbidden imports was eliminated.

tax duties or restrictions<sup>42</sup>. Fearing the recessive consequences of a fall in coffee prices, various fiscal policies were adopted, including that which reduced a four year fiscal surplus (Figure III.4).

Higher public expenditure was complemented with an expansionary monetary policy. During July, 1956, the authorities reduced the reserve requirements of short term liabilities and medium term deposits of commercial banks in three points (Figure III.12). These reductions were supported by the Central Bank's Governor on the account of a liquidity drought in the money market<sup>43</sup>.

Nevertheless, the macroeconomic policy had little impact on diminishing the external disequilibrium. In spite of the trade decisions adopted, the external debts increased at an astonishing rate due to three consecutive years of trade deficit<sup>44</sup> (Figure III.7). To help the payment of those debts, a reduction of one additional point of reserve requirements for short term liabilities was instituted. Additionally, to increase the trade credit for the payment of stand-by imports, the government allowed foreign currency to be obtained at an exchange rate of 50% in the official market and 50% in the free market. The Central Bank therefore began to issue money in order to finance the payment of external debts. This accelerated devaluation expectations and reduced the demand for domestic currency from economic agents.

Figure III. 7. Exports and Imports in Colombia: 1938-1967.



Source: GRECO (2002)

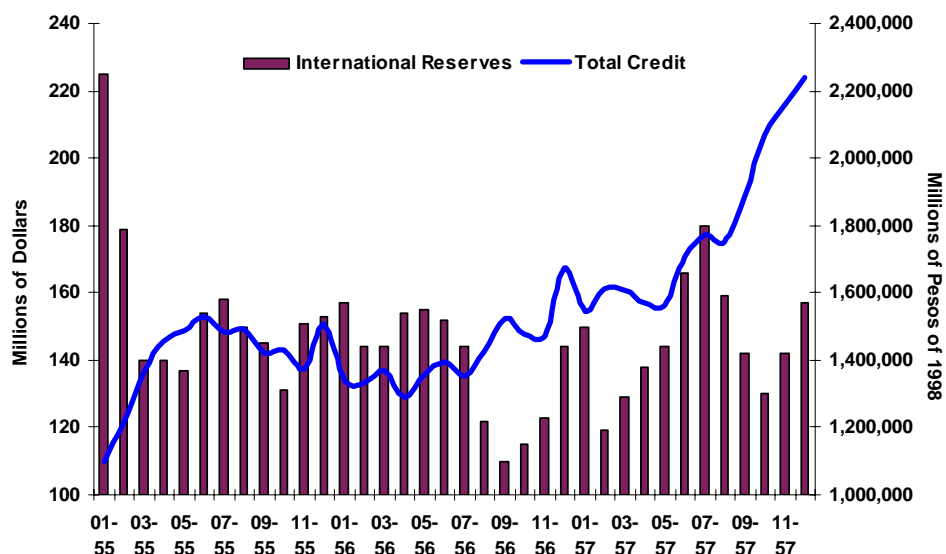
<sup>42</sup> As a complement of this, some laws about imports were reviewed through (through??) the Decrees 3077 and 3572 which tried to restrict the level of those.

<sup>43</sup> See Editorial Notes in *Revista del Banco de la República*, June and July 1956.

<sup>44</sup> Similarly the external public debt in dollars increased by 26.1% between 1953 and 1956. Source: Principales Indicadores Económicos (1998).

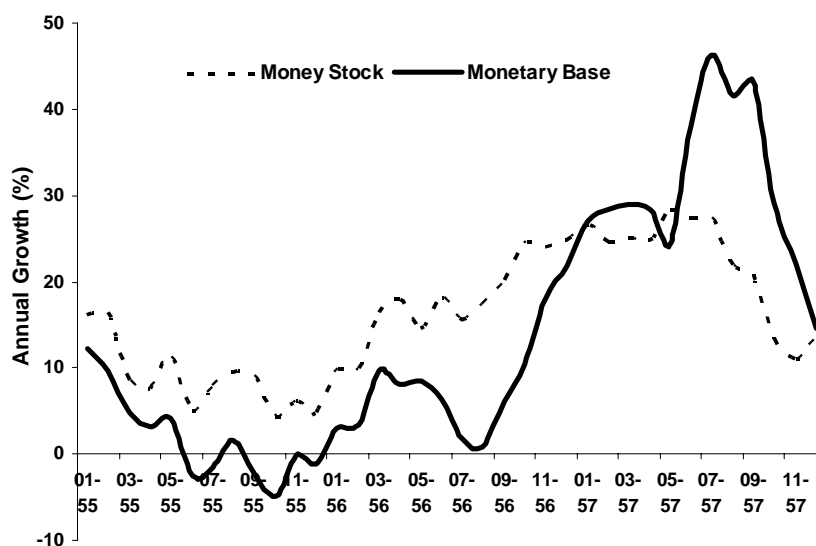
During the second semester of 1956, the money growth rate increased from 17.7% in August to 24.9% at the end of the year. Instead of counteracting this fact, the authorities increased the Central Bank's credit for the public sector from \$75m to \$128m during the year. Along with the increment in the Public Debt Documents investment, this rose from \$430m to \$545m. Issuance used to finance the government reached an amount close to \$170m, equivalent to 6% of the money stock. By July, the monetary base growth had reached 46.3% (Figure III.8) with foreign reserves loss. Therefore, during 1956 they registered an average of US\$ 139m, as opposed to US\$ 218m and US\$ 155m during 1954 and 1955, respectively (Figures III.8 and III.9). At the end of 1956, as shown in Figure I.3, an implicit devaluation of more than 100% was registered by the few official data of the parallel market.

Figure III. 8 International Reserves and Banco de la República Credit: 01/1955-12/1957



Source: Revista del Banco de la República.

Figure III. 9 Monetary Aggregates: 01/1955-12/1957



Source: Revista del Banco de la República.



During May 1957, the dictatorship was replaced by a military board that was put in charge of the transition to democracy. In June, Álvarez Restrepo, the new Minister of Finance, began a reform of the exchange rate regime that included a massive devaluation of the peso by nearly 100%<sup>45</sup> (the exchange rate would rise from \$2.5 pesos per dollar to \$4.9) and the creation of a floating exchange rate where the exchange certificates and capital markets would coexist<sup>46</sup>. A list of forbidden imports was established in addition to other modifications to the tax regime<sup>47</sup>. In spite of the magnitude of the exchange rate adjustment, seven months later, in March of 1958, the government had to carry out another devaluation as the exchange rate of the certificates market had risen from \$4.9 to almost \$6 pesos per dollar. Therefore, through the implementation of Decree 80 on March 26, the exchange rate of certificate purchases was established at \$6.1 pesos/dollar.

### III.D Fiscal deficit and devaluation (November/1962)

The stabilizing macroeconomic policy implemented by Minister Álvarez between 1957 and 1960 reestablished the external sector equilibrium (Figure III.7), thereby impeding external debt growth. At the beginning of the 1960's, macroeconomic stability was affected by deepening in the fiscal disequilibrium that had begun in 1961. In addition, foreign reserves loss was faced by the León Valencia administration and the Minister of Finance, Sanz de Santamaría.

During 1961 the fiscal deficit reached 2%, an amount that had not been observed during the fixed parity system (Figure III.4). The fiscal situation had been deteriorating since the end of the 1950's, when, due to public security problems, the government's income began to decrease while expenses were increasing. The largest decrease in the fiscal income was produced by the modification of the coffee policy. The 1957 exchange rate reform created a 15% tax on exports, which was destined to pay the commercial debt. However, in presence of ongoing pressures, it was reduced to 5% in 1960 and later

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<sup>45</sup> In reference to the magnitude and the adjustment of devaluation, the Minister said, "*we are not going to implement the devaluation. It was implemented a long time ago*". See **El Espectador**, June 17 1957. It is important to emphasise that the exchange rate of the free market was significantly far from the official exchange rate, a process that started at the beginning of 1956 (Figure I.3)

<sup>46</sup> According to the information of the national press, the total exchange flotation was defended by the big productive sectors, starting with the Coffee Growers. Government was supporting a "free directed" exchange rate system. The new system would have the IMF support which considered the decision proper to end the "*complex multiple rates system*" that was operating until then and channelled to the exchange rate unification. See **El Espectador**, June 17 and 18 1957.

<sup>47</sup> The exchange reform was accompanied by trade control mechanisms to avoid the trade deficit accumulated during the dictatorship. One of these mechanisms was the previous import deposit in Central Bank that was getting importance because of its amount and it was considered another instrument of monetary control. For detailed information see Sánchez et.al. (2005).

abolished in 1961<sup>48</sup>. The remaining fiscal deficit was financed with primary issuing through Public Debt Documents investment for amounts of \$219.4m and legal government's share in Central the Bank for \$42.2m.

The central government promoted a bill that would authorize it to finance the 1962 deficit through the Central Bank. Additionally, the project anticipated that the government could negotiate larger term loans with the Central Bank starting in 1963 and throughout the period of the new government's Development Plan (destined to facilitate the allocation of resources towards internal public debt amortization and prolonging repayment during the execution of the Plan. The project had the compliance of the Central Bank's Governor who said, during a discussion at Congress:

*"In this moment the process of (fiscal) deficit payment through Central Bank emissions, that in other circumstances would be advisable and on the contrary notoriously wrong, seems to be the only instrument available in the face of payment urgencies that compromise social tranquillity"<sup>49</sup>.*

At the end of 1962 the Law was approved and the government had negotiated loans with the Central Bank for nearly \$600m. The amount of the fiscal shock on the monetary equilibrium was observed through the growth of primary gross credit by more than \$1.625m, 54% of the monetary base (Figure III.10)<sup>50</sup>.

The Central Bank's Board of Directors made some decisions to mitigate the effects of money issuance with fiscal motivations on money stock. Between November, 1961 and January, 1962, the bank reserve requirements were raised in three points, one per month, reaching 25% in January. This was executed without making the seasonal reduction at the end of the year (Figure III.12). In addition, a marginal reserve requirement of 100% of the short term liabilities for the banking system was established. However, in spite of these measures, money stock growth accelerated, and by December it had exceeded 20%. The effect of the emission was strongly reflected in the monetary base since no measures focused on sterilizing the primary issuance were considered. The Central Bank's total annual growth discounts rose from 15.7% during the first semester of 1962, to 36.6% during the second semester, reaching 42.9% in December. During this month the monetary base was growing at a rate of 35%, the highest growth rate since the 1957 exchange rate crisis (Figure III.11)<sup>51</sup>.

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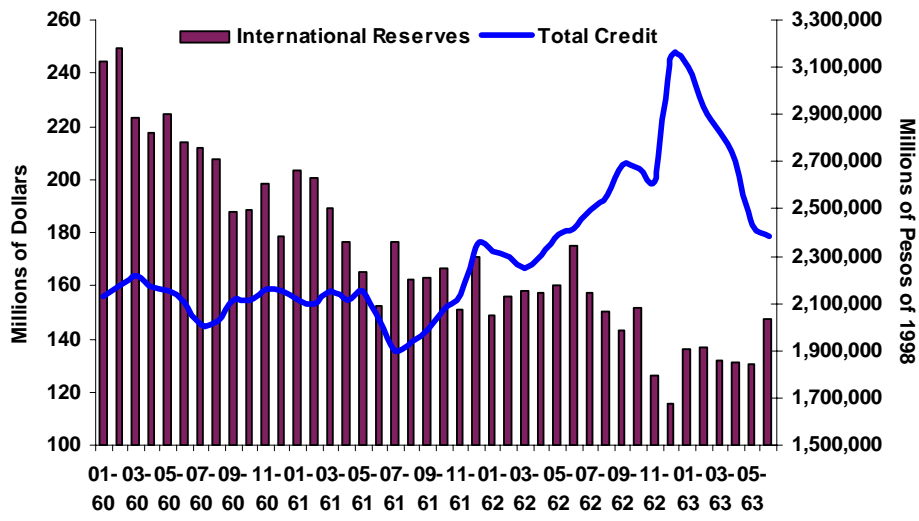
<sup>48</sup> Similar to this tax was the coffee retention tax which had similar levels to the exports tax. In 1961, the level applied to the rate was also modified, reducing it to 4% through Decree 2682 of October 27 1961.

<sup>49</sup> **Revista del Banco de la República**, October 1962. Original Text in Spanish.

<sup>50</sup> In the Central Bank official balance sheet, the "investment in public debt documents" was tripled rising from \$705m in January 1961 to \$2143 in just two years. The biggest increase took place between October and December of 1962 when the amount increased \$902.6m. Equally, the "legal share of National Government" increased from nothing to \$187.2 during the same period.

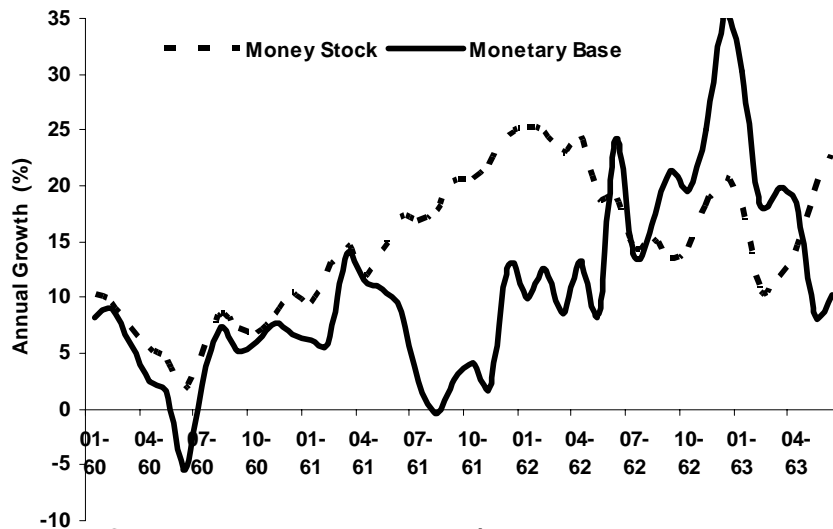
<sup>51</sup> The Central Bank's Governor recognized that the measures adopted during the year, as the increase of the reserve requirement in January or the increment of the imports deposits in April, were not enough. (**Revista del Banco de la República**, second semester 1962).

Figure III. 10 International Reserves and Banco de la República Credit: 01/1960-06/1963



Source: Revista del Banco de la República.

Figure III. 11 Monetary Aggregates: 01/1960-06/1963



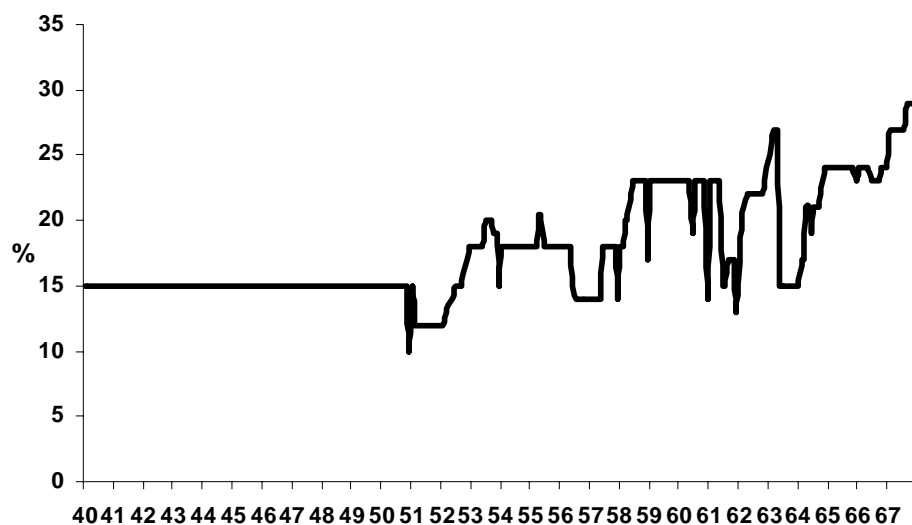
Source: Revista del Banco de la República.

As in previous episodes, the money growth's acceleration was accompanied by official reserves loss (Figure III.10)<sup>52</sup> and severe changes in the exchange rate. As shown in Figure I.3, after the second semester of 1961, the free market exchange rate was far from the official exchange rate. In November 1962, with Resolution 20 and Law 83 were enacted with the advice of the IMF allowing the Central Bank to institute a 34% devaluation increasing the certificates sale price at \$9 pesos. At the same time, foreign currencies that came from the

<sup>52</sup> This was worsening with the permanent fall of the coffee price. Between January 1961 and December 1962 the total reserves fell from US\$ 204 M. to US\$ 116 M.

exportation of certain goods were reallocated to the free market, creating a fund for the financing of the capital goods imports and the previous financing of exports<sup>53</sup>. To warrant the exchange rate stability, the country signed up a *stand-by* agreement with the IMF for US\$50m.

Figure III. 12 Bank reserve requirement coefficient for ordinary deposits



Source: Revista del Banco de la República.

### III.E Two devaluations and the end of the fixed exchange rate system (September, 1965 and March, 1967)

In 1963, the Monetary Board was created. It was placed in charge of studying monetary, exchange and credit decisions, which were of concern to the Central Bank's Board of Directors up to this point<sup>54</sup>. In January of 1964, the Monetary Board raised the exchange rate of the foreign currencies originating from coffee and capital imports with the intention to explore and exploit oil, with exchange rates ranging from \$7.10 to \$7.30. The Coffee Federation insisted on implementing this decision, which allowed them to move forward in the abolition of the exchange rate differential. In July, coffee was established as the only

<sup>53</sup> This revaluation episode would be particularly shaken because some members accused the government of favouring "oligarchic interests" with the exchange policy and to have a "national oligopoly" in the National Treasury represented by the Banco de la República. Consequently, an inter-parliamentary commission was designated to serve as a mediator between the executive and the legislative. After some deliberations, the commission adopted the IMF formula of a unique devaluation relative to the government gradual devaluation formula. **El Espectador**, November 21 and 26, 1962. For a detailed analysis of this devaluation, see Lleras Camargo (1963).

<sup>54</sup> For a detailed description of the Colombian Central Bank's evolution, see Sánchez, et.al. (2005).

major export product, and other exports began to be reallocated to the free exchange rate market<sup>55</sup>.

As shown in Figure I.3, between 1963 and 1964, the Central Bank frequently intervened in the foreign currency “free” market to keep its price stable and to avoid a larger gap between exchange rates. However, at the end of October 1964, pressures on foreign reserves proved to be unsustainable. Between September 1 and October 24 the Central Bank had to sell US\$30m (almost 20% of its stock)<sup>56</sup>. As a result, the sale of foreign currency in the free market<sup>57</sup> was suspended; it had reached \$14m by the end of the year (Figure I.3). In spite of the pressures of devaluation, the Monetary Board decided to keep the price of the exchange certificates at \$9.0 pesos/dollar.

Since the beginning of 1965, the gap between the free dollar and the exchange rate certificates rate continued. However, this was unsustainable since the difference between the two exchange rates obliged the Central Bank to buy foreign currencies that came from the minor exports at the previous week average rate - thereby transferring these currencies to the certificates market. Of course, this was a deficit operation because it had to sell them at the \$9 pesos/dollar rate. As a result, in addition to the inflationary consequences of the exchange operation, it generated severe losses for the State's budget.

Even after some exchange rate regime modifications during the first semester of 1965<sup>58</sup>, the official reserves diminished from US\$147m to US\$104 during the same period. However, data on net reserves (without Central Bank short run liabilities) demonstrated negative values from that point forward (Figure III.13). Under the circumstances, government created a new exchange rate reform in September of 1965. The auctions system for exchange certificates sale was abolished and two official markets were created: the preferential and the intermediate. The first one was supported by dollars that came from coffee exports, and products with an import component of 50% or more would be used to finance imports of authorized products at this preferential rate. The price of

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<sup>55</sup> This stimulated the minor exports market which had a higher exchange rate. See Decree 1734 of July 17 1964.

<sup>56</sup> The Minister of Finance points to speculation over the exchange rate as the cause of this situation, which yielded political instability at the beginning of September. (**Acta de la JM, October 25, folio 286**)

<sup>57</sup> Resolution 46 of October 25, 1964. At first the Minister of Finance advocated the adoption of exchange control, but this measure was rejected because of the risk of producing a severe devaluation in the certificates market.

<sup>58</sup> The first exchange modifications were done in the coffee sector. In March of 1965, coffee retention was increased, reaching 8%. This was redeemed with an increase in the purchase price from \$7.30 to \$7.67 (pesos per dollar?) which came from coffee exports. The decision attempted to intervene by supplying the resources needed in the coffee market without using Central Bank's credits. The Federation's compromise was to get the equilibrium between domestic and international coffee price. The purchase price that came from minor exports was modified from the free dollar rate used by the Central Bank the previous week (remember that in July 1964 coffee had been established as the only mayor export so the other exports would quote at the free exchange rate). Since June 29 the Monetary Board fixed the exchange rate at \$13.5. This was the average between the certificates market \$9 rate and the free market \$18 rate. This is why it can be taken as a revaluation related to the last rate.

coffee foreign currency was fixed at \$8.5 for purchases and \$9 for sales<sup>59</sup>. In the intermediate market there was negotiation of foreign currencies that came from coffee exports. The exchange certificate sale price was fixed at \$13.5 pesos per dollar, leading to a 50% official devaluation<sup>60</sup>. The exchange rate for the minor exports was also applied to a growing list of imports.

The complex exchange rate structure was a result of the reforms attempt to keep three different exchange rates: the preferential imports faced a \$9 rate, the intermediate imports a \$13.5 rate, and the capital free market a rate that ranged from \$18 to \$20 (Figure I.3).

In February of 1966, through Resolution 8, the Monetary Board implemented some measures focused on adopting an expansionary behavior in monetary policy. First, the remainder of the 40% marginal bank reserve requirement that had been valid since December 1962 was abolished<sup>61</sup> and other measures were arranged for financing production. During March of 1966, as an incentive to agricultural production, the investment of one point of the reserves requirements ordered in January was offered as credit to industries that produced popular food. Through Resolution 23 of May 11, the Monetary Board authorized the Central Bank to create the Fondo Financiero Agrario (Agrarian Financing Fund) to take charge of fostering, directing and supervising, rural credit programs. The Resolution updated the proportion that could be focused on fostering operations, which had been frozen since July, 1964<sup>62</sup>.

Fostering policy was accompanied by expansionary monetary policy toward the private sector. Therefore, commercial banks asked for the reserves requirement reduction to improve their liquidity position. The Monetary Board responded with Resolutions 27 and 31 in June which regulated the access to emergency quotas in the Central Bank, reduced the ordinary bank reserve requirement of short term liabilities (less than 30 days) by one percentage point, and allowed banks to divert another point of their reserve requirement to Fondo Financiero Agrario<sup>63</sup>.

As a result of the policy, money stock growth accelerated (Figure III.14). However, the results were not the ones expected by authorities. At the end of 1966, the Central Bank's Governor suggested that the liquidity during the year had been channelled to import activities on account of the high growth of import

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<sup>59</sup> The \$0.5 differential would be split up between the Fondo Nacional del Café (National Coffee Fund) (\$0.4) and the remainder for the coffee growers development campaigns.

<sup>60</sup> That price generated a contentious discussion within the Monetary Board because the estimate presented to and approved by international organizations was a \$14 rate. However, because of the Ministry of Finance's previous announcements about the \$13.5, the rate was maintained. (See Resolution 32 September 1965)-

<sup>61</sup> According to Monetary Board data, with Resolution 8 a primary expansion close to 65% may be produced and instead of increasing through the banking system it would be introduced to other increments, such as the new credits of Fondo de Inversión Privada (Private Investment Fund). See **Actas de la Junta Monetaria**, February 1966.

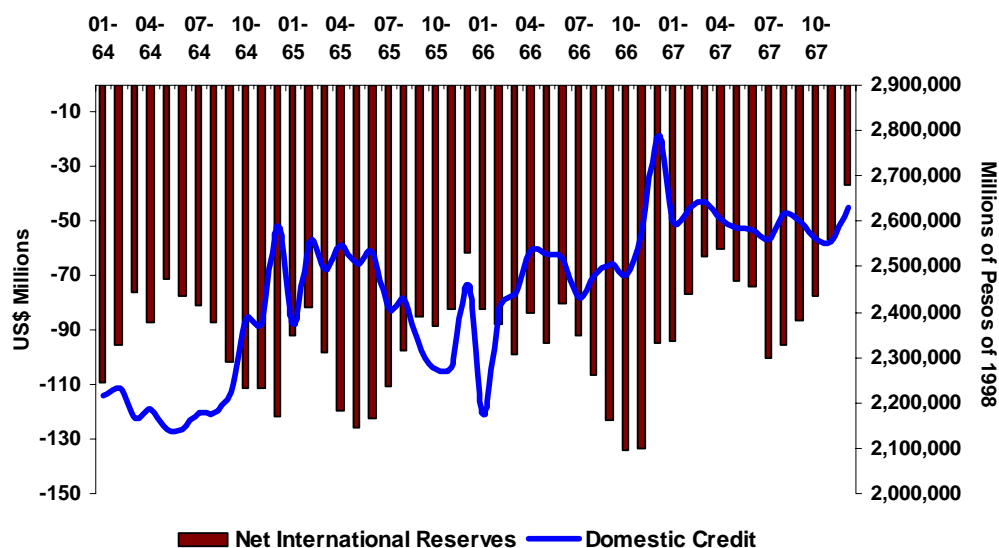
<sup>62</sup> For an analysis of policy on economic development instituted by the Central Bank and its relationship to the development of the financial system, see Fernández, et.al. (2005).

<sup>63</sup> Source: **Actas de la Junta Monetaria**, first semester 1966.

deposits in the Central Bank<sup>64</sup>. Therefore during the first semester, this account grew at a monthly average of US\$51.3m, exceeding 25% of what was observed during the second semester of 1965<sup>65</sup>. During 1966, the average foreign currency level was US\$133m, the lowest since 1951. At the same time, net foreign reserves reached negative values of US\$134m between October and November 1966 (Figure III.13).

Finally, as coffee and small export revenues fell, and import revenues increased, the Lleras-Restrepo administration adopted a new exchange control that ended the liberalization of imports. The Emergency Decree 2867 of November 29 suspended the dollar-free market and established that the Central Bank was the only one that could buy foreign currency and gold. Additionally, the capital market was created and fixed a purchase and sale price of \$16.25 and \$16.3 pesos per dollar, respectively. This was the end of the fixed exchange rate system and marked the beginning of the Central Bank's crawling peg regime. Under the new system, devaluation reached 17% between March and December 1967.

Figure III. 13 International Reserves and Banco de la República Credit: 01/1964-12/1967

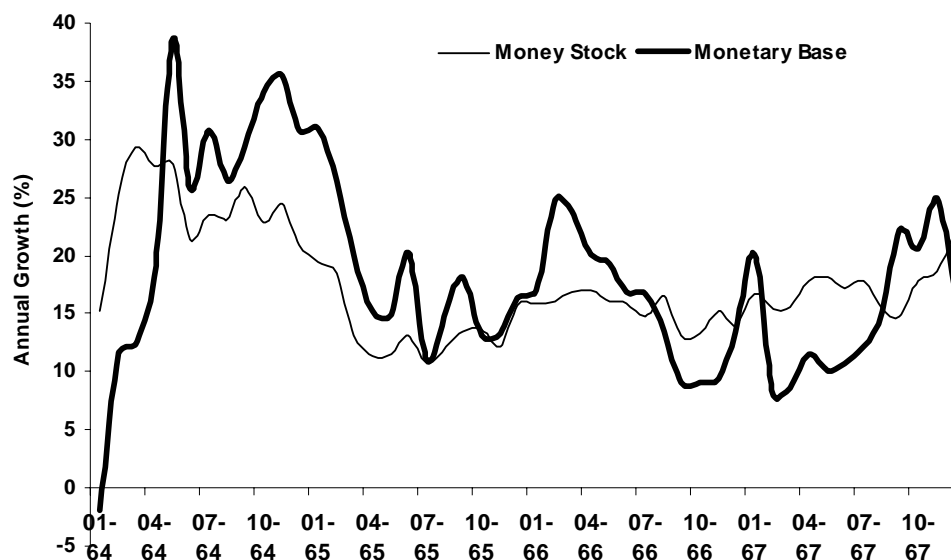


Source: Revista del Banco de la República y DNP

<sup>64</sup> Source: Notas Editoriales del Gerente del Banco de la República, in **Revista del Banco de la República**; septiembre 1966.

<sup>65</sup> It is important to remember that Musalem's (1971) imports demand was a speculative exchange mechanism in the presence of money supply that exceeded money demand.

Figure III. 14 Monetary aggregates: 01/1964-12/1967



Source: Banco de la República

### III.F Summary

The previous section presented a narrative that discussed the circumstances surrounding the devaluations during the fixed parity regime in Colombia. Specifically, the economic authorities' position and the monetary policy decisions were documented in every balance of payments crisis. In summary, despite the unique aspects of each episode, it is possible to document the presence of monetary disequilibrium and the accelerated fall of foreign reserves that preceded each devaluation. In the devaluations in December of 1948 and March of 1951, a significant liquidity growth was observed as a result of the rise in domestic credit. Likewise, in the June of 1957 "mega" devaluation, a large money issuing was observed, which was destined to finance the payment of the external liabilities generated by the trade disequilibrium. This was likely to have increased the devaluation expectations and as a result, further reduced the liquidity demand of the economic agents.

During the November 1962 crisis, the monetary disequilibrium causes were produced by the deterioration of public finances and financing through primary money issuance. Finally, the September 1965 and March 1967 devaluations that occurred during the transition to the new regime were surrounded by a policy for economic fostering that stemmed from pre-determined credit by the Monetary Board. The foreign reserves low levels accelerated the adoption of the new exchange rate regime.

The next section quantifies the relationship between money market disequilibrium and the evolution of foreign reserves in addition to other factors that could explain the official devaluation of the exchange rate.



## **IV. Econometric Evidence.**

This section explores the econometric evidence related to the hypothesis of the paper that monetary disturbances were the main causes of the balance of payments crises during the fixed parity period in Colombia. This data is compared with the empirical evidence that could exist in favor of an alternative hypothesis, in which real shocks were the cause of the decline in external assets that led to the devaluation episodes. Finally, it is demonstrated that an “active” monetary authority was a key cause of the real and monetary disequilibrium.

The econometric approach begins by testing money demand stability during the analyzed period. The empirical test of this assumption enables one to continue with the exercises that join the rise in the domestic assets (i.e. the increase of the government financing with primary issuance) with deteriorations in foreign reserves that led to each of the crises.

### **IV. Money demand during the fixed parity period.**

Based on the theoretical framework presented in the second section, it is possible to conclude that if money demand is stable, in absence of real shocks, foreign reserves loss may stem from the Central Bank’s domestic credit increase. For this reason, we will begin with the money demand estimation and the evaluation of its stability during the period.

The following money demand function is estimated ( $M$ ):

$$M_t = \beta_0 + \beta_1 \cdot P_t + \beta_2 \cdot Y_{Rt} + \beta_3 \cdot i_t \quad \text{(Equation IV.1)}$$

Where,  $M$  is money stock (M1);  $P$  is the price level;  $Y_R$  is the real output level; and  $i$  is the interest rate<sup>66</sup>. The frequency of the variables is annual due to the availability for the data set (1938-1967, and in logs, except for the interest rate. All the variables were first order integrated,  $I(1)$ , so we can proceed to verify the presence of cointegration<sup>67</sup>.

Tests show presence of cointegration. In fact, the two tests accepted the hypothesis of stability in the parameters of the money demand function (See Appendix) and implied an association between the foreign reserves reductions and other macroeconomic that were different from structural changes in money demand.

#### **IV.B Money sterilization and compensation effect.**

The results mentioned above allow us to reject instability in money demand as the main explanation of the foreign reserves volatility during the fixed parity period. Therefore we proceed to quantify simultaneously (i) the *compensation*

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<sup>66</sup> The source of the monetary statistics is Sánchez, et.al. (2005). The other variables are taken from GRECO(2002).

<sup>67</sup> The results of these tests are shown in the Appendix.

*effect* magnitude, which means that foreign reserves loss are caused by money excess (in addition to other real factors that could be significant); and (ii) the degree of *money sterilization*, which refers to the authorities' reaction to neutralize the effect of changes in foreign reserves on money circulation.

To describe the compensation effect, it is necessary to define the monetary base as the sum of the official reserves in pesos (external component), and the domestic assets (internal component)<sup>68</sup>. Thus:

$$BM_t = R_t + AD_t \quad \text{(Equation IV.2)}$$

As in the theoretical model, under the fixed parity regime, the authorities did not control the whole monetary base. Although the Central Bank determines the domestic component, AD, it does not have control on the external component, R which is the foreign reserves in local currency. Therefore, in absence of structural changes of money demand, changes in the domestic component – further than the needed to satisfy money demand- are totally compensated by changes in the external component. This is known as the monetary approach of the balance of payments.

Equation IV.3 represents the compensation effect. This measures the relation between the exchange rate and the foreign reserves in the presence of a change in domestic assets. It is controlled by other variables that may independently affect the reserve's evolution, such as changes in terms of trade, proxies of economic activity for the monthly consumption of electricity for industrial uses, and dummy variables in each of the months where a devaluation causes a rise in R, because it took place a price effect on the foreign reserves in pesos valuation<sup>69</sup>.

As explained in the historical review, the monetary authorities' behavior was not passive. Even if they were functioning under a fixed parity regime, the authorities reacted by increasing domestic assets and sterilizing changes in external assets in addition to other macroeconomic disequilibrium particularly, from these new instruments of monetary policy and the new functions of the Central Bank established in Decree 756 of 1951<sup>70</sup>. For this reason, it is necessary to assert a reaction function that simultaneously shows the effect of this behavior.

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<sup>68</sup> In the Colombia specific case, domestic assets are compounded by credit to national government, the financial sector (commercial banks and the other financing institutions), the private sector, investment on Public Debt deposits, and gross non-monetary assets (Other non monetary assets minus other non monetary liabilities). The primary source to obtain these series were the Monthly Balances of Banco de la República available in **Revista del Banco de la República**

<sup>69</sup> For this equation, other variables were also taken into account that may affect the evolution of the reserves but that were not significant in the estimation. These variables included trade balance (as a percentage of the GDP) and custom revenues (as a proportion of imports) as a proxy for customs rate. The source of those variables was **Revista del Banco de la República**.

<sup>70</sup> Urrutia and Fernández (2003) present evidence in favor of independent monetary policy including the fixed exchange arrangement in Colombia.

Equation IV.4 shows the authorities' reaction function for sterilizing the monetary effect that took place as a result of a variation in the reserves and the other two standard objectives of a Taylor Rule. These include economic activity - using the variable of production of electricity for industrial uses as a proxy - and inflation - measured as the consumer price index<sup>71</sup>. In the equation, the level of reserve requirement is introduced (Figure III.12) because the authority could use this instrument to compensate for the effects on liquidity that were caused by variation in domestic assets<sup>72</sup>. Finally, in addition to the dummy variable previously explained, changes in the fiscal balance are also introduced into the equation as one of the objectives for the monetary authorities to react.

Therefore the estimation of the simultaneous equations is<sup>73</sup>:

$$\Delta R I = \beta_0 + \beta_1 \Delta A D + \beta_2 \Delta T O T + \beta_3 \Delta E l e c t + \beta_4 d e v$$

**(Equation IV. 3)**

$$\Delta A D = \beta_5 + \beta_6 \Delta R I + \beta_7 \Delta B F + \beta_8 \Delta E l e c t + \beta_9 \Delta E n c a j e + \beta_{10} \Delta I n f l a c i o n + \beta_{11} d e v$$

**(Equation IV. 4)**

The results of the estimation, as shown in Table IV.1, present a high and significant (-0.57) compensation effect, which demonstrates the pressure on foreign reserves that resulted from domestic asset variation. The effect of the terms of trade is also high and significant (0.38). The coefficient associated with the proxy for economic activity is expected for this kind of specification. It is important to show that the authorities' reaction was significant (-0.53) in the presence of economic activity falls. This is in accordance with the earlier assertion about the tendency of the authorities to realize countercyclical policy. The effect of reserves sterilization was significant (-0.59), even controlling for the reserve requirement increments that tried to diminish the effects of the expansionary monetary policy on money supply (the latter was non-significant).

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<sup>71</sup> The source of both variables (production and inflation) was **Revista del Banco de la República**. Its use may have significant limitations. On one hand, the use of the industrial production may not be the activity variable that the authority uses to take decisions and react. On the other hand, inflation use as the CPI may have a variable component (i.e. presence of food) that was not used for the authorities to react. But, the scarce information about monthly economic activity and prices made these assumptions necessary. The estimation with annual data is done in the appendix in a robustness test.

<sup>72</sup> At this particular point, we want to thank Miguel Urrutia for his remarks.

<sup>73</sup> Data used to estimate these equations have monthly frequency between January 1945 and March 1965, when the fixed parity was abolished. Domestic and external assets data were taken from money data that appeared in **Revista del Banco de la República**. Terms of trade were estimated as the quotient between the nominal exchange rate multiplied by the coffee price per pound in dollars, the product of the Producer Price Index in the U.S, and the Consumer Price Index in Colombia. Fiscal Balance is estimated as a percentage of the GDP, and reserve requirement represents the coefficient of reserve requirements of the ordinary deposits for the whole period. Trying to take into account the effect of the crises on the evolution of the variables, the measure of each variable was done estimating their proportion to the given value of the variable in the subsequent month of the devaluating episodes.

Table IV. 1. Compensation Effect and Reaction Function

Independent Variable	dR	dAD
C	0.03 [1.85]*	0.04 [2.20]***
dR		-0.59 [10.289]***
dAD	-0.57 [-9.5057]***	
dReserve Req		0.04 [0.4452]
dBF		0.03 [2.7558]***
dElect	-0.22 [-1.7558]*	-0.53 [-4.397]***
dInflat		0.001 [0.92548]
dTOT	0.38 [2.78]***	
dev	-0.05 [-0.656]	-0.10 [-1.5020]
R <sup>2</sup>	0.08	0.15
D.W.	2.31	2.30

Note: d(x): difference of X. R is international reserves, AD is domestic assets, BF id fiscal balance, ToT is terms of trade (Nominal exchange rate\*coffee price/ PPI in U.S\*CPI in Colombia); and dev is a devaluation dummy. Statistics inside a paranthesis. (\*) = level of confidence 90%; (\*\*) = level of confidence 95% ; (\*\*\*) = level of confidence 99%. The sample has monthly frequency between 1947.01 and 1967.03. The system of equations was estimated by SUR method. Trying to capture the effect of crises in the evolution of the variables, the proportion of those related to the value they had the month after each devaluating episode (abolishing the observations of the next months to the crisis) was estimated. Source: Revista del Banco de la República and estimations of the authors.

For a detailed examination of the authorities' behavior in presence of the sterilization of the foreign reserves variation, a reaction function is estimated that introduces the changes of the domestic assets in the presence of lagged reserve changes. The possibility of the existence of a lagged response was examined even if it did not occur in the same month of the variation of the reserves. Bank reserve requirements were used as a control variable because the Central Bank could change them to diminish the fluctuation originated at the monetary base. Therefore, the following model was estimated:

$$\Delta AD_t = \omega_0 + \omega_t \Delta R_t + \omega_{t-1} \Delta R_{t-1} + \dots + \eta_{t-n} \Delta R_{t-n} \quad \text{(Equation IV.5)}$$

Where  $\omega$  and  $\eta$  are the coefficients of the polynomial estimation<sup>74</sup> (See Dhrymes, 1971). The estimation was done for both the reserves variation,

<sup>74</sup> These kinds of estimations are realized to find long run effects and lags of a single variable over the evolution of other variable. This specification is taken to avoid the colineality problems

introducing the positive and negative shock separately. The exercise was realized for a five month horizon ( $n=5$ ) and the polynomial is of order 2.

**Table IV. 2. Dynamic reaction function**

Lags	d(R)	d(R+)	d(R-)
0	-0.33962	-0.17235	-0.54045
1	-0.21595	-0.16693	-0.28045
2	-0.12393	-0.14649	-0.10641
3	-0.06355	-0.11104	-0.01832
4	-0.03482	-0.06058	-0.01617
5	-0.03773	0.0049	-0.09997
<b>Sum of coefficients</b>	<b>-0.8156</b>	<b>-0.65249</b>	<b>-1.06177</b>
<b>AD</b>	<b>(***)</b>	<b>(***)</b>	<b>(***)</b>

Note: dX = difference of X. R is International Reserves internacionales

in pesos; R+ is positive reserves flow and R- the negative ones; AD

Domestic Assets. Source: Revista del Banco de la República y

estimations of the authors.(\*\*\*) Conf. Of 99%

The results for this specific reaction function show that the Central Bank tended to keep sterilizing the external assets flows, in a larger magnitude (-0.815), during the five months subsequent to the shock. One observes that as the coefficient associated with the ordinary bank reserve requirement was not significant, the authorities' reaction was focused on the increase in domestic assets. Finally, in the event of positive and negative flows, the reaction was significant, asymmetric, and larger in the presence of reductions in external assets. The coefficient related to this event (-1.06) indicate a monetary authority that overreacted when external assets declined. The dynamic of losses in reserves that took place when there was a pesos for dollar substitution was evidently overcompensated by the authority and, accordingly, lead to a vicious circle of money issuing and reserves loss.

The last exercise attempts to determine the relative weight of either the monetary component or the real component in the foreign reserves loss explanation that preceded each devaluation. As shown in Table IV.1, both components are significant in the foreign reserves evolution. When just looking at the crisis episodes (reserves fall period), the exercise estimates the contribution of each of the components by weighting them with the coefficient indicated in Table IV.1. The analyzed periods are shown in Figure IV.1 :

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founded when a simple regression of the independent variables lagged on the dependent variable is done.

Figure IV. 1

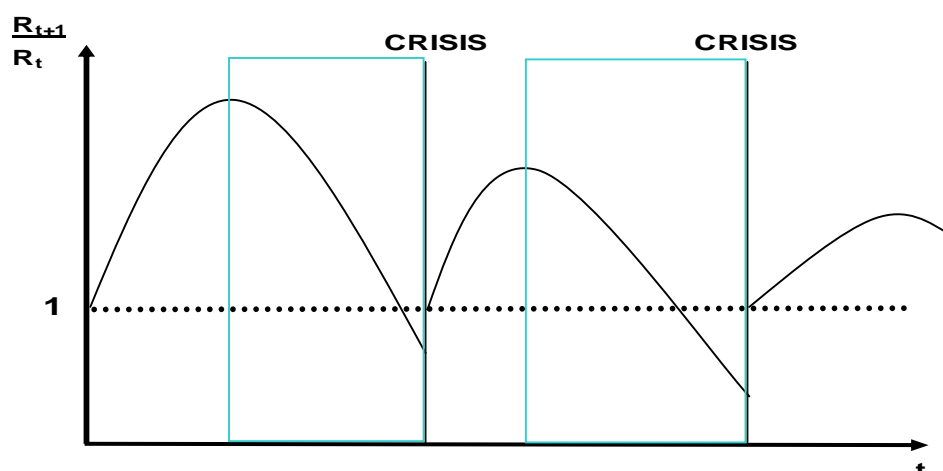


Table IV.3 shows the results of the exercise, both aggregated (combining all the falling reserves episodes) and separately. While the monthly growth average rate observed for the external assets during the specified period is explained by the 122.9% variation in domestic assets, the terms of trade explained a proportion close to 8.7% of the total variation, despite any affect they may have had on foreign reserves. The electricity index variation affected the behavior of the reserves by 2.55%. The result is consistent in 5 out of 6 studied crises.

Table IV.3. Decomposition of International Reserves Growth

	Monthly average growth	Contribution to Average Growth			% Contribution to Average Growth		
		RI	AD	ELECT	TOT	AD	ELECT
<b>TOTAL PERIOD</b>	-3.7%	-4.6%	-0.1%	-0.3%	122.9%	2.5%	8.7%
<b>1 CRISIS</b>	-2.1%	-13.3%	-0.1%	-0.3%	642.6%	4.7%	14.3%
<b>2 CRISIS</b>	-2.7%	-0.3%	0.4%	-0.7%	9.9%	-14.3%	26.6%
<b>3 CRISIS</b>	-4.6%	-5.0%	-0.3%	-0.4%	109.1%	6.1%	7.8%
<b>4 CRISIS</b>	-5.2%	-2.2%	0.0%	-0.3%	42.1%	0.4%	6.0%
<b>5 CRISIS</b>	-7.7%	-2.4%	-0.3%	1.7%	31.5%	3.5%	-22.4%
<b>6 CRISIS</b>	-0.4%	0.0%	-0.3%	-1.0%	6.5%	71.1%	287.6%

Source: Cálculos de los autores.

These estimations provided evidence that supports the idea of the balance of payments crisis explained in the previous sections<sup>75</sup>. Foreign reserves, assuming money demand stability, were affected negatively by the domestic assets increment. As expected of the Colombian economy during this period, the variation in the terms of trade was also significant in the foreign reserves evolution when surrounded by the influence of coffee price on the external sector. At the same time, the economic authorities reacted to variations in economic activity in a countercyclical way that increased domestic assets in the presence of declines in external assets. The reaction to the external assets

<sup>75</sup> In the econometric Appendix the results of the simulation are shown according to a specification based on an annual data frequency.

variation was also asymmetrical, as it was greater when the foreign reserves, dominated by the Central Bank's domestic credit increases, declined.

## **V. CONCLUDING REMARKS**

The six devaluations of the fixed parity period, 1938 – 1967, were complex, traumatic, highly political, and involved strong macroeconomic adjustments of the national economy. This paper traced the origins of the episodes and identified their causes. The initial hypothesis starts from the monetary approach of the balance of payments and assumes a monetary disequilibrium as the detonator of each balance of payments crises. The evaluation of the hypothesis was done using three instruments. First, a theoretical model that characterized the devaluation's dynamic under fixed exchange rate was stated. Secondly, a narrative approach with the detailed analysis of the circumstances that surrounded each devaluation was given. Finally, some econometric tests were employed trying to identify the main causalities of some of the most important macroeconomic variables that explained the balance of payments crises.

The theoretical model showed that devaluation could be the way to accelerate the macroeconomic adjustment in the presence of shocks to the income level that should have had as a counterpart, a fall in reserves. In fact, since countries were authorized to devalue their currencies only in presence of fundamental disequilibrium in their balance of payments, this was the philosophy behind the possibility of devaluation after the Bretton Woods Agreement. However, the model also supports the main hypothesis of this paper, which states that the official reserve falls were the result of monetary disequilibrium, which was derived from expansionary monetary policies.

The narrative approach supports the latter hypothesis, showing, in general, that devaluations were characterized by recurrent money market disequilibrium as a result of either fiscal disequilibrium or an overflow of money emission towards selected economic sectors. Equally, a tendency to delay the execution of the exchange adjustment through external trade control and restrictions can be observed. This occurred not only through the policies for exports fostering via exchange rate differentials, but also due to the fear that the devaluation would result in inflation due to the coffee revenues. This made the devaluation not only an adjustment instrument for the economy, but also a price control mechanism through exchange rate regime differentials between goods according to its inflationary effect. The result was a complex and difficult to manage exchange rate system.

The statistical instruments offer quantitative evidence about the elements that produced the exchange rate disequilibrium. The first results supported the monetary approach when money demand was stable, opening the possibility that every monetary expansion would be transformed into a "compensation effect" because of official reserves loss. On average, over 100% of the foreign reserves loss that accompanied each balance of payments crises in Colombia was explained by a monetary disequilibrium - i.e. an accelerated increase of the domestic assets of the Central Bank. Another important result was that a monetary authority that was not passive, reacted by sterilizing the effect of

variations in reserves on liquidity. That reinforced the hypothesis about the balance of payments crises since, during the period previous to the devaluation, the Central Bank abundantly emitted to sterilize the foreign currency flow, thereby creating the dynamic that preceded each devaluation.

In spite of recognizing that the devaluating episodes are complex because of the political dynamic that they implicitly carry, which should be analyzed in further detail in subsequent papers, the evidence illustrates the external disequilibrium in Colombia during the fixed parity period. The money market disequilibrium was a direct cause of the quick fall of the official reserves.



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## VII APPENDIX

### VII.A. Econometric tests

#### Unit root and Money demand tests

The annual variables that satisfied the money demand equation were subjected to three stationary or unit root tests: augmented Dickey-Fuller; Phillips-Perron and KPSS, finding non stationary evidence. So, following Engle and Granger (1987) an error correction model is estimated<sup>76</sup>:

$$\Delta Y_t = \mu + [\phi_1 \Delta Y_{t-1} + \phi_2 \Delta Y_{t-2} + \dots + \phi_p \Delta Y_{t-p}] - \alpha \beta Y_{t-1} + \varepsilon_t \quad (\text{Equation VII.1})$$

Where,  $Y_t = [M_t, P_t, Y_t, i_t]$ . The model's order ( $p=1$ ) was estimated according to a multiple variable test of normality and error autocorrelation. Finally, the series' evolution made us consider a model that introduces tendency in the cointegration vector and drift in the difference vector (usually named D Model).

The tests exhibit the presence of cointegration. More importantly, the two tests accept the hypothesis of stability in the parameter of the money demand function (Figure VII.1)<sup>77</sup>. It is important to emphasize that similar estimations were done by Salazar (1996) for the same period, finding stability in its parameters also.

Table VII.1 Money demand: multivariable residual test

Model	Lags	CI Vectors (5%)	Multivariable Residual test			
			Normality	Autocorrelation		
			(Doornik-Hansen)	LM(1)	LM(4)	Pormanteau(5)
B	1	1	8.17 (0.4170)	14.23 (0.581)	20.24 (0.209)	67.07 (0.372)
	2	2	12.05 (0.148)	12.54 (0.706)	16.99 (0.385)	54.18 (0.250)
	3	3	22.37 (0.004)	9.36 (0.897)	13.02 (0.671)	73.86 (0.000)
C	1	0	11.58 (0.170)	28.46 (0.027)	20.50 (0.198)	71.87 (0.233)
	2	1	16.45 (0.036)	13.60 (0.628)	15.46 (0.491)	51.70 (0.331)
	3	3	26.34 (0.000)	5.61 (0.991)	9.84 (0.874)	71.49 (0.000)
D	1	1	11.63 (0.168)	27.43 (0.036)	20.73 (0.188)	71.33 (0.247)
	2	1	16.28 (0.038)	14.23 (0.580)	15.42 (0.494)	52.69 (0.297)
	3	2	27.28 (0.000)	6.60 (0.980)	11.48 (0.778)	78.72 (0.000)

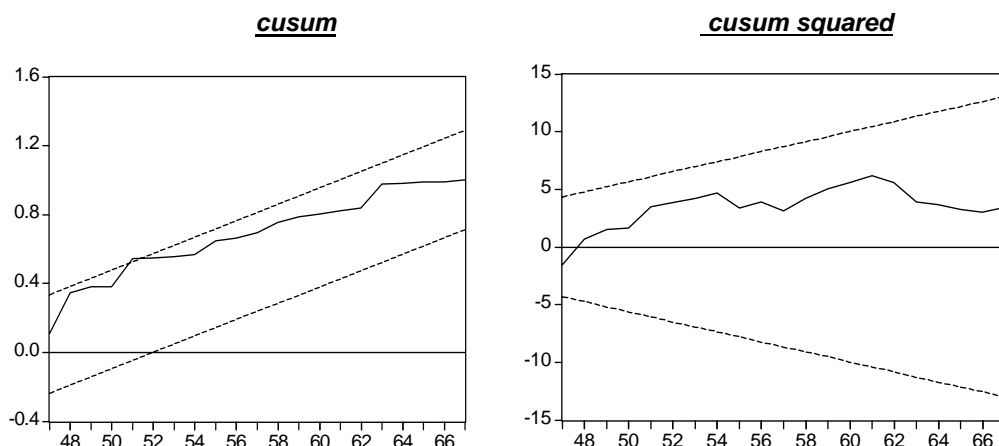
Note: Statistics are reported with their p-values in parenthesis.

<sup>76</sup> The procedure follows the one did by Misas and Oliveros (1997)

<sup>77</sup> The parameter stability test *Cusum* (*Squared Cusum*) is based on the accumulative sum of the remainders (squared) of the estimation. The test shows the correspondent lines of the confidence interval with 5% of statistical error. The test finds parameter instability if the accumulated sum (squared) diverge of this line.

**Figure VII.1**

**Stability tests in money demand parameters**



**Annual Data Estimations**

Using monthly data for the fixed parity period, evidence that supports the existence of the compensation effect and the reaction of sterilization by the monetary authorities was presented. However, it is interesting to test robustness for the results using other variables that have annual frequency. Afterwards the results for the estimation are presented:

- **Simultaneous approach**

The evidence presented shows the existence of a compensation effect and an active behavior of the monetary authorities that reacted by sterilizing the variation of external assets. Besides, the authorities' reaction function was also affected by the variation of the public expenditure, as proved previously. Therefore, in this section we proceed to estimate a system of simultaneous equations whose specification introduces these results. The system is described by the following equations:

$$\Delta R_t = \beta_0 + \beta_1 \Delta AD + \beta_2 Y_t + \beta_3 i_t + \beta_4 dev \quad \text{(Equation VII.2)}$$

$$\Delta AD_t = \beta_5 + \beta_6 \Delta RI + \beta_7 \Delta Y_t + \beta_8 \Delta Encaje + \beta_9 \Delta BFiscal + \beta_{10} dev \quad \text{(Equation VII.3)}$$

As shown in Table VII.2 the compensation effect remains high and significant, even controlling by money demand variables. At the same time, the reaction function presents a monetary authority that "overreacted" to foreign reserves changes because the coefficient associated to variations in the domestic component of the monetary base is greater than 1, in absolute value. It is possible to observe that even if sterilization was high, the other available instrument to the monetary authorities, bank reserve requirement, was used to diminish the effect of the domestic assets increment. Besides, the fiscal result was another of the objective variables that caused a reaction from the authorities. Finally, the authorities also reacted to the presence of variation of

the output in a smaller proportion than in presence of variations of foreign reserves.

Table VII. 2 Simultaneous annual approach

Independent Variable	d(R)	d(AD)
<b>C</b>	<b>-171.55</b> [-0.87]	<b>4.45</b> [0.1698]
<b>dR</b>		<b>-1.12</b> [-9.82]***
<b>dAD</b>	<b>-0.68</b> [-7.2389]***	
<b>dY</b>	<b>0.04</b> [2.793]***	<b>0.06</b> [10.5]***
<b>dBF</b>		<b>-0.14</b> [-1.54]
<b>i</b>	<b>20.71</b> [0.88]	
<b>dev</b>	<b>182.20</b> [3.32]***	<b>171.78</b> [3.2046]**
<b>dEncaje</b>		<b>19.21</b> [4.361]***
<b>r<sup>2</sup></b>	<b>0.66</b>	<b>0.83</b>
<b>D.W</b>	<b>2.69</b>	<b>2.96</b>

Statistics are inside a parenthesis. (\*) = Confidence of 90%; (\*\*) = Confidence of 95% ; (\*\*\*) = Confidence of 99%. Note: The system of equations was estimated by SUR method. dX = difference of X. R is International Reserves in pesos; AD is Domestic Assets ; Y is real output; BF is the Fiscal Balance; i is the domestic interest rate; Dev is a dummy for each year when the devaluations took place; Encaje is the reserve requirement established by Banco de la República. Fiscal Balance series was took from Junguito and Rincón (2004) Sources: GRECO (2002); Revista del Banco de la República and estimations of the authors.

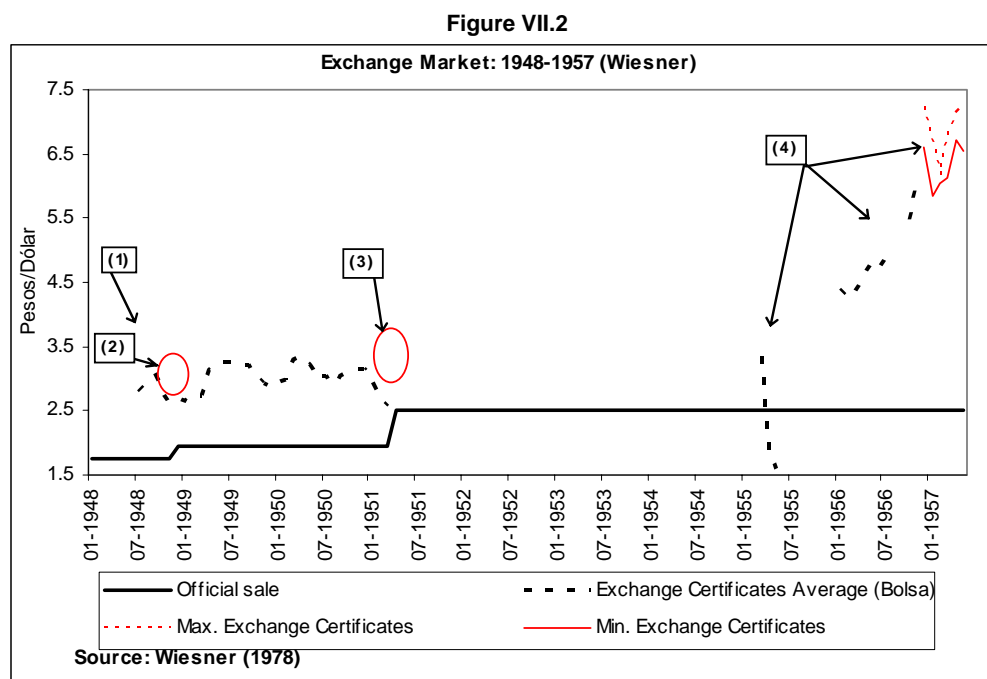
## VII.B Brief exchange rate legislation history during the fixed parity period

In general, Wiesner (1978) identified three different exchange rate periods between 1948 and 1967. The first one between 1941 and 1957, in which was allowed a freely negotiable exchange rate certificates system, originated from foreign currency that came from the export of non traditional goods. This market officially functioned between 1948 and 1951, with another attempt in 1955 and 1956. The second period begins in 1957 ending in 1965, with the creation and coexistence of two fluctuating exchange certificates and capital market. But again, one year after its beginning, the foreign currency purchase of the certificates market was instituted with fixed parity, periodically adjustable. The same thing happened some months later with the sale parity of the market. In the capital market side, between 1963 and 1964 Central Bank intervened the market to fix its price at \$9.98 (purchase) and \$9.99 (sale) which would be repeated in 1965.

The third period started in 1965 with the abolition of the certificates market and with the creation of three markets: preferential, intermediate and free. The difference between the first ones was settled in the kind of good that were included in each one of them. In both, the exchange rate was previously fixed by the authority. The third market was smaller than the others and foreign currency flotation was allowed. Again, as expected, this market was intervened a year after. This third and last sub period ended in March 1967 with the exchange rate reform to Decree – Law 44 that stated a double foreign currency market: exchange certificates and capital, whose transactions would exclusively be done through Central Bank and the authorized establishments.

Even this is a brief synthesis of the exchange rate legislation history of the period, and it is shown that every new regime (that introduced a new parity), modifications to the exchange rate were more frequent than extraordinary. These modifications were always to increase the foreign currency price leading to a permanent devaluation of the Colombian peso. However, for practical purposes, a variation measure which explains the main devaluations of the period was necessary. As seen, with the proposed official parity series (sale), 6 important devaluations were identified: December 1948, March 1951, June 1957, November 1962, September 1965 and March 1967<sup>78</sup>.

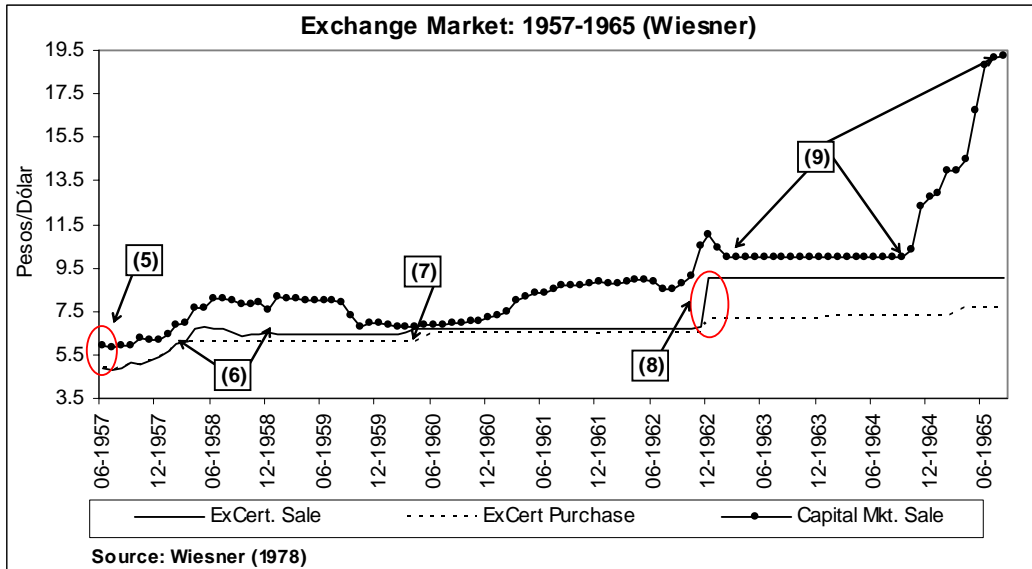
The principal exchange regulation is now described:



<sup>78</sup> It is important to clarify that those dates differed from Wiesner (1978), particularly the March 1957 and September 1965 devaluations. About these two devaluations we are following Edwards and Santaella (1992) because we are taking as one the consecutive devaluations of 1957 and 1958; and we take the three different market creations in 1965 as a 50% devaluation. The "Venta Oficial" (1941-1957), "Venta del Mercado de Certificados" (1957-1965) and "Venta del Mercado Preferencial" (1965-1967) series were connected. Additionally, in 1967 the series was completed since March to December 1967 with the information of sales of the recently created Certificates Market through Decree 444/67.

- (1) **1948.June:** Decrees 1949 and 1952 recognized a 10 point premium to some exports (coffee, banana, leather, metals, precious stones, cattle, meat, textile and manufactures with an import content). It created a system of freely negotiable exchange certificates, originated from foreign currency that came from exports different to the ones mentioned before, from oil capital imports, insurance indemnifications, and Colombian capital revenues in foreign countries or from foreign investment registered by the official market. Those certificates were “from free market but not for free application”, so they would be used with the priority criteria that the “Oficina de Cambios” stated. The tax to money orders to foreign countries that was previously established in 4%, rose to 14, 20 and 30% according to the kind of goods.
- (2) **1948. December 10:** Law 90 devaluated the peso from \$1,75 to \$1,95. The 10 point premium was abolished. The use of the exchange rate certificates was limited.
- (3) **1951.March 20:** Decree 637 abolished exports and imports restrictions (except for the ones listed in the forbidden imports that appeared in Decree 638); abolished the certificates market and disposed that all the operations in foreign currency had to be done through Central Bank at the fixed sale and purchase exchange rates of \$2,51 and \$2,50, correspondingly, except for coffee foreign currency that would be settled at 75% with a \$1,95 rate and 25% at a \$2,5 rate. This was the first attempt of exchange convergence.
- (4) **1955 May 13:** Decree 1372 legalized a free dollar market (making more complex the exchange market) whose supply would be foreign currencies that came from minerals, rice, corn , tobacco, textiles, leather and other exports that were previously used to pay an imports tax; as the ones that came from services, tourism and commissions. Such currencies would be destined to supply the imports demand of the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> groups.
- 1955 October:** Decree 2797 reallocated goods from a group with low registration taxes to a group with higher taxes, trying to diminish imports.
- 1955 November:** Freights, royalties, commissions and banking expenses may be ordered to other countries with free dollars. Foreign currency from banana exports are included.
- 1956 April:** It was restricted the use of official dollar for rough materials and essential elements for domestic production.
- 1956 November 30:** Decree 2929 established that every foreign currency that did not have the obligation of being sold at the official rate may be delivered to Central Bank in exchange for currency tittles (making more complex the exchange system). The decision made the coffee rate to fluctuate.

Figure VII.3



- (5) **1957 June 17:** Decree 107 created a free exchange rate regime with the coexistence of two fluctuating markets: exchange rate certificates and capital. A forbidden imports list was stated, the quantitative restriction to other imports was abolished and it was instituted a 15% ad-valorem tax for every export and a 10% tax to money orders. The coffee differential reappeared.
- (6) **1958 March 26:** Decrees 80 and 102 introduced the following modifications to the system: a/ foreign currency purchase with fixed exchange rate, periodically adjustable; b/ foreign currency sale in a fluctuating market through public sales; c/ a fraction of the certificates market demand reallocated to the capital market; d/ 15% retention tax for exported coffee was created.  
**1959 January 16:** Law 1<sup>st</sup> approved: a/ imports classification in forbidden, license requirements and free; b/ foreign currency sale of exports different to coffee, banana, leather, precious stones at a free market exchange rate; c/ creation of a regulatory exchange fund to stabilize the exchange certificates market; d/ confirmation of the coffee tax; e/ ad-valorem 15% tax for every import; f/ stimulus to minor exports.
- (7) **1960 May 13:** Resolution 20 of the Central Bank's Board of Directors increased the sale rate of the certificates to \$6.5. As Decree 80/58 modified the exchange rate certificates regime, they established that if in 4 consecutive weeks, after July 26 1958, the sale price of those documents exceeded, in more than 60 points, the purchase price fixed, it can be adjusted by Central Bank.
- (8) **1962 November 20:** The certificates sale price was fixed at \$9 since the 20<sup>th</sup> and the purchase price at \$7,1 since the 27<sup>th</sup> of the same month. Additionally through Law 83 of 1962 the modification to Law 1<sup>st</sup> of 1959 was approved by Congress, according to the IMF proposal to do a direct devaluation. This devaluation included the arrival to the free market of banana, platinum and leather, such as the creation of a foreign currency fund for the financing of capital imports and the previous financing of exports.



(9) **1963 February:** Central Bank intervened the capital market to stabilize its sale price at \$9,99 and its purchase price at \$9,98.

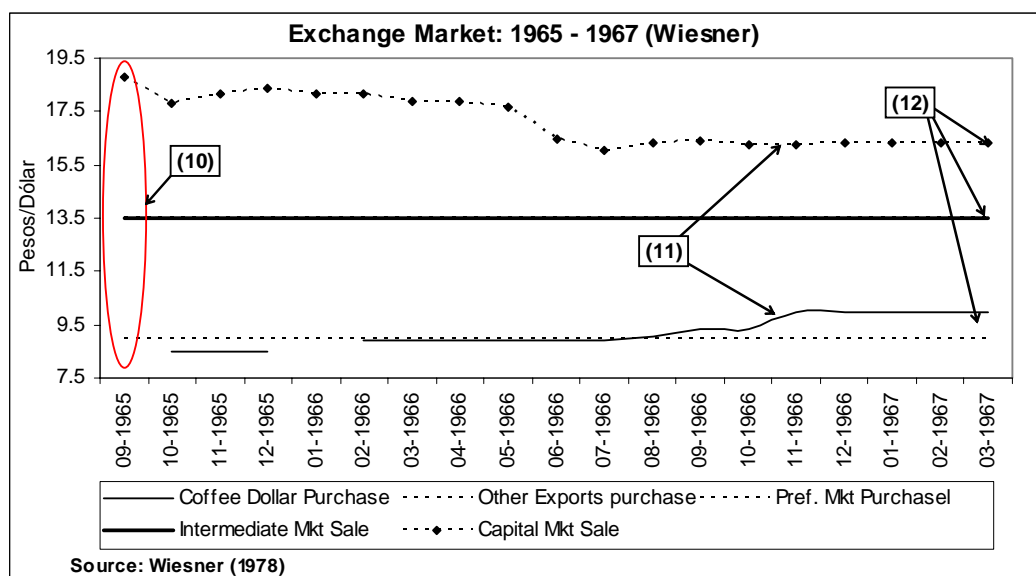
**1964 October:** Resolution 46 of the Monetary Board suspended the free dollars sale as an exchange regulation fund's intervention in the capital market, as a result of foreign reserves fall.

**1965 February:** A new intervention to the capital market was authorized and it increased the foreign currency percentage limit that Central Bank could designate to this market. The coffee restitution was modified to affect the capital market.

**1965 June:** Resolution 20 of the Monetary Board stated that foreign currency, different to the one of coffee exports, would be sold to Central Bank at a \$13,5 rate, except for the fraction that corresponded to the non-refundable component of the export.

**1965 June 29:** It was abolished the system of paying the minor exports at a rate equal to the free market average rate of the previous week and it was stated that Central Bank purchased the foreign currency of those exports at the rate fixed by the Monetary Board, avoiding that the free market exchange rate pulled up the lower rate of the exports and to diminish the inflationary pressures.

Figure VII.4



(10) **1965 September:** Decree 2322 introduced the following reforms to the exchange rate system: a/ the certificates market was abolished and two markets were created: preferential and intermediate. Coffee foreign currency and the one of exports with a 50% or more import component would be in the first market, at a \$8,5 purchase rate and a \$9 sale rate and it would be used for the payments of goods mentioned in the preferential list. National Government expenditure in foreign currency, amortization of the external debt interests, students' expenses and payment of domestic oil refining would be in the first market also. In the second market, there would be foreign currency of exports

different to coffee, gold purchases, investment recorded by this market and public and private credit, and they would be used for the payment of goods that were not included in the preferential list, freights and amortization or interests of public or private debts registered (when they did not have access to the preferential market). The exchange rate of the intermediate market was at a \$13,5 sale and purchase rate.

b/ It was instituted a system of capital investment inscription and it disposed that its refunds and profits would be transferred with free foreign currency, except when they were registered by the intermediate market subject to other conditions.

c/ It was instituted a regime of external debts register. The sale rate for oil capital imports was still at \$7,67.

By Decree 2373 of September 6 the coffee retention was rose to 16%.

- (11) **1966 November:** Decree 2867 established that the Central Bank was the only one that could sell and purchase foreign currency, fixing the purchase and sell rates at \$16,25 and \$16,30, which were freely negotiable since that date; it abolished free imports of goods and established the priorities to make payments to foreign countries. By Resolution 47 the exchange rate of coffee foreign currency was raised to \$9.94 and Decree 2897 raised the coffee retention to 19%.
- (12) **1967 March:** Exchange reform; Decree- Law 444 established a double foreign currency market: exchange certificates and capital, whose transactions would be done through Central Bank and the authorized credit establishments. The coffee tax changed, represented by an exchange differential with a 26%ad-valorem tax where 4 points would be destined to the National Coffee Fund and the remainder to the National Treasure through the CEC. A gradual decrease of one point per month was announced. The sale rate for oil foreign currency was still at \$9 according to Resolution 13 of March.