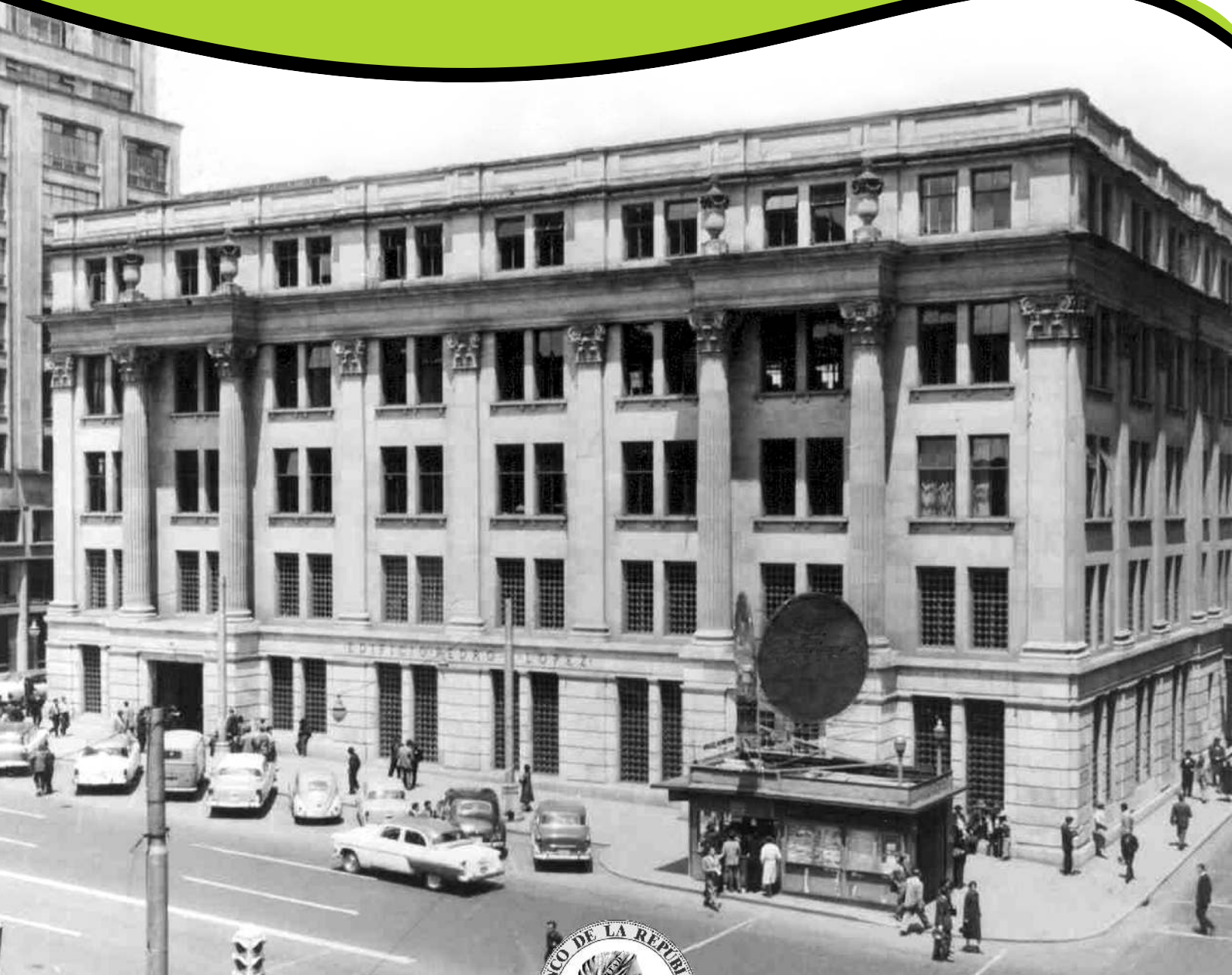


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Some stylized facts on public finance in Colombia since the first Kemmerer mission (1923) □ □

Por : Mauricio Avella Gómez

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Algunos hechos característicos de las finanzas públicas en Colombia desde la primera misión Kemmerer (1923)*

Mauricio Avella Gómez¹

Resumen

En este documento se presentan algunos episodios y regularidades empíricas relevantes para el estudio de las finanzas públicas en Colombia desde 1923. Tales eventos y hechos empíricos se clasifican en varios grupos, entre los cuales se destacan los asociados con la dependencia de la economía en relación con el sector externo, los vinculados con la evolución del gobierno central, y los que ilustran la asociación estrecha entre el desarrollo del sector financiero y los ciclos de la deuda pública externa e interna. Para ilustrar las regularidades empíricas se acude a series macroeconómicas históricas. Ciertos eventos claves (choques externos, cambios institucionales) pueden producir efectos permanentes sobre las trayectorias de dichas series, y cambios en el intercepto y / o en la pendiente de sus funciones de tendencia. Para precisar las fechas de dichos cambios estructurales se acude a metodologías empíricas recientes.

Abstract

This paper surveys some facts relevant for the understanding of the Colombian experience with public finance and debt since 1923. The stylized facts are classified in three groups as follows: first, facts associated with the dependence of the economy on the external sector; second, facts which reveal empirical regularities in the evolution of

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^{1/} Researcher. Banco de la República. Bogotá, March 2007. The first version of this article was written in 1988 at the University of Glasgow, following discussions with Richard Portes (Center for Economic Policy Research, London) and David Vines (Balliol College, Oxford). The first version was based on data for the period 1925-1985, and was prepared with the financial support of Fedesarrollo (Fundación para la Educación Superior y el Desarrollo) and its directors at that time, Miguel Urrutia and Eduardo Lora. Daniel Osorio did the job of updating the series. Special mention should go to David Ibáñez for research assistance. This is the twelfth of a series of papers on Colombia's debt.

the fiscal sector; and third, facts which illustrate the close association between the development of the financial sector and the cycles of external and internal debt. Historical macroeconomic time series are used to illustrate episodes and empirical regularities. The presence of major events (external shocks, institutional changes) generates permanent effects on the path of those series, and produces shifts in the intercept and / or slope of their corresponding trend functions. Recent empirical methods are applied for the dating of those breaks.

Key words: public debt trends, intertemporal government budget constraint, multiple structural breaks.

JEL classification: H62, H63, N46, C22

*Some stylized facts on public finance in Colombia since the first Kemmerer mission
(1923)*

This paper surveys key facts relevant for the understanding of the Colombian experience with external and internal debt since 1923. At that time, crucial legal, monetary and budgetary reforms were put in place by Colombian authorities with the support of a U.S. technical mission led by Edwin W. Kemmerer².

The stylized facts discussed in this document are classified in three groups as follows: first, facts associated with the dependence of the economy on the external sector; second, facts which reveal empirical regularities in the evolution of the fiscal sector; and third, facts which illustrate the close association between the development of the financial sector and the cycles of external and internal debt.

In the first group the following stylized facts are considered:

Fact 1. The reliance of the economy on a major staple (coffee exports) for the most part of the century, whose price depended on notable fluctuations in world markets. The terms of trade heavily depended on the fate of coffee international quotations³.

Fact 2. The outstanding importance of import duties in the composition of tax revenues. A downfall of imports implies negative effects on government receipts. Given restrictions on the availability of foreign exchange, as it happened during decades in the 20th century, an adverse shock on the terms of trade will be detrimental to imports and therefore to expected fiscal revenues⁴.

Fact 3. The major experiences of access of the economy to external financing coincided with the booms of foreign private lending in the late 1920s, late 1970s and the first half

^{2/} A number of important statutes in the realm of finance were enacted with the support, and some of them at the suggestion of the Kemmerer mission in 1923. They included Law 25 establishing a central bank in Colombia -the Bank of the Republic-, Law 34 on the formulation of the budget, Law 36 on the collection of national revenues, Law 42 creating the office of Comptroller General, Law 45 on banking in general, and Law 46 regarding negotiable instruments. Additionally, the mission proposed other institutional changes, including a new organization of the ministries. At the time the mission arrived, the financial functions of the government were divided between the Ministry of Finance (Ministerio de Hacienda) and the Ministry of the Treasury (Ministerio del Tesoro). The first was in charge of the collection of taxes, and the second of the outlays. The mission proposed to unify these functions under a new Ministry of Finance and Public Credit (Ministerio de Hacienda y Crédito Público).

^{3/} For the relevance of coffee in the Colombian economic and social development a classical reference is Nieto Arteta ([1958], 1975). For a general outlook of the importance of coffee on foreign trade and economic activity, a recent contribution is found in GRECO (2002, Chapter 7). Villar and Esguerra (2005) discuss the historical dependence of terms of trade on coffee prices during the twentieth century.

^{4/} At the time of the Kemmerer mission in 1923 import duties represented 55% of the tax burden in Colombia. Its predominance fell over time: at the beginning of World War II the relevant figure was 33%, and in the mid 1950s it was about 25%. CEPAL (1957, p. 88, and Statistical Tables, Table 55). In the sixties and seventies the share declined to 20%, before going up again since the mid eighties to the mid nineties to 28%. From 1995 to 2004 that share came down to an average of 23.4%.

of the 1990s. In the interim, between the 1940s and early 1970s, such access mainly depended on funds made available by developmental organizations⁵.

In the second group the following stylized facts are mentioned:

Fact 4. Except for a few years during the 1990s, the public sector was the predominant borrower of external funds during the period of study. The burden of the debt largely depended on the performance of exports: periods of high indebtedness and rapidly increasing exports showed low debt-to-export ratios, and periods of stagnated indebtedness and collapsing exports produced a high debt burden. Adverse shocks on export markets meant deterioration of creditworthiness⁶.

Fact 5. The behaviour of the internal public debt is dominated by marked upswings after adverse shocks arising in the external sector. In historical perspective, the internal public debt appears to have played a function of "shock absorber" when the economy underwent the negative shocks. As for the sources of financing of those temporary increases of the internal debt, the central bank was of leading importance, at least until the beginning of the 1990s.

Fact 6. Authorities followed sustainable financial policies over time. This means that there existed a long-run relationship between government expenditures inclusive of interest payments and tax revenues.

Fact 7. The time paths of the average tax rate and the rate of inflation suggest that the inflation rate was not chosen by governments as a public finance issue.

The following stylized facts are classified in a third group:

Fact 8. The three great international lending booms of the 20th century had a marked influence in the development of the financial sector. When those booms came to an end, the financial system faced solvency difficulties.

Fact 9. The internal public debt played a significant role in the rescue of the financial system and other sectors affected by the external crises of the 1930s, 1980s and 1990s.

Three kinds of information are to be found in this document. First, some sections are designed with the idea of introducing the evolution of the Colombian economy during the period of study, as far as such path provides meaningful facts regarding public finance and debt. This is the case of the first section where the experience of an economy largely affected by the fate of its external sector is discussed. Second, most sections are aimed to illustrate the stylized facts listed above. A heavy emphasis is made on the historical evolution of the relevant statistical series. Third, although most series are accompanied by information about their statistical characteristics, some sections include additional tests when they are considered necessary to substantiate the stylized facts.

^{5/} Historical reviews of the Colombian experience with external indebtedness during the 20th century are provided in Avella (2006) and Ocampo y Lora (1988).

^{6/} Avella (2006, Gráfica 6)

A central interest in the discussion of statistical series is the presence of structural breaks. As the diagrams will reveal, some series exhibit abrupt structural changes in their mean. Those changes were associated to episodes which in some cases resulted important for the historical evolution of public finances and debt. For the estimation of significant break dates, a procedure suggested by Bai and Perron (2003) is followed⁷. Table 1 displays significant break dates which affected the evolution of time series considered in this document. As seen, those break points appear to be concentrated in the first half of the forties and in the first half of the eighties, when the economy faced a variety of external shocks linked in the first case to the outbreak of World War II, and to the international debt crises of the eighties, in the last case.

Table 1
Break dates in quoted macroeconomic time series
1925-2003

Time series	Break dates
Gross Domestic Product	1943, 1980
Purchasing Power of Exports	1942, 1953, 1967, 1979
Imports	1942
Net external financing	1981
Government expenditures	1943
Average tax rate	1983
Internal public debt	1981
Inflation	1990

A. A general outlook of the economy.

A picture of the economy with a broad brush can be drawn by following the behaviour of GDP growth rates during the period of study. Four phases are highlighted: the interwar years (mid-1920s to early 1940s), the so-called "external strangulation" period (mid-1950s to mid-1960s), a period of high growth rates (since the late 1960s) which ended in stagnation (early 1980s), and a full boom-and-slump cycle in the 1990s characterized by average lower rates than in the fifty previous years. This general picture is intended to serve as a general background for further discussions in this document.

Important changes in the economic structure along the period of study are underlined. The most notable fact is the substantial fall in the contribution of the primary production sector to GDP as seen in Graph 1. Agriculture represented about 50% of output at the time of the great depression (1929-1933) and still constituted about 40% at the end of World War II. In the post-War period the agricultural share in output declined continuously, reaching about 22% in the mid-1980s, and around 15% at the end of the

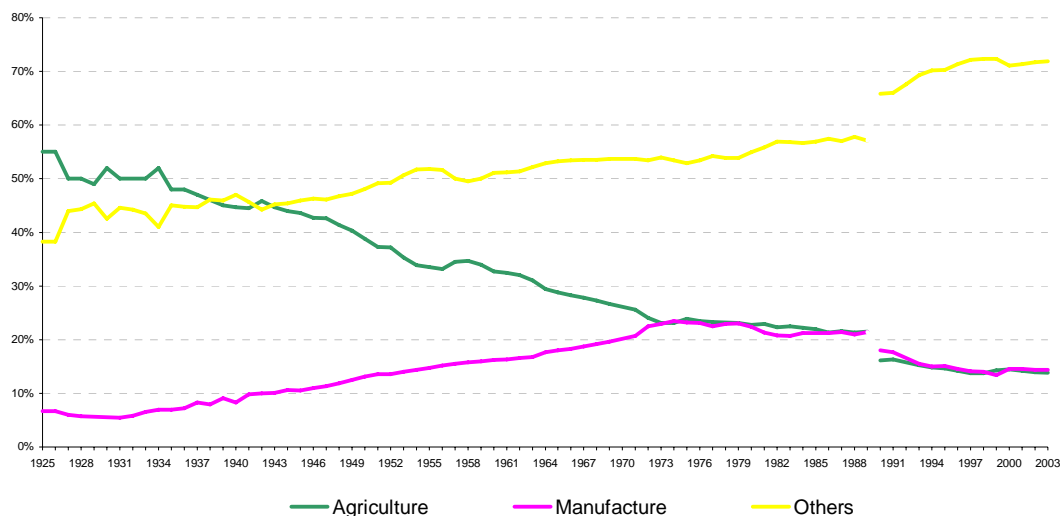
^{7/} The approach is in the spirit of the *intervention analysis*, as described, for example, by Enders (1995, chapter 5). An overview is provided by Perron (1994).

20th century. These facts reflect a modernization process which involved the development of the manufacturing and services sectors.

The rapid increase in the percentage share of manufacturing in GDP during the 1940s and 1950s slowed down during the 1960s and 1970s before stagnating and even declining since the first half of the 1980s. Traditional services -commerce, construction, personal services and housing- represented a rather constant percentage of GDP, around 28%, since the end of World-War II until the mid-1980s, before declining to around 22% during the 1990s.

Other services particularly associated with the urbanization process -transport, communications, financial services-, increased their participation in GDP from about 10% in 1950 to over 20% in 1985 and stabilized around 23% in the 1990s. Finally, government services maintained a steady portion of about 8% of GDP in the post-War period, until the 1990s, when it went up to around 15% towards the end of the century. Thus, national accounts reveal a different evolution of government services in the last decade of the century. This new behaviour will show up in the sections dedicated to fiscal variables.

GRAPH 1
ECONOMIC STRUCTURE
(% share of GDP)
1925-2003



Sources:
Cepal (1957)
Mitchell (1993)
United Nations (2006)

According to international standards the modernization process of the economy is less impressive than it appears to be in Graph 1. While the contribution of agriculture to the growth of GDP in the post-War period exceeded the average for small exporters of primary goods (19.6% vis-à-vis 18.2% between 1945-49 and 1980-84), industry notably lagged behind typical industrialization standards in those countries (22.9 vis-à-vis 36.5%, also between 1945-49 and 1980-84)(Ocampo 1989, Table 6.5; Syrquin and Chenery 1989).

It has been hypothesized that agriculture has influenced not only growth but also financial policies. Some literature on international debt problems has explored the conjecture of a rural base of politics in Colombia as an explanation of why the country was the only commercial borrower in Latin America who escaped rescheduling programs during the 1980s (Urrutia 1989, 1990; Berg and Sachs 1988)⁸. Independently of the validity of this hypothesis, it would be mentioned later in this document that rural interests frequently appeared along the period of study when important decisions were to be taken on internal and external public debt, exchange rates, and credit policies.

The relative weight of agriculture in the Colombian case can also be illustrated with reference to other major Latin American debtors. While during the U.S. lending boom of 1925-29 the shares of agriculture and industry in GDP in Colombia were 52% and 8% respectively, the corresponding figures in Argentina were 26% and 20%, in Brazil 22% and 13%, and in Mexico (a major historical debtor although not an important borrower in the late 1920s) 22% and 21%. Later, in the 1975-79 period, coinciding with the beginning of a new borrowing boom, while the Colombia's shares were 26% and 22%, the relevant figures for Argentina were 13% and 35%, for Brazil 8% and 33%, for Chile 9% and 39%, and for Mexico 9% and 31%. And in the last lending boom of the century, while in Colombia the shares were 15% and 24%, in Argentina were 6% and 24%, in Brasil 7.3% and 25.7%, in Chile 6% and 29%, and in Mexico 6% and 22% (Mitchell 1993, United Nations 2006).

In the historical annals regarding public debt, the Colombian case is frequently discussed with relation to other important debtors in Latin America⁹. In this general outlook the question is how Colombia has historically fared in the context of major debtors in the region. Some international estimates show that the Colombia's annual average compound growth rate during most of the 20th century, the 1929-1987 period was 4.3%, a middle way between the higher rates of 5.4% and 4.8% for Brazil and Mexico respectively, and the lower figures of 2.9% and 2.6% for Chile and Argentina respectively. The economic performance of these countries worsened during the 1980-87 period (the so-called "lost decade"), with Colombia reaching an average growth rate of 2.8%, ahead of Brazil with 2.4%, Mexico with 1%, Chile with 0.6% and Argentina with -0.6% (Maddison 1992). Once more, these countries played a crucial role in the emerging market credit cycle of 1993 – 1999. And this time, in contrast with the 1980s, Colombia was left behind in terms of growth. For the period 1990 – 1999, Chile and Argentina went ahead with an average rate of 6.3% and 4.2%, while Mexico, Colombia and Brazil, just reached 3.3%, 2.8% y 1.8% (United Nations 2006).

The exposition now turns to a description of aggregate output evolution during the period of study. Three great phases may be distinguished in the evolution of the growth rate of output during the period 1925-2004 (Graph 2.2). The first extends from the booming mid-1920s through the first half of World War II; the annual growth rate reached 3.9%. The second period dominates more than three decades, embracing the recovery after the War, the expansionary late 1960s, and the coffee bonanza of the late 1970s; the average growth rate went up to 5.4%. The third period starts in the critical

^{8/} Berg and Sachs (1988) highlight "the heavy political influence of the coffee growers" in the adoption of exchange-rate as well as financial policies which led to a relatively low foreign indebtedness of the country in the Latin American context.

^{9/} For instance, Eichengreen, B. and Portes, R. (1987).

early 1980s and encompasses a full growth cycle at the end of the century¹⁰. Graph 2.1 emphasizes the fact that the main break point in the series took place in 1980 at the end of the coffee bonanza of the seventies, and on the eve of the international debt crisis of the 1980s¹¹.

Graph 2
Colombia's Economic Growth
Growth rates of GDP
1925-2003

1. Break dates: 1980

^{10/} A general guidance regarding the Colombia's economic performance during the 20th century is provided in Ocampo (2007) and Ocampo, Lora y Steiner (1994).

^{11/} For the break point at 1980 the estimated coefficients were as follows:

For the period 1926-1980: 0.04656; t-value: 14.56

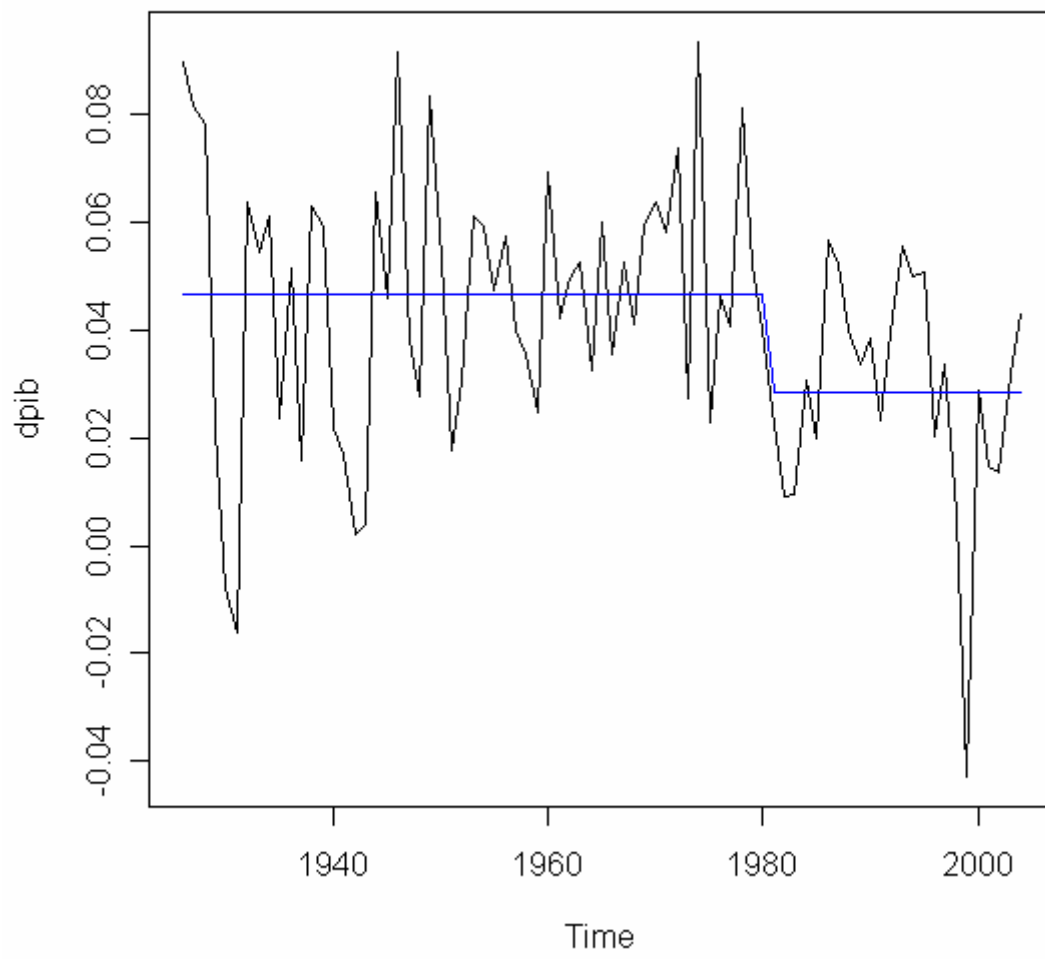
For the period 1981-2004: 0.02848; t-value: 5.86

And for the break dates at 1943 and 1980:

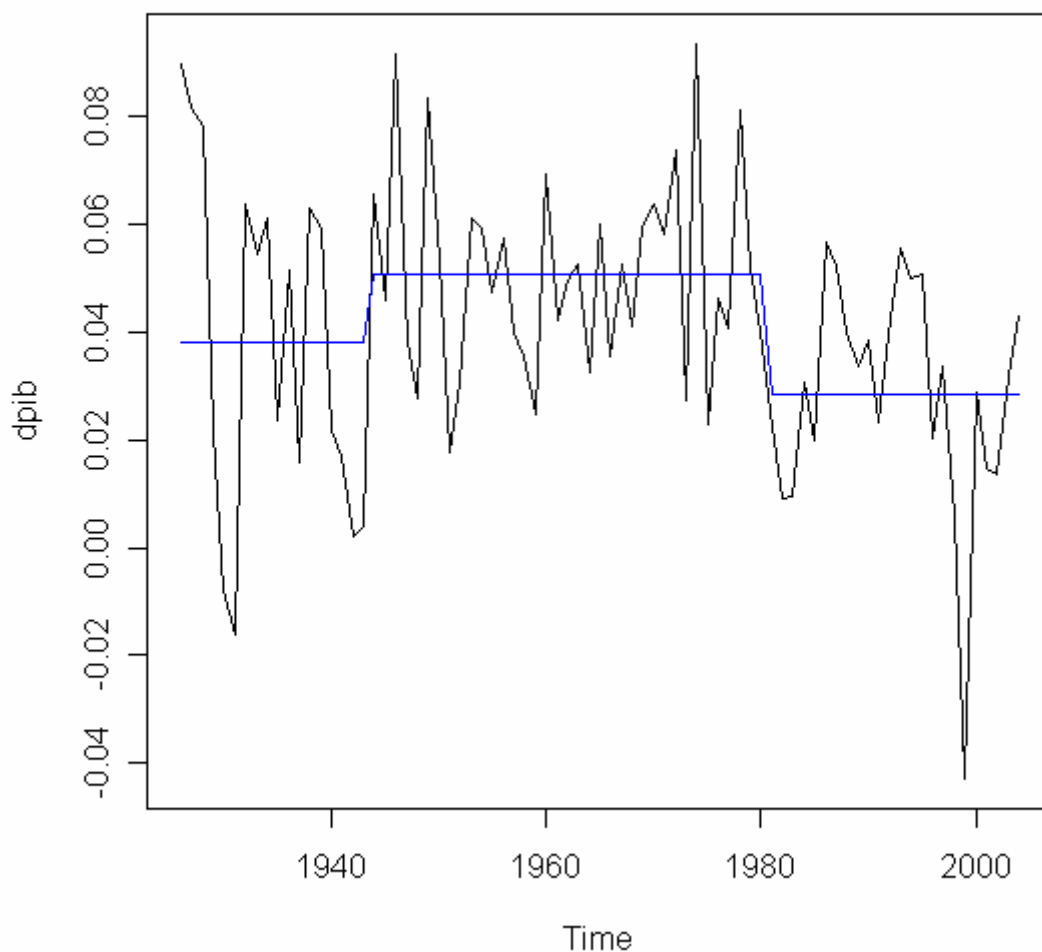
For the period 1926-1943: 0.03807; t-value: 5.09

For the period 1944-1980: 0.05069; t-value: 16.58

For the period 1981-2004: 0.02848; t-value: 6.61



2. Break dates: 1943, 1980



Notes: dpib: Annual change in real GDP in logs
 Sources of annual data of real GDP:
 CEPAL (1957)
 Banco de la República: www.banrep.org/

1. The interwar years

A sketchy interpretation of the three periods just described is now offered. Roughly speaking the first period corresponds to the last stage of an unprecedented exports' bonanza which with some interruptions had lasted since the beginning of the century. The boom was fuelled by extraordinary injections of external credit. The external upsurge peaked in 1928 before a dramatic collapse of the terms of trade and a sudden interruption of foreign loans.

The economy moved from an average growth rate of 8% in 1926-28 to an average of -1.3% in 1930-31. An immediate recovery was possible after the withdrawal of the gold standard and the implementation of expansionary policies. Exchange and import controls, and exchange rate adjustments were introduced to restore external balance. An extraordinary though not unprecedented decision was the official moratoria on external

debt payments. To recover internal balance activist policies involved increased government expenditures, cheap bank loans and an enlarged stock of internal public debt. Both sets of policies revived the economy and encouraged the development of the manufacturing sector, particularly of consumption-goods import-competing industries. The intensive utilization of internal public debt was a temporary measure followed by fiscal reforms in 1935. A new tax regime was at the heart of the reforms. Apart from its pretensions of promoting a better income distribution, the new regime sought to reduce the dependence of budget revenues from custom duties.

During most of the 1930s the terms of trade evolved below their historical trend (not shown). The world quotations of coffee, the major staple, were depressed, and the situation deteriorated even more during the international coffee crisis of 1937-40. This last episode opens the second period whose first phase (1939-45) dominated by World War II, illustrates alternative macroeconomic conditions: from recession and price deflation (1940-41) to recession and high inflation (1942-44).

2. The "external strangulation" period

An important ingredient of the inflationary juncture of 1942-44 was the collapse of imports induced by the international conflict: the reduction of imports precipitated a budget deficit and hastened a substantial accumulation of international reserves. All the time authorities sustained a fixed-nominal exchange rate in force since 1935. Fiscal decisions adopted to finance the budget, including 'forced' allocations of public bonds, made part of drastic measures of monetary sterilization.

As revealed in Graph 2.2 the slowdown of economic activity during 1940-43 led to some of the lowest growth rates of the economy along the period of study. It was during World War II that a clear break arose between the growth rates associated to the boom-and-bust cycle of the twenties and thirties, and a long period of on average higher growth rates which would last until the late 1970s.

A new cycle of accelerated imports and falling reserves followed the end of the War. The burst of imports was particularly hurried by wartime-repressed imports of intermediate and capital goods required by the growing manufacturing sector. The sharp decline in international reserves led to successive devaluations of the nominal exchange rate in 1949 and 1951. The succession of alternative and extreme economic circumstances during the 1940s is reflected in the ample oscillations of the growth rate of GDP as illustrated in Graph 2.2. However, as the graph suggests, quick oscillations of the growth rate of the economy are not an exclusive feature of the 1940s. On a more moderate scale the experience is reiterated in the late 1950s and during the 1970s and early 1980s.

A new phase of prosperity was fuelled by a price coffee bonanza which dominated during the first half of the 1950s. Booming imports of capital goods buttressed the industrialization process, and enlarged fiscal revenues allowed an unprecedented expansion of government expenditures. When the boom came to a halt the economy found itself dealing with a sharp fall of coffee prices, a trade balance deficit, and piling up import-payment arrears. This accumulation of short-term trade debts was refinanced by means of parallel arrangements with the Export-Import Bank and commercial banks (a consortium of New York private banks), concurrently with a stand-by arrangement

with the IMF. The notable fact here is that for the first time since the collapse of external financing in the early 1930s a syndicate of private banks was offering credits to Colombia.

The end of the external bonanza of the mid-1950s marked the beginning of a recessive phase which lasted until 1967. These were years of "external strangulation" dominated by a chronic shortage of foreign exchange. A diversity of trade and exchange rates policies orientated to reestablish external balance was frequent in this period. Important developments in import-competing industries were supplemented by a resolute policy of export promotion. As for exchange rate changes a maxidevaluation in 1957 put the exchange rate back on its historical trend of real devaluation; though other nominal adjustments of the exchange rate were carried out in the early 1960s, they did not have a comparable lasting effect. Internally, an expansionary fiscal policy financed with increased internal and external debt took place in the early 1960s. This expansionary movement was stimulated by the optimistic prospects of the Alliance of Progress -a pact of economic cooperation signed in 1961 between the United States and its Latin American allies-. International creditors and observers presented Colombia as the "showcase of the Alliance of Progress". However, recurrent difficulties to achieve external balance rapidly frustrated the expansionary impetus.

3. From rapid growth in the 1960s to stagnation and crisis in the 1980s

A phase of high rates of economic growth during 1968-72 was stimulated by a buoyant international economy and a set of policies orientated to increase external competitiveness. A crawling-peg exchange rate arrangement, foreign exchange controls and a regulated access to external credit constituted the framework enacted at that time, which practically unmodified would last until 1991. Nontraditional exports were stimulated, and the purchasing power of exports recovered their historical growth trend for the first time after the downswing of coffee prices in 1956. Yet, these encouraging results fell too short to overcome reiterated trade-balance deficits. It was an important inflow of foreign credit of official origin which financed the external disequilibrium, and provided part of the funds which fed one of the most notable expansions of public expenditure in the post-War period.

The expansionary years came to an end in the mid-1970s on the brink of an international recession. Additionally, the inflation rates reached heights (23.6% in 1973-75 compared with 7% in 1968-70) which although with ephemeral precedents in the past, for the first time exhibited symptoms of persistence at high levels. Policies to combat against inflation and to strengthen the diversification and promotion of exports were designed in the mid-1970s. A fiscal reform destined to eliminate subsidies and invigorate tax revenues, and measures of financial liberalization were introduced to restore internal stability. And an acceleration of the rate of the crawl was chosen to improve external competitiveness.

An emphatic demonstration of the effects of coffee-price cycles on the economy was lived through during the years 1976-81: an unanticipated and relatively prolonged boom of the international quotations (1976-78) followed by a sharp decline (1979-81). The set of policies orientated to increase the competitiveness of the economy broke down. As the coffee bonanza went on, international reserves built up to unprecedented levels, the monetary base expanded at higher rates and the rate of inflation reached its second

highest peak in the whole series. Authorities slowed down the devaluation rate of the crawling peg, then allowing the real exchange rate to appreciate with the consequent loss of competitiveness in the non-coffee tradables sector. In the late 1970s the economy found itself with a high stock of international reserves and a low stock of net external debt: in fact, by 1980 exports tripled net external debt. Other results were less satisfactory. Import-competing industries stagnated and a backward movement affected the process of export diversification. Additionally, the movement towards financial liberalization was partially reversed as authorities sought to reduce inflationary pressures by controlling bank lending.

The prospects of the economy worsened in the early 1980s, as seen in the downswing of growth rates with respect to their average record over the previous three and a half decades (Graph 2.2), or in the relative low growth rates which resembled those of the early 1940s. Apart from the negative impacts of the international economy -price shocks of 1973-74 and 1979-80 and the industrialized countries' policy responses- which were by their nature global, domestic policies could have increased the vulnerability of the economy.

The following three phases can be observed in the first half of the 1980s: First, the collapse of coffee prices and the outbreak of the worst recorded trade balance deficit. In spite of these facts the devaluation rate of the crawling peg was insufficient to avoid a real appreciation of the exchange rate. The eroding effect of the trade deficit on the stock of international reserves was disguised by a substantial increase of external debt, and the internal counterpart of this enlarged external debt was an increased government expenditure. Further, governments financed a considerable portion of the broadened spending with proceeds obtained from the financial investment of international reserves. There was also a change of attitude regarding the access of the private sector to foreign credit; while in the late 1970s it was restricted, in the early 1980s private firms were allowed to obtain fresh funds in the buoyant international market. This change of attitude was to complicate matters in the immediate future. Finally, the central government and public enterprises intensively turned to the banks during the climax of foreign bank lending (1978-82). As a result, three quarters of the increased indebtedness of the economy during these years were contracted with commercial banks.

The second phase coincides with the aftermath of the Mexican crisis in 1982. Foreign-bank loans to private firms and domestic commercial banks virtually dried up. The external disequilibrium could no longer be veiled by borrowing and international reserves started falling. At the same time the negative impact of the debt crisis on neighbouring economies -important export places- added up to the fragile trade balance situation.

The third phase (1984-1986) is distinguished by drastic processes of external and internal adjustment. External adjustment was pursued by a combination of commercial policies and devaluation. A mixture of import quotas and export subsidies added to an existent and tight belt of exchange controls. A strong acceleration of the rate of the crawl rapidly rendered a real exchange rate similar to that reached in 1975, when the economy achieved the by then highest recorded level of external competitiveness. Internal adjustment was tried for by decreasing government expenditures, namely cutbacks in public investment and real reductions of wages in the public sector; additionally, ambitious tax reforms were implemented to broaden the tax base and

increase budget revenues. While the internal adjustment could render the expected results, governments used massively but temporarily the expedient of internal public debt: bond issues were allocated in open market, but given the weakened financial position of the Treasury, the Central Bank ended up redeeming a significant amount of issues.

A crucial difference between the financial crisis of the 1930s and its replica of the 1980s was the continuity of debt service payments. Despite the drying-up of foreign commercial bank loans the country managed to honour its external commitments along the decade. Important ingredients of this process were a substantial increase of loans from official sources and a notable contribution of foreign direct investment during the early 1980s. Contrasting with a common experience in the continent, debt restructurings were not a fact in the relationship with commercial banks. Yet, new medium- and long term loans approved by these banks in the second half of the 1980s were not an exercise of "voluntary lending"; they required prolonged negotiations frequently involving political pressures on the banks. As in the 1940s, the U.S. government played a "persuasive" role; in the recent experience, pressures from the IMF and multilateral and bilateral institutions influenced the outcome of negotiations.

4. Opening up the economy in the 1990s. A new boom and bust cycle of external financing.

At the turn of the second half of the 1980s the economy was in a process of recovery, in part explained by a short coffee bonanza during 1986. The economy grew at a rate over 4.3% between 1985 and 1990, leaving behind the critical early 1980s. However, there was at the time an extended opinion according to which the productive potential of the economy could be facing a slowdown¹². To make matters worse, the International Coffee Agreement, through which producers could get stable quotations, collapsed by 1989. Analysts considered that the inward growth model adopted since the end of World War II was no longer a source of dynamism in the productive sector. It was thought Colombia should embark on a program of microeconomic liberalization measures, in a way similar to the liberal policy reforms implemented in other parts of Latin America by the late 1980s. The external sector should be deemed as an *engine of growth*¹³.

Political institutions were a matter of debate and reform in the first years of the 1990s. The constitutional chapter on public finance was reformed, the central bank was given a new role, and the monetary financing of the budget deficit was tightly restricted.

A series of events in the external sector marked the beginnings of the 1990s. Trade liberalization reforms reduced the average tariff protection from 83.0% in the mid-1980s, one of the highest in Latin America at the time, to 6.7 in 1992, one of the lowest of the continent¹⁴. This radical conversion to free trade came about after a substantial increase of the real exchange rate intended to strengthen exports. Initially, authorities

^{12/} The Program for the Modernization of the Economy put in place in 1990 was designed to promote external as well as internal competition. (Cuellar, 1994), (Fernández, 1994).

^{13/} According to the celebrated expression due to Dennis Robertson (1938), who emphasized the role of international trade in the expansion of the world economy from 1860 to 1913. The phrase is still widely quoted in academic studies on economic development. For example, recent discussions are found in Bhagwati, J. and Srinivasan, T. N. (2002) and Bhagwati (2004).

^{14/} World Bank (1993)

put in place a gradual process of transition since the beginning of 1990, but by 1991 import liberalization was accelerated and a new framework for capital account transactions was implemented. By then, a new wave of capital imports was reaching the Latin American shores, and Colombia was not an exception¹⁵. External private debt skyrocketed, aggregate private expenditure reached unprecedented levels, and aggregate demand doubled a growth rate of the economy above its historical records¹⁶. While the second half of the 1980s was characterized by the reestablishment of internal and the external balance, by 1995 the economic scene was characterized by a huge current account deficit (5% of GDP) and an appreciated real exchange rate.

If growth, global and in emerging economies had been characteristic in the first half of the 1990s, the outstanding feature of most of the second half was the slowdown of growth. For the first time since the mid-1970s, the overall emerging market GDP growth underperformed a weak OECD growth rate in 1998¹⁷. A boom-bust credit cycle contributed to shape the business cycle in both global and emerging economies. Financial turmoil in Asia in 1997, and Russia in 1998 spread to Latin America. Consequently, the external financing of emerging markets such as that of Colombia, swung sharply. A precipitous slowdown dominated the Colombian economy during the period 1996-1999, reaching a growth rate of -4.8 in the last year, the lowest figure ever recorded. At the turn of the century, the economy was growing well below its historical rates, and recovery was a word that only could be used since the years 2003 and 2004, within a context of better performance of the industrialized world and trade partners.

As in the late 1970s, international bank lending exploded in 1995-1996. In fact, banks worked as the main swing factor in the emerging market credit cycle of 1994-1999. On the analogy of the early 1930s and early 1980s, the violent swing in net foreign flows fed a new chapter of internal financial crises. Once again, the internal public debt worked as a shock absorber mechanism, but this time –within the constitutional framework enacted in 1991- the central bank was not a direct source of government financing as it happened in those previous episodes.

In conclusion, these descriptions give the image of an economy which was substantially affected by the fate of its external sector. Disturbances in the international economy involved both the current and the capital account, and a good deal of policies applied during the period of study was conceived to face those shocks. This brings the exposition to a discussion of shocks arising in the goods and in the capital market, as well as to a general perspective of policies adopted to maintain external balance.

B. External sector.

^{15/} Before the implementation of reforms in Latin America, there was an extended pessimism in foreign capital markets regarding a recovery of capital exports to the region. The consolidation of the reform process was one important argument for the rebirth of capital flows to Latin America. The substantial scale of inflows benefited the emerging markets as a whole, but the distribution was quite uneven. Asia received over 50%, and Latin America around 25% between 1993 and 1996. This was the prelude of a strong collapse of capital flows in 1998-1999. Morgan (1999).

^{16/} While the average growth rate of GDP between 1993 and 1995 was 5.3% -above the normal value of 4.5%-, the corresponding figure for aggregate demand was 9.4%. Figures calculated from Banco de la República, www.banrep.org/

^{17/} Morgan (1999)

Three issues are discussed in this section. The first describes export shocks as summarized by the path of the purchasing power of exports (PPE), and import shocks. The second shows how the access of Colombia to foreign lending has been largely determined by ample and sporadic waves of private funds (late 1920s, late 1970s and mid-1990s); when private lenders retreated in the 1930s, external financing depended on official organizations (especially in the 1950s and 1960s) and scattered initiatives of foreign direct investment, until the start of international bank loans in the 1970s. The third outlines the evolution of exchange rate arrangements designed to cope with external instability.

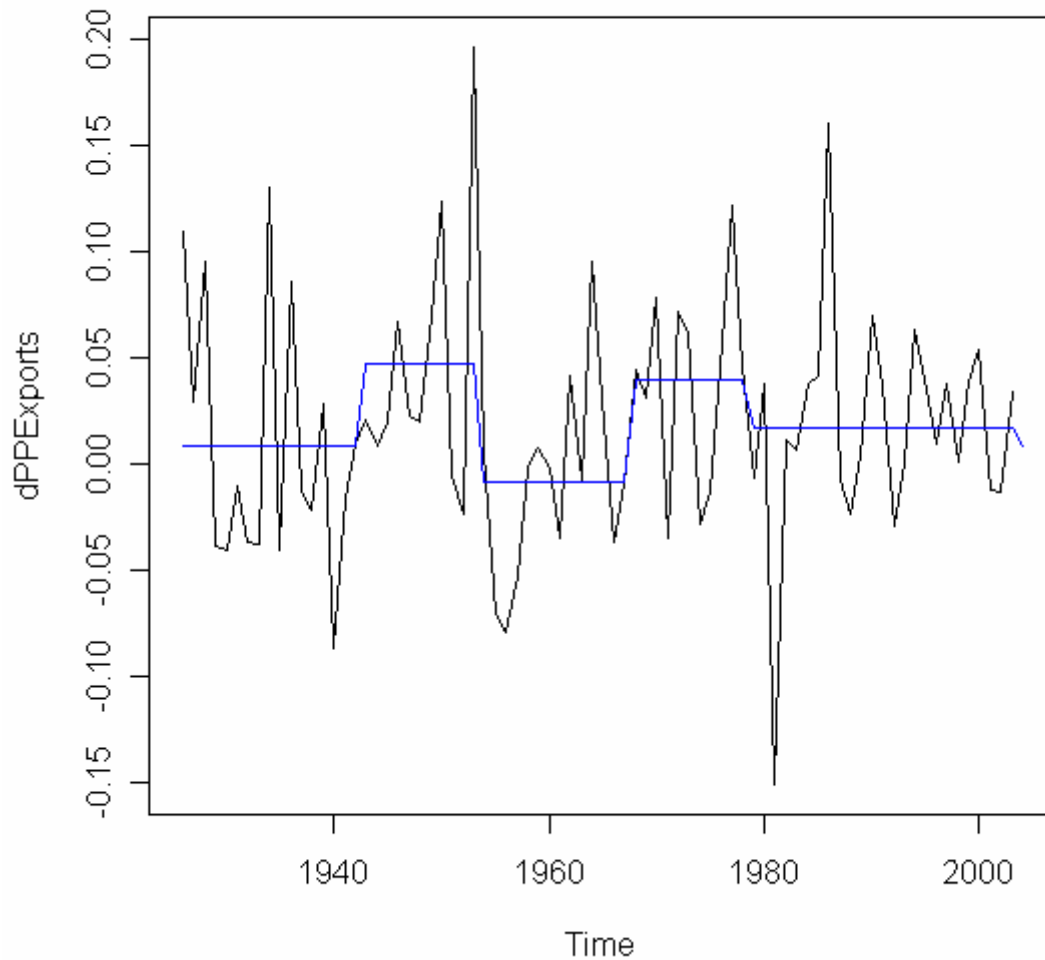
1. Shocks originating in the goods market

A description of shocks in the goods market is offered by the evolution of the terms of trade (TOT) or (PPE). This last measure which includes TOT and also real export effects is shown in Graph 3. The series exhibits four significant brake dates in 1942, 1953, 1967 and 1979¹⁸.

Changes in mean are closely linked to the fate of coffee prices: a drastic decrease in the mean of the series appears to be associated with the external strangulation period which lasted from the mid-1950s, coinciding with the end of the coffee boom of the time, to the late 1960s; another decrease takes place at the beginning of the eighties, after the collapse of the coffee prices, and the new reduced level persists until the first years of the new century. Two significant increases in mean, the first in 1942, and the second in 1967, characterize the series; the first reveals the revival of exports towards the end of World War II and its immediate aftermath, and the second the golden years of export promotion in the late sixties and early seventies, which culminated with the beginning of the coffee bonanza.

Graph 3
Purchasing Power of Exports
Growth rates
1925-2003

^{18/} The significant brake points are given by the following estimates:
For the period 1926-1942: 0.008472; t-value: 2.27
For the period 1943-1953: 0.04687; t-value: 2.84
For the period 1954-1967: -0.008357; t-value: 2.62
For the period 1968-1979: 0.039198; t-value: 2.37
For the period 1980-2003: 0.017134; t-value: 2.26



Sources of original data:
 Cepal (1957)
 IMF International Financial Statistics Yearbook

Shocks are not limited to export markets. They can also appear in the import market. In the Colombian case import shocks have affected not only the current account, but have had significant fiscal effects. Although fiscal dependence on import tariffs and on other taxes on foreign trade has declined over time, negative changes in imports have always adversely affected government finances. Table 2 shows the average share of custom duties in total budget receipts between 1924 and 2005. An extreme fiscal dependence on tariffs inherited from the 19th century took place up to the mid-1930s, when political and fiscal reforms were implemented. With the adoption of income taxation in 1936, the share of customs fell to about one third of the budget. Coinciding with the political period of the National Front (1958-1974) and the opening of the economy in the last decade of the 20th century, that share reached its lowest historical average.

Table 2

Average share of custom duties in total receipts
1924-2005
Selected periods
Per cent

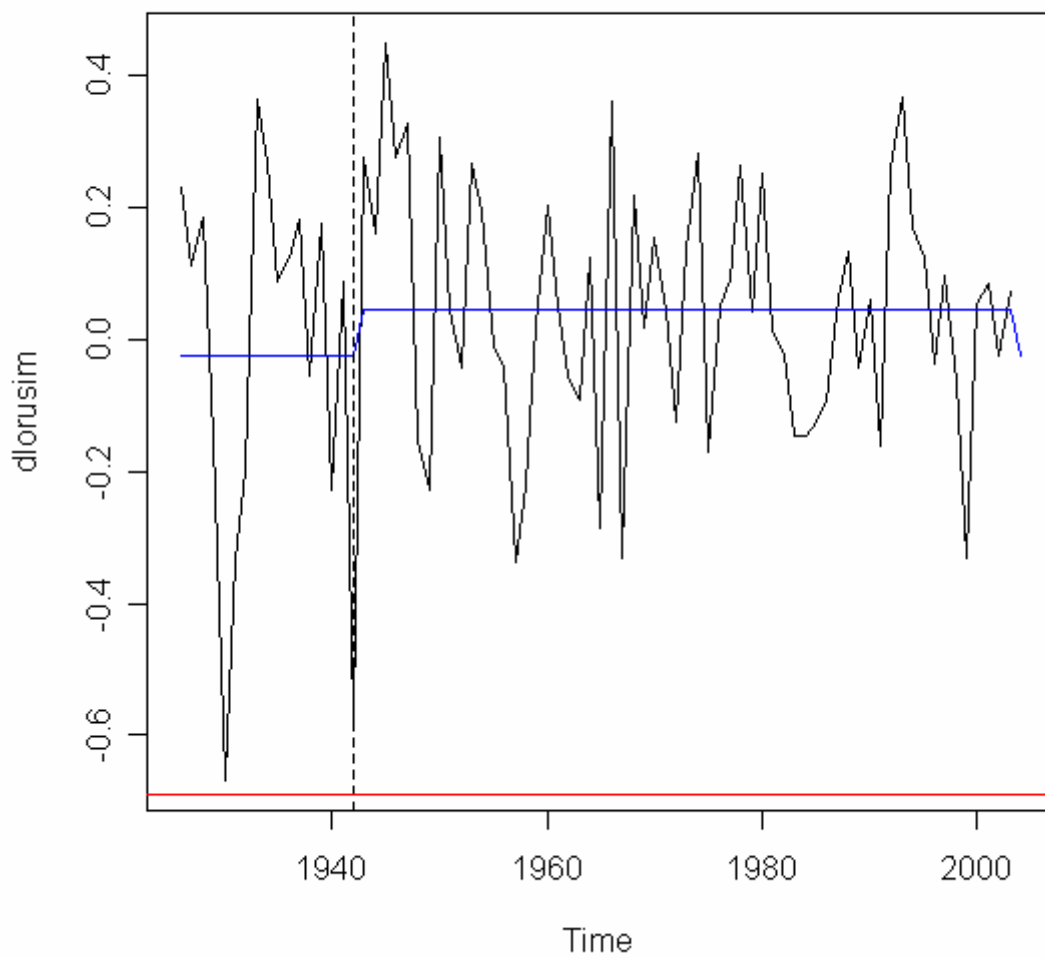
1924-1935	75.6
1936-1949	34.6
1950-1957	32.3
1958-1978	25.9
1979-1990	33.0
1991-2005	23.1
1924-2005	37.4
1936-2005	29.8

Source: Annual tax data from Informe Financiero del Contralor. Annual Report.

A limited availability of foreign exchange derived from adverse export shocks (a fall in PPE), or constraints on foreign borrowing (loss of access of the country to external financing including foreign bank trade credits) can be quoted between the causes of import downswings. Also supply shortfalls (export restrictions abroad) should be mentioned. The clearest, although extreme case of export rationing abroad was lived through during World War II, when the collapse of imports contributed to one of the major fiscal crises during the period of study. As a matter of fact, the only significant break point in the whole series took place precisely in 1942, as shown in Graph 4¹⁹. Finally, it has to be noted that imports are affected by government policies (exchange rate and/or commercial policies) concerning external balance.

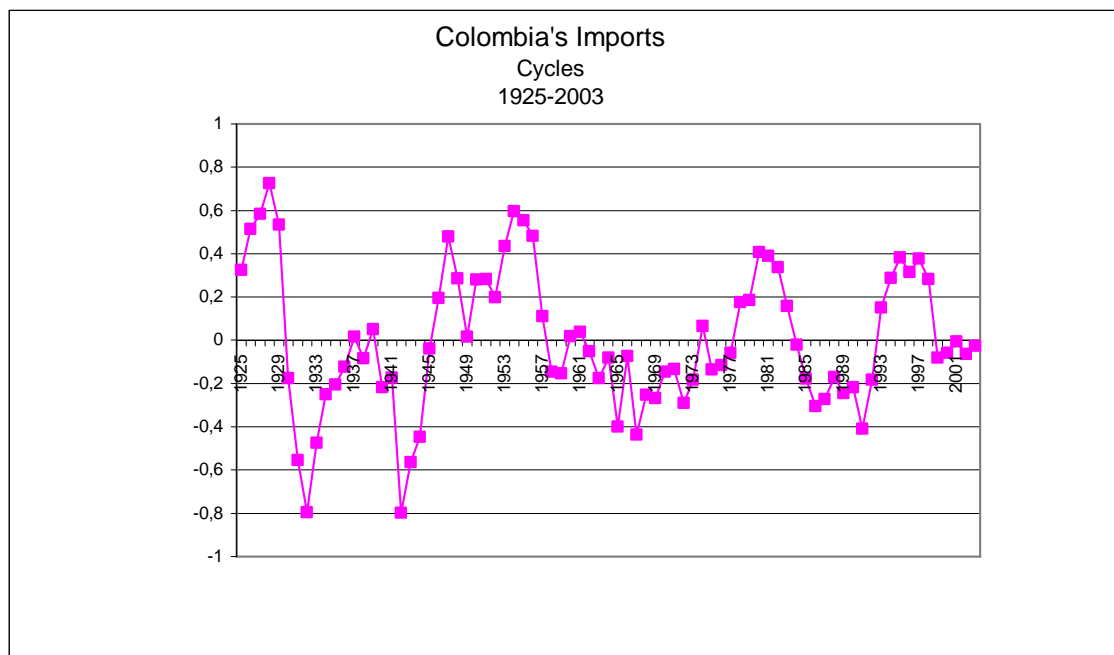
Graph 4
Growth rates of Imports
1925-2003

^{19/} For the break point at 1942 the estimated coefficients were the following:
For the period 1926-1942: -0.02341; t-value: 2.10
For the period 1943-2003: 0.0469; t-value: 1.98



Notes: dlorusim: Annual per cent change in real imports in dollars
Sources of original data:
Cepal (1957)
IMF International Financial Statistics

Graph 5



Notes: Cycles: deviations from trend (Hodrick-Prescott filter, $\lambda=100$) in logs

Sources of original data:

Cepal (1957)

IMF International Financial Statistics

In Colombia the share of imports in GDP has fluctuated substantially over time. High points were achieved during the booming late 1920s and the 1950s (around 13%), and low points during the great depression and World War II (around 5%). During three decades -1960s, 1970s, and 1980s- the average share was 11.8%. A higher level was achieved after the reforms of the early 1990s; in fact, the new average reached 21% between 1994 and 2005. The succession of cycles in the series of imports is depicted in Graph 5.

Even in relatively closed economies the income elasticity of imports may be high. In the U.S. case (where the share of exports and imports was around 4% in the 1950s and 1960s, and about 7% in the 1950s to mid-1980s), estimates of the income elasticity of imports up to the mid-1980s varied between 1.5 and 2.0 (Dornbusch and Fischer, 1986). In countries where imports are restricted by the availability of foreign exchange, such as in the Colombian experience, the income elasticity of imports is expected to be low. Early econometric evidence suggested that in the Colombia's case this elasticity was around 0.8 (Musalem, 1971), Carrizosa (1979).

In conclusion, two types of facts have been highlighted. First, the cycles of the PPE resulting from external shocks transmitted through the goods market. Second, the crucial importance of custom duties in government revenues, and therefore, the fiscal effects of import shocks.

2. Shocks arising from the capital market

The access of Colombia to international financing can be divided in four periods. First, the interwar period in which long-term public and private bonds were placed in financial centres such as New York and London. The suppliers of funds were mainly individual investors. This extraordinary financing was suddenly interrupted after the 1929 crash. Second, the postwar period up to 1970 when long term-funds were provided by official institutions. Third, the revival of international private financing through commercial bank loans (medium- and short-term) since the early 1970s up to the early 1980s, but heavily concentrated on the years 1979-82. And fourth, the access of the country to the emerging market credit cycle of 1993-1999. During these four periods, lending operations were supplemented by foreign direct investment and usual suppliers' credits.

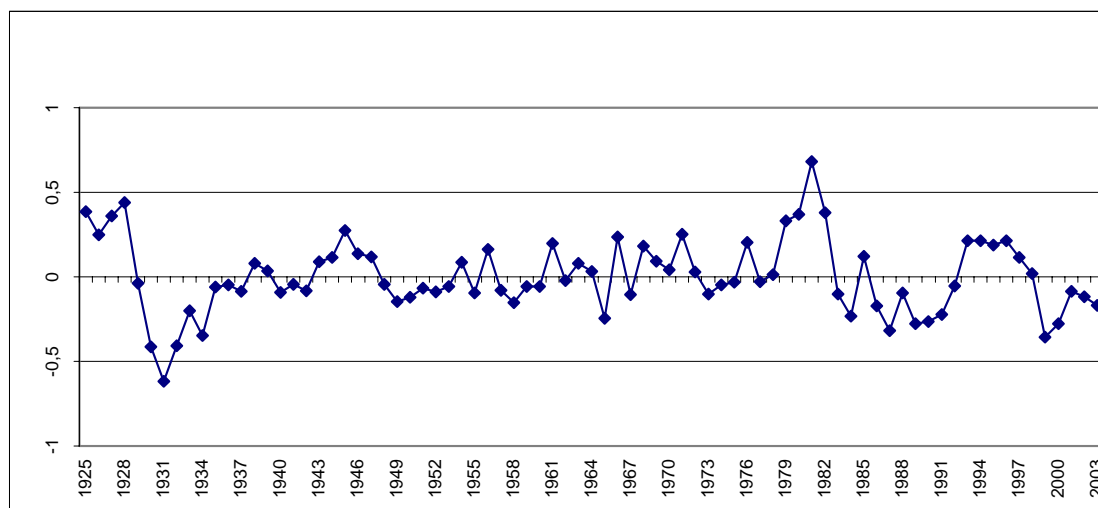
Net external financing can be calculated by using the equation for changes in international reserves:

$$dIR = TB + dF' - r'F' = TB + f'$$

Then, $f' = dIR - TB$, where dF' is the annual flow of external financing and r' the external interest rate. TB is the trade balance. Note that dF' includes financing to the public and the private sectors, and also foreign direct investment.

Cycles of f' are depicted in Graph 6a, where exports have been used as a scale variable. Actual values give the annual ratio of the net flow of external financing to the flow of exports. Two main characteristics are observed. First, the extremes of the series are dominated by notable positive cycles which correspond to the access of the country to the boom of private-long-term funds in the 1920s, to the boom of commercial bank funds in the late 1970s and to the resurgence of private loans in the 1990s. These events were followed by sharp cutbacks of external financing in the early 1930s, the early 1980s and the late 1990s. The second characteristic of the series is the nearly year-to-year oscillations of f' around trend since the early 1950s to the late 1970s coinciding with the period in which official institutions were the dominant source of foreign credit. The series suggests a stop-go behavior of the net funds provided by developmental organizations and foreign investors, altogether.

Graph 6a
Net external financing
Cycles
1925-2003



Notes: Net external financing as a proportion of exports, $f^*/x = (DIR - TB)/X$. Cycles are calculated as deviations from trend (Hodrick-Prescott filter)

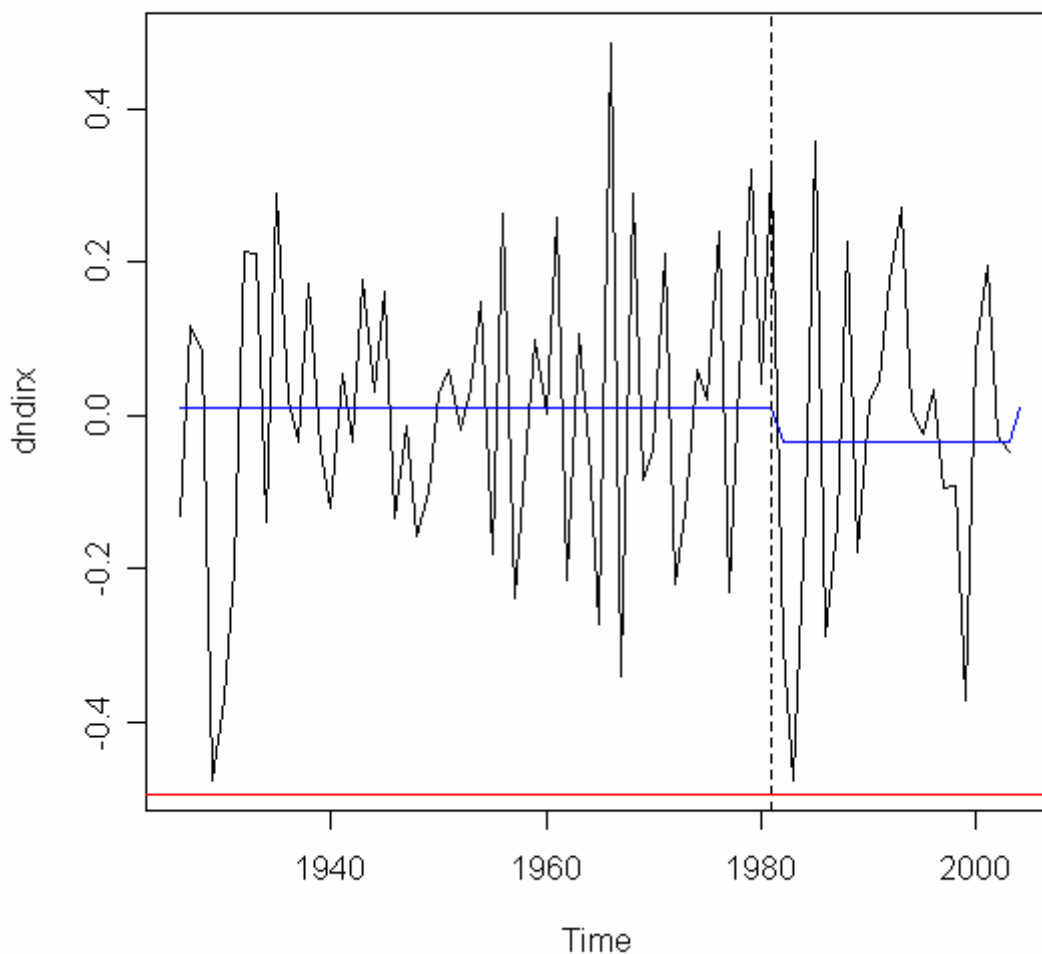
DIR*: change in international reserves; TB*: trade balance; X: exports.

Sources of original data: Banco de la República. Informe del Gerente a la Junta Directiva. Publicación anual.

Graph 6b emphasises the presence of a structural brake in 1981, in the aftermath of the coffee bonanza of the late 1970s, and just before the outbreak of the international financial crisis which exploded in 1982²⁰.

Graph 6b
Net external financing
Structural Changes in the series
1925-2003

^{20/} The only significant break date in 1981 is defined by the following coefficients:
 For the period 1926-1981: 0.009429; t-value:2.23
 For the period 1982-2003: -0.034682; t-value:2.12
 Other potential structural brakes in the series did not appear to be statistically significant.



Notes: dndirx: Change in net external financing as a proportion of exports
Sources of original data: As for Graph 6a

In conclusion, the stylized fact at this point is that the major experiences of access of Colombia to external financing during the period of study have coincided with the major cycles of foreign private lending this century. When the boom-and-bust cycle of foreign loans of the 1920s came to an end, the access to external lending was limited to concessional finance made available by official development institutions. New full cycles of private international lending would take place in the late 1970s and mid-1990s.

3. Exchange rate policies and other adjustment measures

Five phases dominate the landscape of the real exchange rate during the period of study. Different arrangements appear in the background of its historical performance. The gold exchange standard ruled foreign exchange transactions after 1923 when important institutional reforms took place. This exchange rate arrangement was in force during the boom of the late 1920s and survived the international financial crisis of 1929-30.

Colombia was one of the last countries who abandoned the gold standard since convertibility was suspended only after the devaluation of the pound sterling in late 1931.

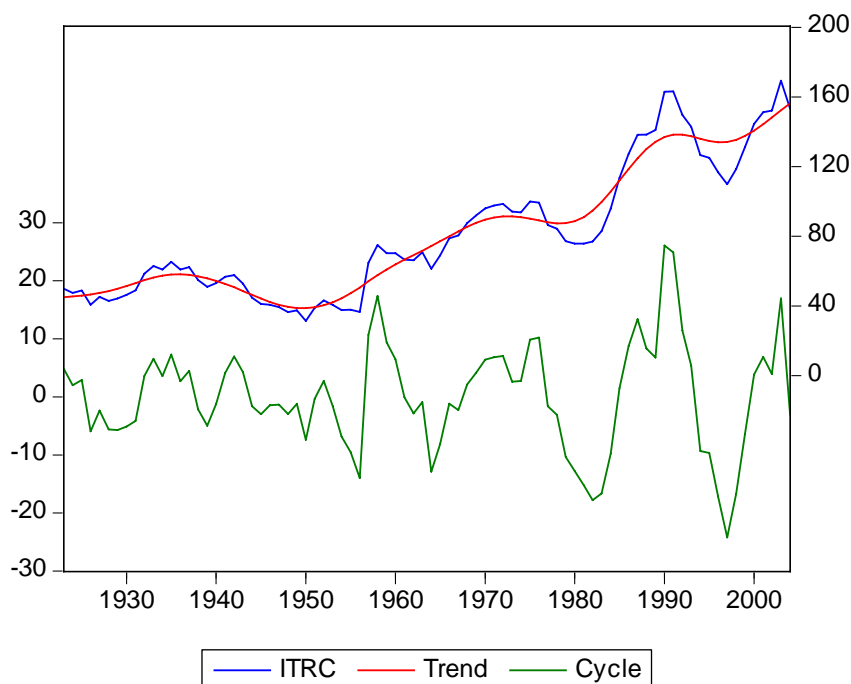
The breakdown of the gold standard was followed by a new phase in which a managed float arrangement (1931-36) was replaced by a fixed exchange rate system which lasted until 1948. While the managed float period was characterized by a process of strong real depreciation of the national currency, the fixed exchange rate period was dominated by a tendency to overvaluation of the exchange rate particularly since the outbreak of World War II.

Attempts to correct for overvaluation of the exchange rate characterized a new phase between the late 1940s and early 1950s, but the key measure was a single maxidevaluation performed in 1957. These adjustments happened in a context in which different exchange rates for different transactions were applied, and the exchange controls introduced after the collapse of the gold standard were preserved.

A further phase started in 1967 with the adoption of a crawling-peg exchange rate, the reinforcement of controls on international capital flows, and the tendency to a unique exchange rate. A gradual real devaluation of the peg which clearly outstripped the historical trend dominated during most of the 1970s, before the coffee bonanza in the second half of the decade induced policy rectifications. These changes led authorities to slow down the rate of devaluation of the crawling peg, which eventually implied a substantial overvaluation of the real exchange rate (in 1981 the real exchange rate was 25% overvalued in terms of the level of competitiveness achieved in 1975, the highest one achieved up to the 1970s). Correction of misaligned exchange rates was one of the policy priorities after the 1982 external crisis, and that adjustment was fulfilled by means of a strong acceleration of the rate of the crawl -60% between 1982 and 1986-.

In Latin America, the 1990s started under the sign of competitive real exchange rates, as part of overall programs of trade reform. At the end of 1990, the Colombian real exchange rate reached its highest historical record in the 20th century. This process came to a halt when abundant capital inflows reached the continent since 1992. Colombia tackled the real appreciation by undertaking sterilization operations, and by imposing reserve requirements on short-term capital inflows. At that time, the crawling peg regime put in place in Colombia in 1967 was substituted by a controlled-floating regime (1991) and later on by exchange rate bands (1994). Despite these policies, authorities did not fully ease the pressures on the real exchange rate which continuously appreciated between 1991 and 1997. As a matter of fact, the real appreciation amounted to 40% during that period. When the emerging market credit cycle of the late 1990s subsided, the real exchange rate came back to the depreciating track. This time, it depreciated about 67% between 1997 and 2003.

Graph 7
Real Exchange Rate Index
1975=100
1925-2004



Notes: ITCR: Real Exchange Rate Index

Sources for the original data:

Banco de la República: Informe del Gerente a la Junta Directiva (1925-1980)

Banco de la República: www.banrep.org/

For most of the 20th century the exchange rate was only one within a set of instruments designed to preserve external stability. Other instruments had considerable importance in policy agendas. An outstanding example was given by exchange controls created for the first time in 1931 after the announcement of suspension of convertibility of the pound sterling. Since then, continuously, though with differing severity, controls were applied to the regulation of the capital account up to the early 1990s. Other instruments were closely related to the regulation of the current account, such as quantitative import controls. In practice, authorities did not use to rely on one single instrument but on a mixture of them. A publicized argument for not depending only on the exchange rate was that the high instability of world coffee prices would be transmitted to the economy straightaway through the exchange rate (Díaz-Alejandro, 1976).

C. Fiscal Sector

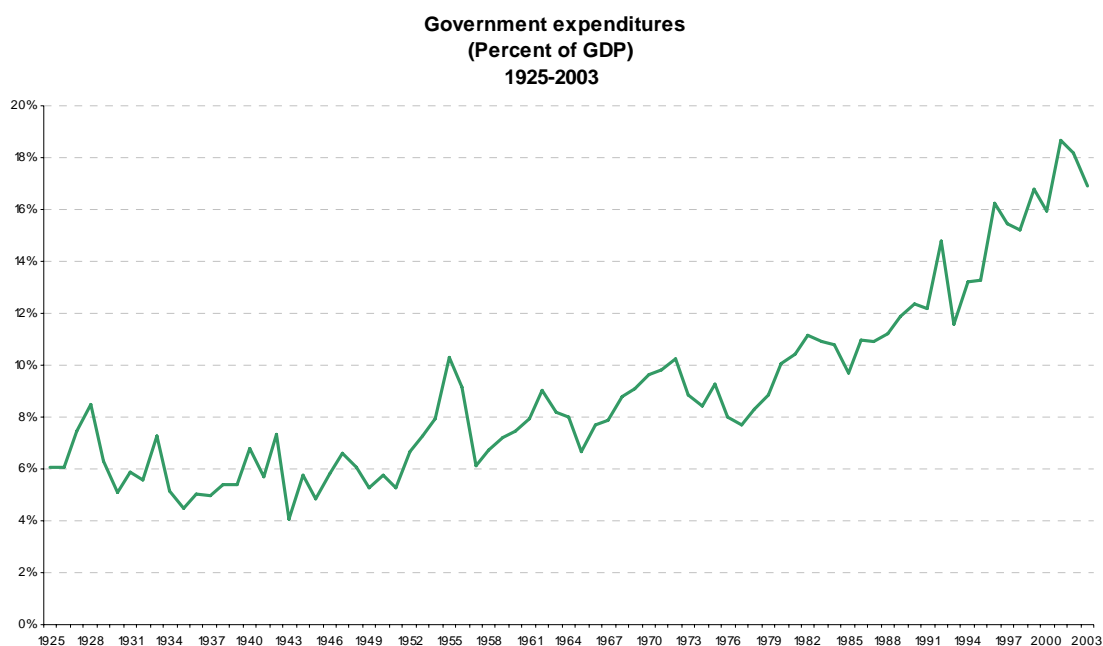
Three sources of stylized facts are considered here. First, the evolution of government expenditures, government revenues and budget deficits as a proportion of the size of the economy; the attention is called to the different shape of the series during the post-War period in comparison with 1925-45. Second, the evolution of external and internal public debt; in the former case, the evolution of the debt-export ratio, and in the latter, the cycles of internal public debt, are followed. Then, a description of the path and composition of real public debt is presented. Third, the series of expenditures, revenues and debt are discussed altogether, to see whether the fiscal accountancy suggests that governments followed sustainable financial policies during the period of study; the

discussion is closed by exploring to which extent the series of government revenues as a proportion of GDP (the average tax rate), seems to be correlated with the inflation rate series as predicted by the equilibrium approach to public finance.

1. Central government expenditures

Two main periods can be distinguished in the evolution of real government expenditures -Graph 8-²¹. From the mid-1920s through 1950 the importance of government spending declined relatively to the size of the economy. The magnitude of the fiscal adjustment that followed the boom in the 1920s is illustrated by a cutback of expenditures from 8.5% to 4.5% of GDP between 1928 and 1935; there was one outstanding interruption in 1933 when authorities deliberately increased expenditures to stimulate recovery and finance a temporary border conflict with Peru. The ratio went up during the first half of World War II to be followed by a drastic adjustment during the second half of the conflict. In averages, government expenditures represented 7% of GDP in the late 1920s, and somewhat less, 5.5% in the "optimistic" five years that followed the end of the War.

Graph 8



Notes

Government expenditures net of interest debt repayments.

Sources

Informe del Contralor. Yearbook

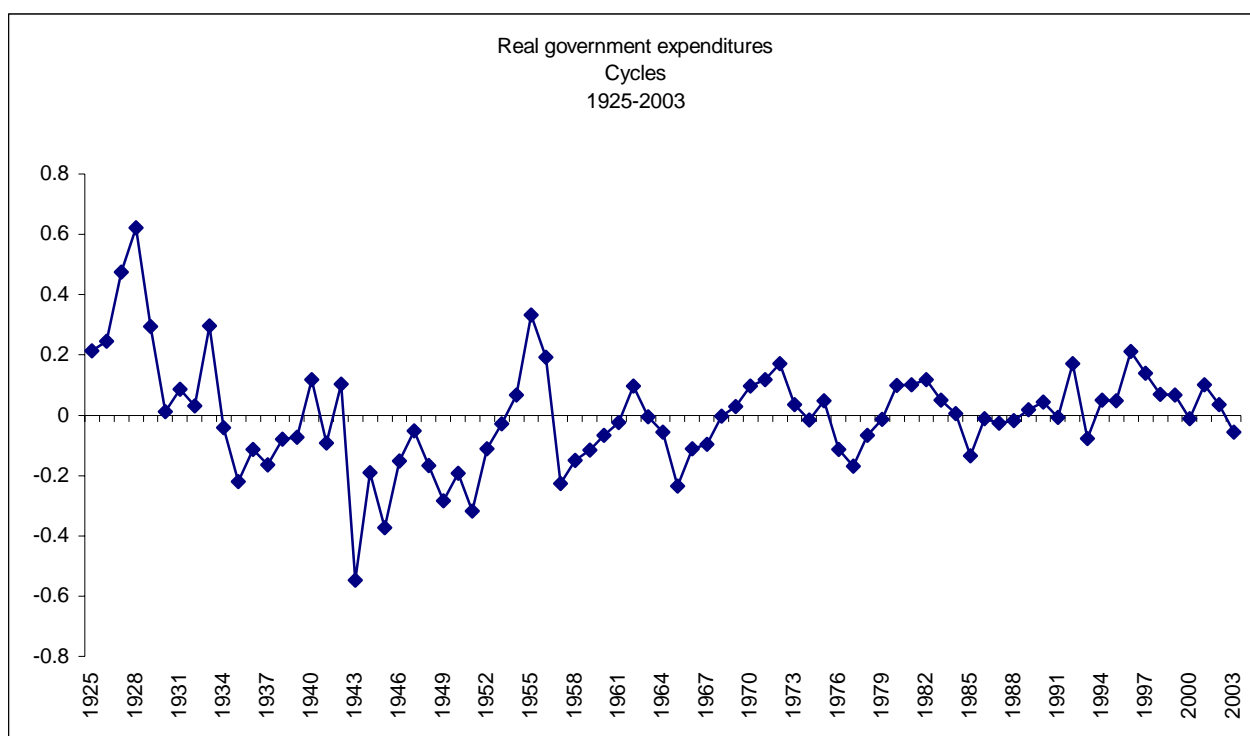
A rather different image emerges from 1950 through the end of the series. The average ratio of government spending to GDP grows over time, and the shape of the series

^{21/} Government expenditures are defined as the annual flow of government expenditures excluding any payment for interest on internal and external debt. This definition will lead to the concept of primary budget deficit, below.

suggests that periods of rapid increasing government spending are followed by shorter periods of retrenchment. There is nearly a pattern every decade with expansionary waves of 5-6 years followed by contractionary movements of 2-3 years.

A supplementary view is offered by the cycles of government spending around their trend -Graph 9-. As seen, relative to the trend, the positive cycle of the late 20s has no parallel in more recent history. The four positive cycles after 1950 happened under different contexts: the two intermediate cycles corresponded to expansionary periods in which government projects were widely supported by the availability of concessional external funding. At the two extremes, the positive cycles emerged as a result of countercyclical policies implemented at the end of the coffee bonanzas of the early 1950s and mid-1970s. Starting in the late 1980s, the graph suggests that over its last fifteen years the series tends to persist above its trend. Finally, as shown in Graph 10 only one significant break point characterizes the series, namely, the year 1943²². As from that date, the rates of growth of real government expenditures were characterized by a higher mean value.

Graph 9



Notes

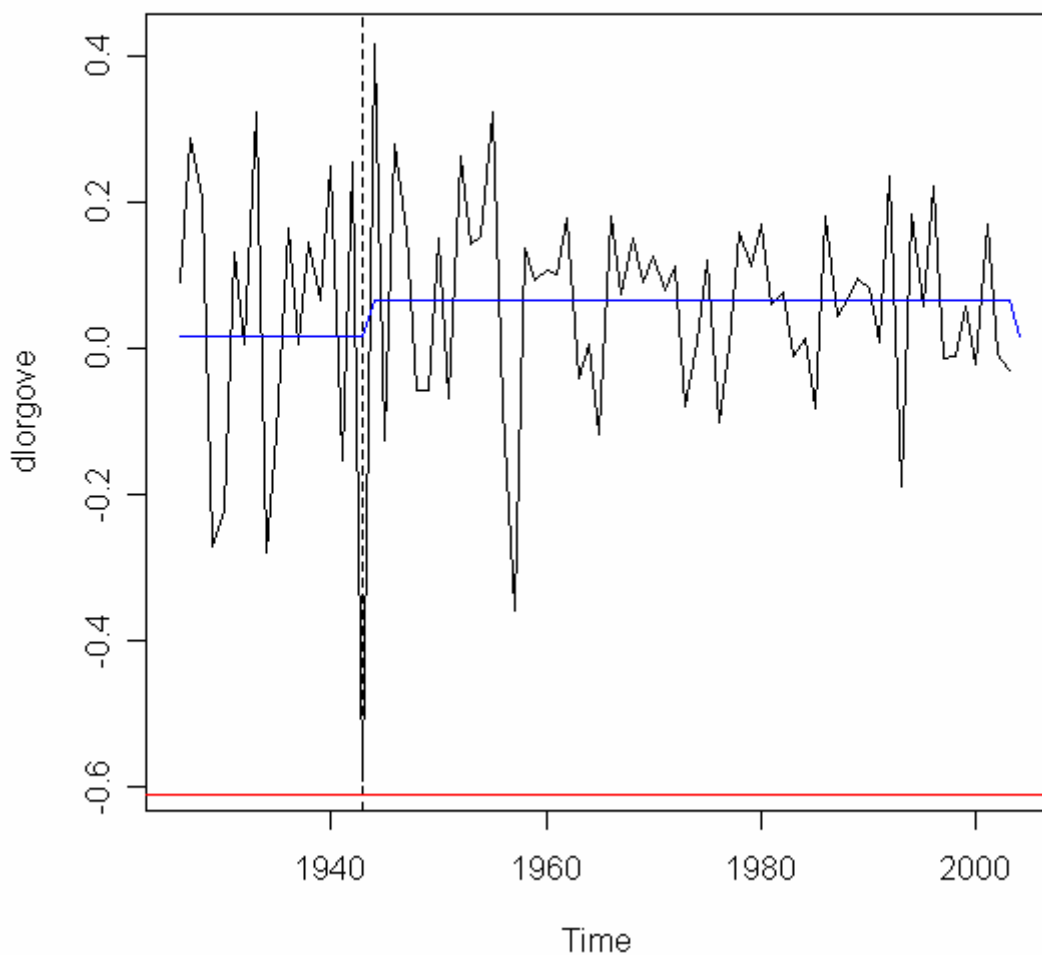
Percentage deviations from a linear trend in logs.

Sources

Informe del Contralor. Yearbook

²² The estimated coefficients for the break date at 1943 are as follows:
 For the period 1926-1943: 0.0155; t-value: 2.05
 For the period 1944-2003: 0.0660; t-value: 3.13

Graph 10
Real government expenditures
Growth rates
1925-2003



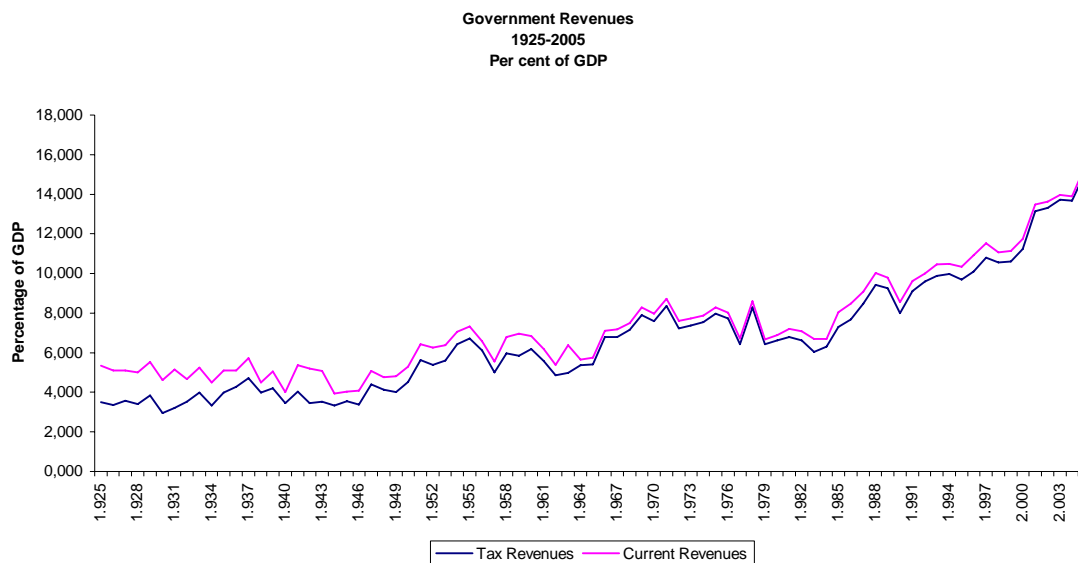
Notes

dlorgove: Growth rates of real government expenditures
 Original source of data. Informe del Contralor. Yearbook.

2. Central government revenues and primary budget deficit

There is a similar shape between Graph 8 above and Graph 11 for the average tax rate below, particularly during the period before 1950.

Graph 11



Notes

Government revenues as a percentage of GDP.

Sources of original data:

For fiscal data: Informe del Contralor. Yearbook

For GDP series. As for Graph 2

Discrepancies between graphs 8 and 11 become more obvious in the second half of the century. In the early 1960s and 1980s, increasing ratios of government expenditures to GDP coincided with declining ratios of government revenues to GDP; these experiences differ from those of the 1950s and late 1960s when expenditure expansions were accompanied by revenue expansions, both as a proportion of GDP.

The ratio of government revenues to GDP is taken as the average tax rate. It can be demonstrated that the series of Tax Revenues in Graph 11 is stationary around a deterministic trend²³.

Though with ample oscillations, the average tax rate appears to have behaved in a procyclical way: going down during recessionary periods such as 1929-34, 1956-66 and 1979-81; and going up in the first decade of the postwar period, and during the dynamic growth years between 1966 and 1972. An important step forward followed the tax reforms of the mid 1980s which re-established fiscal equilibrium. That achievement would not last long. Although the tax rate kept increasing over the 1990s and early 2000s, that rhythm did not have strength comparable to that of government spending. A significant break date in 1983 characterizes the series.

^{23/} The best specification for the Tax Rate was as follows:

$$\text{Tax Rate (t)} = 0.1552 \text{ time-trend} + 0.8851 \text{ Tax Rate (t-1)}; R^2: 0.94$$

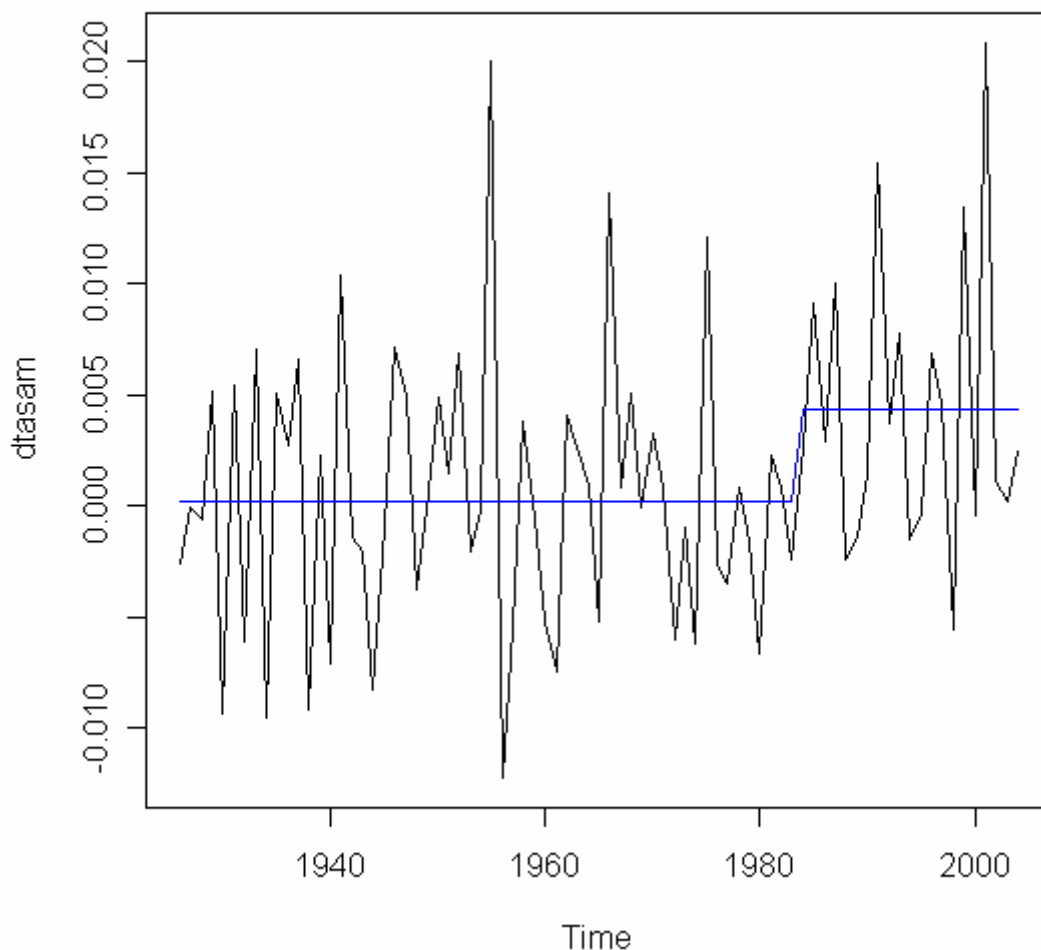
t-values (12.73) (19.05)

The ADF unit root test applied to the estimated residuals of the previous estimated equation, gave the following results:

$$\Delta(\text{Estimated Residuals}) = 0.023 - 1.205 \text{ Estimated Residuals (t-1)}$$

t-values (0.315) (-10.735)

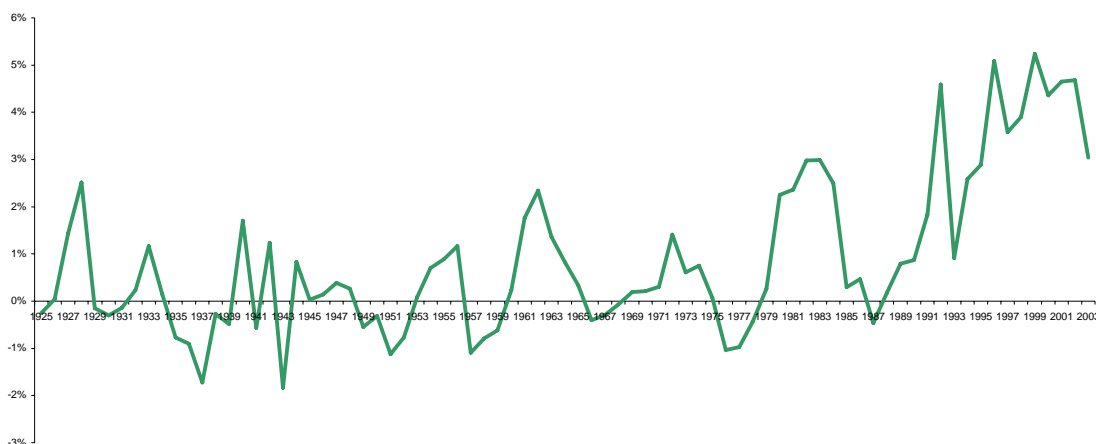
Graph 12
Average tax rate
Rates of growth
1925-2003



The time paths of government revenues and expenditures are finally reflected in the evolution of the primary budget deficit -Graph 13-. A stop-go sequence of fiscal deficits characterizes the Colombian experience since 1950. Deficits in the early 1960s and 1980s were practically shaped by the evolution of government expenditures. The 1980s episode is singular since governments financed most of the increased spending with financial proceeds from the investment and management of international reserves accumulated during the coffee bonanza of the late 1970s. If these proceeds are treated as revenues in the same way as tax receipts the budget deficit of the early 1980s is replaced by an average surplus of about 1.3% of GDP between 1977 and 1985. The series comes to its end by revealing an unprecedented experience: since the early 1990s the primary budget deficit appears to increase and persist at high GDP levels not reached in the past.

Graph 13

**Primary budget deficit
(Percent of GDP)
1925-2003**



Sources for original fiscal data:
Informe del Contralor. Yearbook.
For GDP series: As for Graph 2

3. Public debt

a. External debt

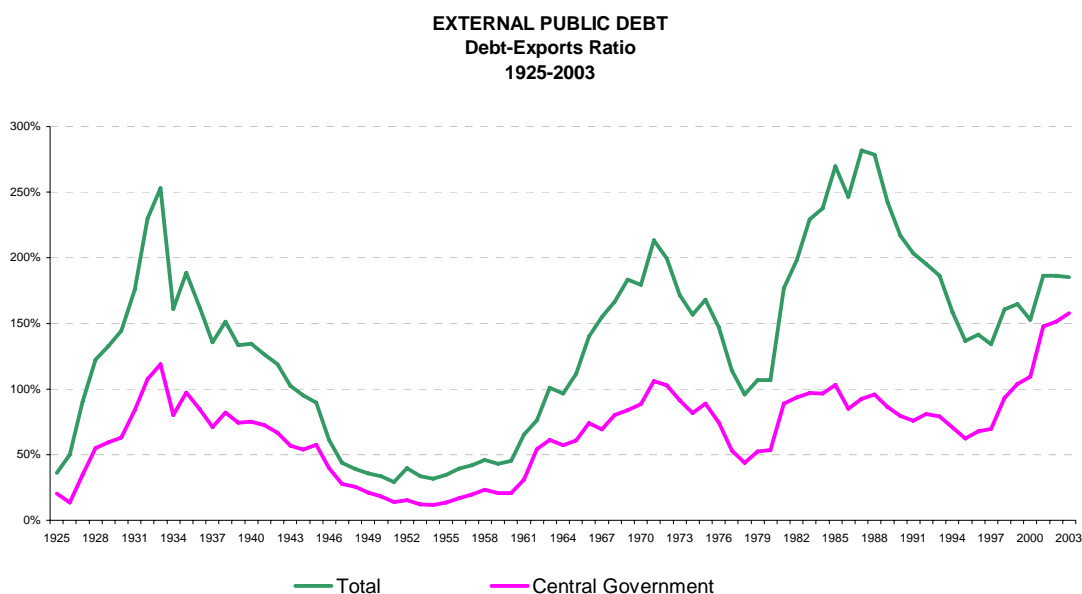
The public debt has been predominant in the composition of the total external debt. Some outstanding dates are illustrative. By the end of the U.S. lending boom in 1928, the percentage share was 71%. In 1950, when all the renegotiations of the external debt which had been defaulted in the 1930s were concluded, the share was 84%. These high figures declined during the 1960s and 1970s when the private sector gained a major portion of external credit. In fact, by 1970, when the access of the country to concessional sources of foreign lending was flourishing, the share of the public sector was 76%, and when the Latin American debt problem went off in 1982, the participation of public indebtedness had fallen to 65%. In the following years the nominal external debt of the private sector (in US dollars) ceased to grow, while the public debt carried on rising; as a result, by 1985, the share of the public sector in the total external debt was 75%.

It was in the 1990s, when after foreign-exchange reforms which facilitated the access of private borrowers to foreign lending, and in the midst of a boom of international loans, the external debt of the private sector reached its highest in the 20th century. In fact, by 1997 the external debt on the shoulders of private borrowers amounted to 50% of the total external debt. When in 1997-1998 the slump in net financial flows hit Asia and Latin America, the access of private borrowers to international lending receded, and at the turn of the century its share was just above 30% of total external debt.

Graph 14 shows the path of external public debt weighted by exports, D/X . The series is broken down according to the two main public debtors: the central government, and the rest of the public sector. The rest of the public sector is formed by public

administrations different from the central government such as provincial authorities (departments) and local authorities (municipalities), and also by public enterprises. The difference between the two lines in the graph represents the relative importance of the rest of the public sector indebtedness. Three peaks dominate the series in 1933, 1971, and 1987.

Graph 14



Notes

External debt of the central government, and of the total public sector as a proportion of exports.

Sources

Banco de la Republica

The vertical upsurge of D/X during the 1925-33 period is illustrated by the fact that in 1925 less than 5 months of exports were required to pay off the whole public debt while in 1933 that requirement amounted to 30 months. Two different subperiods have to be noted, however. Between 1925 and 1928 public debt grew much more rapidly than exports, and the D/X ratio increased from 0.35 to 1.21. It has to be seen that this subperiod coincided with the U.S. private lending boom which expired by 1928. During the next five years the D/X ratio continuously increased, reaching the height of 2.52 in spite of the paralysis of foreign lending. This evolution is explained by a 55% collapse of exports, which was precipitated by the downturn of commodity prices during the great depression. In conclusion, no more than 40% of the substantial increase of the D/X ratio during the 1925-33 period can be ascribed to actual indebtedness of the public sector. This upshot is important to understand how standard measures of creditworthiness (as D/X) were adversely affected by the international downfall of commodity prices.

The steep increase of the D/X ratio during 1925-33 was entirely reversed during the following years until the end of World War II. Some facts are to be noted. First, since the access to long-term lending had been suspended since 1928, the D/X fall is mainly explained by increased exports. Second, although an official moratoria of debt

repayments was gradually adopted in 1932-33, the central government and other public entities made partial buybacks of external debt²⁴.

The first fifteen years after the end of World War II seem to reflect a long interlude between episodes of accelerated external public indebtedness. But in fact, the nominal stocks of debt which had been declining since 1931 started growing again in 1948. Two phases can be distinguished in the "pause" period 1947-60. A first one between 1947 and 1953 when a notable increase of 70% in the nominal stock of external public debt resulted inferior to an upturn of exports of more than 100%. This upsurge of exports resulted from the coffee bonanza of the early 1950s. Conversely, the second phase was characterized by a minimum change in the nominal debt (3%) and a slightly negative growth of exports. The final effect of these facts was that along the "interlude" period no more than 4 months of exports were required to pay off the total amount of external public debt²⁵.

Contrary to the experience of the 1920s, the sharp increase of external indebtedness during the 1960s was financed by official institutions, mainly the International Development Agency (IDA), the Interamerican Development Bank (IDB), and the World Bank. At its height in 1971, central government indebtedness represented one year of exports, a burden just inferior to that experienced in the critical years 1932-33; the total indebtedness of the public sector amounted to over two years of exports, a burden similar to that of the years 1930-33. These debt burdens fell by 50% between 1971 and 1978, principally due to the rapid increase of exports: while the nominal stock of public debt doubled during these years, the nominal flow of exports multiplied by 4. As a matter of fact, the nominal increase of public debt between 1971 and 1978 exceeded that of the period 1960-71 of "high indebtedness". Therefore, the path of exports made a crucial difference for the increasing external debt burden in the 1960s followed by its sharp decline in the 1970s.

An important change in the sources of external funds for the public sector took place during the 1970s. Foreign commercial banks became increasingly important while official credits lacked the dynamism of the 1960s. Coinciding with the international boom of private commercial bank loans during the years 1978-82, 68% of the new external public indebtedness of Colombia was disbursed by those creditors. One of the similarities of this process with the experience of the 1920s was the private character of the lenders, though in contrast with that precedent, in recent times they were typified by bank syndicates instead of atomized investors, and loans were extended on a medium-, short-term basis rather than on a long-term basis. Another contrast is that, as commented above, although the 1982 crisis interrupted the "voluntary" lending of commercial banks to the public sector, the official lending sustained the curve of increasing external indebtedness. As a result, towards 1987 the ratio of external public debt to exports outstripped the high coefficients reached at the time of the great depression.

^{24/} A detailed exposition of this process is offered in Avella (2004)

^{25/} An important episode took place in the mid-1950s. It was a substantial accumulation of trade debts in the aftermath of the coffee bonanza (1954-57) which required extraordinary balance-of-payments loans. These exceptional and temporary loans were granted with the only purpose of refinancing short-term trade debts and entirely repayed before the mid-1960s (Avella, 2004)

The emerging market credit cycle of 1994-1998 contributed to a considerable increase of the gross debt of major international debtors²⁶. Colombia's total external debt went up by 54% in that period, but its public sector only borrowed one third of the new indebtedness. The lending boom of the 1990s was the time for the private sector. But, by the end of the first quinquennium of the new century, the stock of public debt recovered its traditional predominance, amounting to 68% of total external debt.

In conclusion, the following facts are highlighted: First, the historical predominance of public indebtedness in the composition of the external debt of Colombia during the period of study. Second, the burden of the external public debt measured according to the D/X ratio has depended not only on the magnitude of public indebtedness (the numerator) but importantly on the fate of exports in commodity markets. Consequently, adverse shocks on exports (such as in the early 1930s and 1960s) have negatively affected creditworthiness.

b. Internal debt

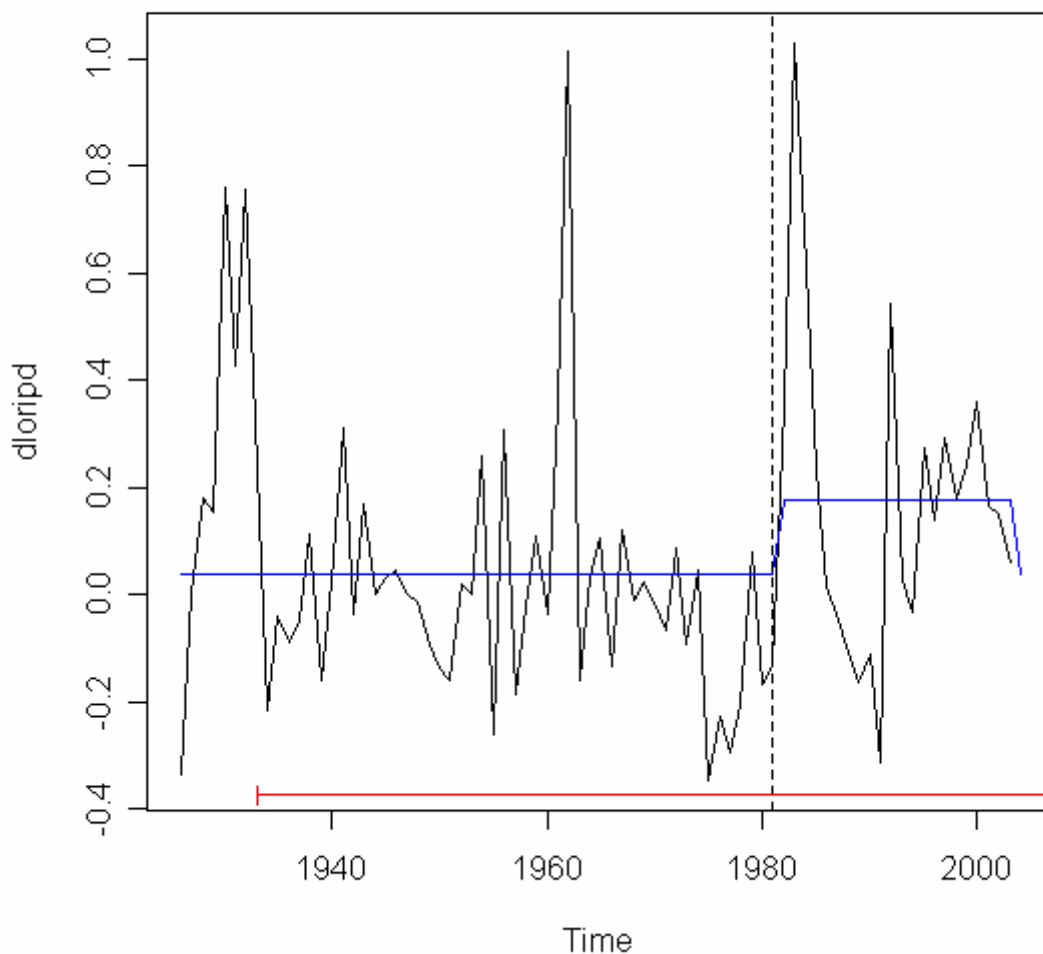
1) Crucial episodes

In the evolution of the internal public debt, as depicted in Graph 15, five expansionary episodes are worth noting: the 1932-33 extraordinary increase in internal debt after the negative impacts of the great depression on the external sector; the enlargement of internal debt during World War II after the collapse of import duties and the implementation of policies orientated to smooth out adverse effects of the war on the economy; the early 1960s one-shot increase in government liabilities destined to finance central bank losses in the foreign exchange market, and also government programs in connection with national priorities and international objectives of the Alliance of Progress; the upsurge of internal indebtedness after the external shocks of the early 1980s, particularly the near extinction of commercial foreign lending to the country; and finally, the increase of government borrowing in internal capital markets, after the collapse of the emerging market credit cycle of 1994-1997. The internal debt of the national government increased from 6.8% of GDP in 1995-1996 to 29% in 2002-2003. These facts suggest a connection between severe external crises and exceptionally large internal debt upswings. The historically substantial increases of internal public debt in the last two decades of the twentieth century made possible the appearance of a break point in 1981²⁷.

Graph 15
Real internal public debt
Rates of growth
1925-2003

^{26/} The gross debt of the 17 most heavily indebted countries increased by one third between 1994 and 1998. World Bank. Global Development Finance (2004)

^{27/} The estimated coefficients for the only significant break point in the series are as follows:
For the period 1926-1981: 0.03745; t-value: 2.01
For the period 1982-2003: 0.17727; t-value: 3.09



Notes

dloripd: annual changes in real internal public debt

Original source of data: Informe del Contralor. Yearbook.

Some important economic and institutional characteristics affected the evolution of internal public debt in the 20th century. The internal market for government bonds was quite limited for decades, and the access of the government to central bank loans restricted by regulations whose severity varied over time. How can then internal public debt have had any meaningful role in the Colombia's experience? How could the positive cycles of internal debt described in the previous paragraph have been financed? The main sources of financing were ad-hoc central bank loans to the government whose extraordinary magnitude brought about internal debt growth rates above the historical trend, after periods of very low growth rates as in the late 1920s, late 1970s, and late 1980s²⁸.

²⁸ / The experience of the early 1940s and early 1960s was different. In the first case, there was a massive and to a great extent forced allocation of public bonds in the private sector as part of a plan of stabilization during World War II. In the second case, large losses of the central bank in the foreign exchange market during the "external strangulation" period were transformed into government liabilities.

The extraordinary loans of the central bank to the government are reflected in the composition of internal public debt. While during the 1930s those loans represented about 30% of the nominal stock of internal debt, in the 1983-85 period they amounted to 70%. The rest of the time its importance was none or negligible, apart from temporary increases in the mid-1950s and first half of the 1970s²⁹.

After the huge expansion of loans of the Central Bank in favor of the National Government in the 1980s, the internal public debt in the balance sheet of the Bank represented more than 60% of total internal public debt. This important part of internal debt was consolidated in 1992, when the original loans were transformed in government bonds (TES A). Since then, the crucial government bond in internal markets has been a Treasury liability, the TES B. Brought into being in 1992, at the end of that year the TES B represented 14% of total internal debt. By 1995, the comparable figure was 71%, and since then its share has oscillated between 50% and 60%. Apart from being the dominant government bond of the last decade and a half, it has been the instrument of crucial institutional changes. For the first time since the original Kemmerer Mission it has been possible to have a market for internal public debt. Monetary authorities could put in place Open Market Operations in a way similar to more advanced economies. And during the economic recession at the turn of the century, the upswing in internal public debt was materialized by selling bonds in the market and not by borrowing from the Bank of the Republic as it was usual in the past.

The central bank's credit to the government is not limited to extraordinary loans. The central bank is the "bank of the government", and therefore the relevant account which summarizes the financial relationship between the Treasury and the bank is the net credit to the government. This account is debited whenever loans and other lending operations to the government are made, and is credited as a result of Treasury deposits in the bank³⁰. The concept of net credit facilitates to examine the importance of government financing in the balance sheet of the central bank. It also permits to describe the relative weight of central bank credit in the domestic sources of government financing different from open market sales of bonds.

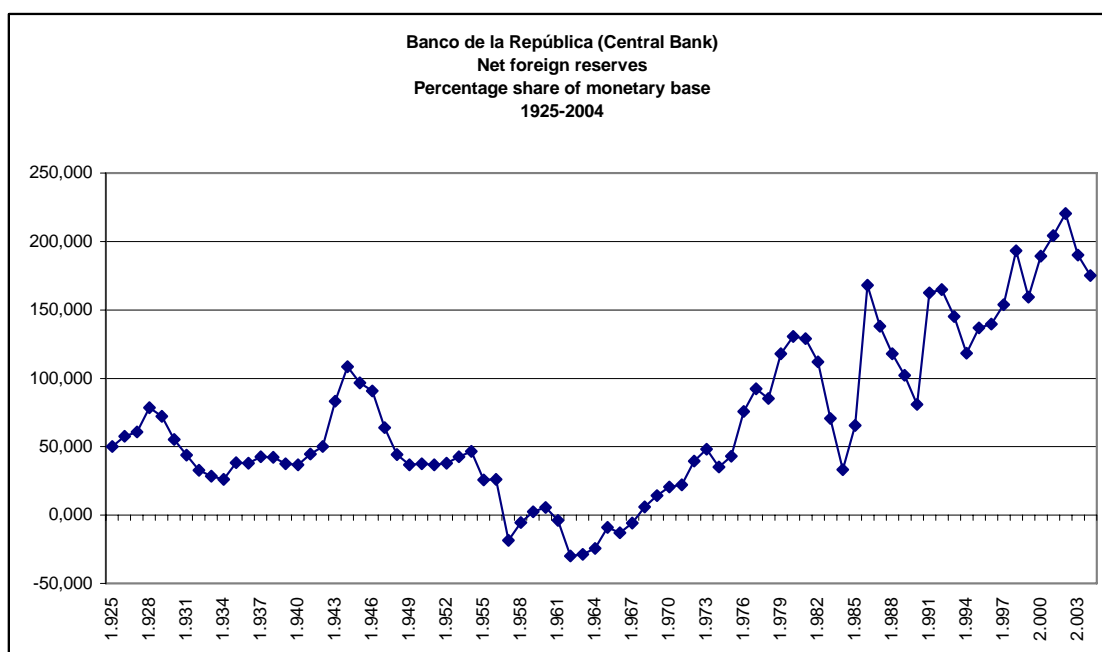
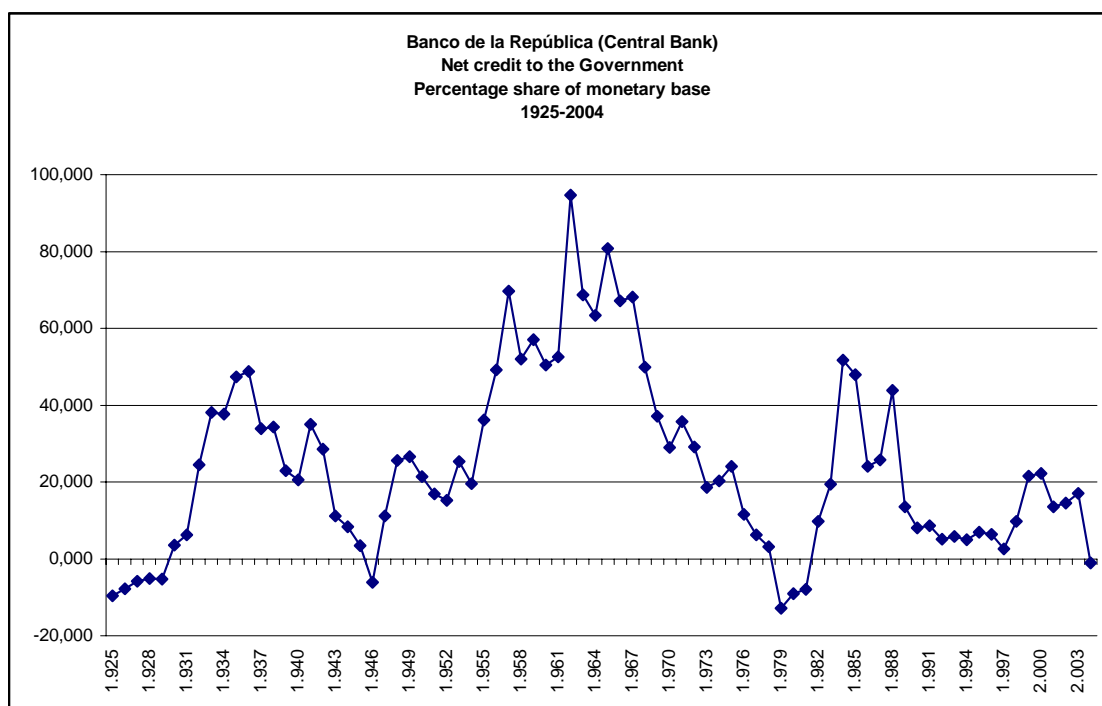
Regarding the importance of government loans in the central bank balance sheet, Graph 16 shows the percentage share of them and net international reserves in the monetary base, respectively.

Graph 16
Central Bank Credit and Foreign Reserves

²⁹ / At least two precisions have to be made about the importance of central bank loans in the 1930s. First, only during the brief period 1931-33 there were significant loans to the government reaching a share of over 30% of internal debt; the share remained practically constant up to 1937 simply because in a period of stagnated internal debt there were no amortizations of loans up to that year. Second, there was an abrupt reduction of loans to nil values in the early 1940s which did not correspond to amortization in the usual way; it was a conversion of a government liability into a long-term investment of the central bank. Otherwise the loans share would have continued at its previous level.

³⁰ / Historically, other lending operations included items such as conversions of external obligations of the government into internal debt, and the results of specific transactions carried out by the central bank which were finally charged to the public debt. Examples of the first case can be found since the 1940s (Eximbank loans) and were common in the 1960s (IDA and other international agencies' loans). The best example of the second case is offered by the losses made by the central bank in the foreign exchange market during the 1960s which were charged to the public debt.

1925-2004



Notes

Net credit of the central bank to the government, and net foreign reserves of the central bank, as a % of the monetary base.

Sources of original data:

Informe del Gerente a la Junta Directiva del Banco de la República (1925-1980)

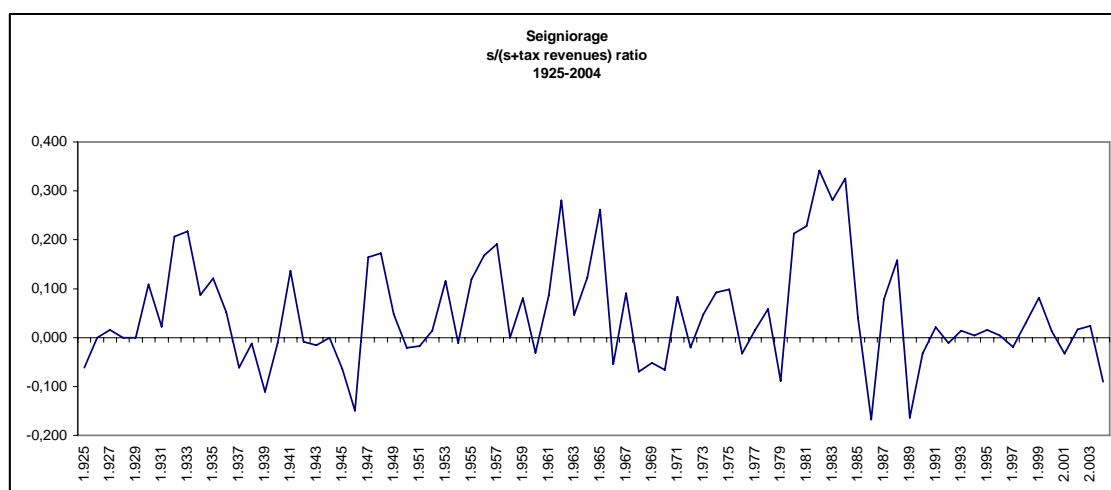
Banco de la República: www.banrep.org/

The message conveyed by these graphs is the countercyclical behaviour of the central bank net credit to the government. Whenever the share of international reserves in the monetary base increases (decreases), the share of net credit to the government falls

(raises). The net credit to the government appears to be neutralizing -partially at least- the monetary effects of the balance of payments.

As for the share of central bank net credit in domestic sources of government financing different from bond sales to the public, the concept of seigniorage is used. The conventional definition which considers the changes in the monetary base as a proportion of GDP, as applied, for instance, in Fischer (1982), is not applied here. An alternative definition is considered. Accordingly, seigniorage (S) is equal to the annual changes in net credit of the central bank to the government. These resources can be supplemented by the proceeds obtained by the government, if any, from the investment of international reserves. This sort of definition is favoured in relevant literature, particularly in Drazen (1985, 1988) and Spaventa (1988). By considering seigniorage and tax revenues as a whole, the path of seigniorage over time can be depicted in relation to this total, as in Graph 17. As expected, seigniorage is mostly important in the 1930s, 1960s, and 1980s. Seigniorage is particularly meaningful in the 1980s, first due to unprecedented returns on international reserves in 1979-83, and second, due to substantial enlargements of net credit of the central bank to the government in 1982-85.

Graph 17



Notes:

Seigniorage (S): annual changes in net credit of the central bank to the government, plus financial proceeds from the investment of international reserves.

Sources. Informe del Gerente a la Junta Directiva del Banco de la República (1925-1980)

Banco de la República: www.banrep.org/

The central fact emphasized at this point is how the positive cycles of internal public debt are created in response to severely critical periods of the external sector and internal depression. When it was required before the 1990s, the extraordinary increases of internal debt were financed by ad-hoc loans of the central bank to the government.

2) The shock absorber role of the internal public debt.

The shock absorber role of the internal public debt is documented next in a highly stylized way, based on the similarities of the Colombian experience both in the 1930s

and 1980s, and to some extent in the 1990s, but minimizing references to specific details.

Consider simultaneous external shocks arising in both the goods and the capital markets. The severity of these shocks leads to paralysis in export sectors and deep recession in home markets. In the financial sector, the central bank experiences substantial losses of foreign reserves with the consequent drain on the money supply. As for commercial banks, both sides of the balance sheet are adversely affected: the suspension of foreign financing by international banks and the reduction of the money supply create strains on the liabilities' side, while because of the recession (and deflation as in the early 1930s) the quality of assets is critically damaged by a high proportion of bad loans. An economy-wide debtors' problem arises and there are symptoms that the public is losing confidence in the stability of the banking system.

How do authorities react to these developments? At the very beginning they express their conviction that the external problem is a temporary one, and therefore there is no justification for changes in policy. As the external position of the country deteriorates authorities adopt contractionary measures on public spending (a draconian adjustment in the 1930s) to alleviate pressures on the balance of payments; it is understood that this is the best contribution of the government to the stability of the exchange regime (gold standard in the early 1930s and a fixed real exchange rate in the early 1980s). Regarding the external debt, authorities consider that the reduction or suspension of foreign lending being a temporary phenomenon, the best way of regaining access to international credit is to honor thoroughly the debt service, regardless of unilateral suspensions of debt service adopted by other debtors. In a nutshell, authorities judge that fiscal austerity, exchange rate stability and full repayment of the external debt service contribute to stabilize the economy and guarantee the resurgence of external lending to the country.

It is the rapid depletion of international reserves, the proximity of collapse of the banking system and extraordinary developments in foreign capital markets (particularly in the 1930s with the abandonment of the gold standard by Great Britain [1931], and the devaluation of the U.S. dollar [1933]) which lead authorities to change policies. Those changes initially contemplate the adoption (as in 1931) or reinforcement (as in 1983) of exchange controls and commercial policies to stop the drain on foreign reserves long before more drastic measures are imposed (in the 1930s these strong measures meant suspension of the gold standard and adoption of a managed-float-exchange-rate regime, and partial default on the external debt service. In the 1980s they only meant substantial acceleration of the rate of depreciation of the crawling peg to correct an overvalued exchange rate).

Where is internal public debt in this story? In spite of the government expenditure retrenchment a substantial budget deficit appears. It is the endogenous result of the adverse external shock originated in the export market (in particular the collapse of coffee prices after periods of bonanza in the late 1920s and late 1970s) and the subsequent slowdown of economic activity. By then, getting fresh external funds for fiscal purposes is a remote possibility, and the banking system finds it extremely difficult to finance imports, an important (crucial in the early 1930s) source of tax revenues. Up to this point the stock of internal public debt has been increased by selling

bonds to the public, and also to the central bank, within strict regulations which limit the loans to the government to a certain proportion of the capital of the institution.

The role of internal public debt is not limited to provide automatic stabilization, however. Even this function is substantially constrained by a relatively small market for public bonds (in the early 1930s severely affected by loss of confidence in financial markets), and the aforementioned restricted access to central bank loans. At some point authorities find themselves with a badly depressed domestic economy (and substantial deflation in the early 1930s), international reserves nearly exhausted, vital export sectors going bankrupt, the banking system facing insolvency rather than illiquidity, the treasury accumulating a backlog of immediate obligations, and no hope of getting funding abroad. After adopting the new exchange and foreign debt policies mentioned above, authorities turn to policies of domestic recovery (reflation in the 1930s), rescue of the banking system and support of crucial economic sectors (coffee growers in the 1930s). Authorities obtain from Congress the legal authorization for extraordinary loans of the central bank to the government, with limited amounts, temporary character and specific purposes (recapitalization of banks, public works and others. In the 1930s a war with a neighbouring country demanded additional loans). In the 1980s, various credit lines were opened by Congress in the Central Bank for the purposes of economic recovery. This is the extraordinary and temporary expedient by which internal public debt absorbs part of the negative effects of the external shocks on the economy.

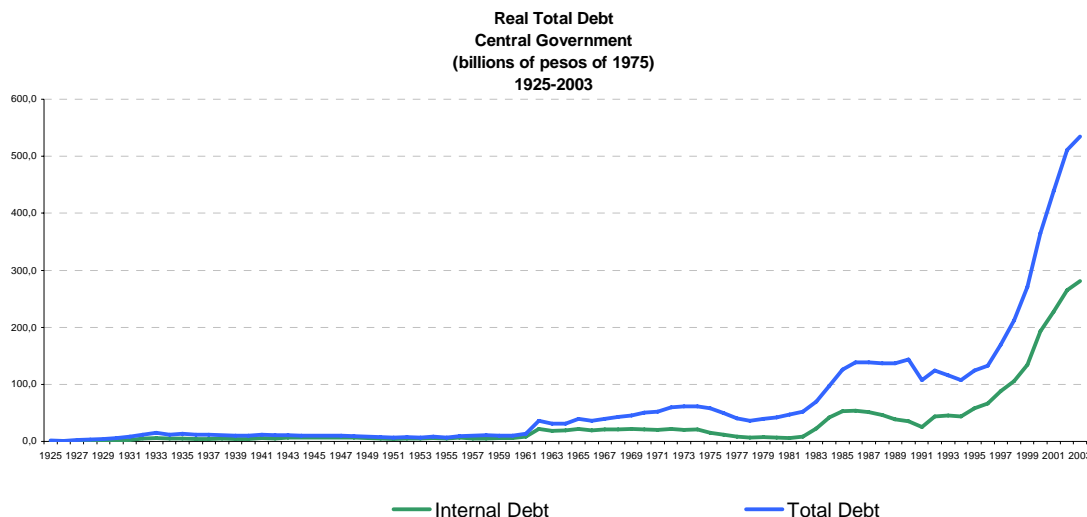
What is coming next? Authorities embark in a process of fiscal reform substantially orientated to strengthen tax revenues (in the 1930s to consolidate direct taxation and reduce the fiscal dependence from custom duties, and in the 1980s to simplify existing systems and reinforce the VAT). Also authorities seek to accommodate to the new situation in foreign capital markets (sporadic short-term loans from subsidiaries of foreign companies in Colombia during the 1930s, and only refinancing loans, instead of fresh credits, between 1983 and 1990).

How do the extraordinary loans affect the maturity structure of the internal public debt? Although originally designed as short- or medium-term operations, the experience shows that the repayment of those loans is deferred well into the future (most of the extraordinary loans of 1932-34 due to be amortized by 1940 were actually redeemed in the early 1970s. Similarly, the extraordinary loans of 1983-1984 which were supposed to be repayed in the following two years were transformed into a 30-year loan). In other words, the tax burden of the shock absorbing increases in the internal public debt is largely translated to future generations of tax payers.

4. The path and composition of central government debt.

The relative composition of total public debt of the central government between their external and internal components is shown in Graph 18, where the real external debt is the area between the graphs for the real total debt and for the real internal debt.

Graph 18



Original source of data:
Informe del Contralor. Yearbook

Four main periods can be distinguished in the evolution of the real total debt. First, the interwar period during which three phases alternate. At the beginning of the series (1925) the internal debt represented 45% of the total, but due to the extraordinary access to the US lending during 1926-28, that figure declined to 16% by 1928. With the collapse of foreign lending, the share of internal debt started growing since 1930, and after the reflationary policies of 1932-33 reached the figure of 40%. Due to stabilization policies during World War II the share of internal debt rose to 60% and to 72% in the late 1940s, this time due to the rapid decline of the outstanding external debt which followed the renegotiations with foreign lenders carried out during the decade.

The second period covers from the mid-1950s to the mid-1970s. During the second half of the 1950s the external debt started growing continuously and the participation of the internal debt declined. In 1962 the internal debt "jumped" (the real stock tripled) during a severe external crisis, and its share reached again highs of 70%. Since 1962 up to 1974 the internal debt grew only to sustain a relatively constant real stock, but its share declined to 35%; during the same period the real stock of external debt quadrupled.

The third period covers from the mid-1970s to the early 1990s. For some years (1975-1978), both the external and the internal debt declined, but the latter at a very much greater pace; by 1981 the external debt was growing again and the share of the internal debt reached its lowest figure in the series: 12%. A new phase started in 1982: the internal debt "jumped", again coinciding with a new external sector crisis which involved not only the current but the capital account. Repeating an experience similar to that of the early 1930s, the internal debt increased reaching a share of 43% by 1984. Graph 15 is eloquent about the rapid recovery of external debt since 1984. In fact, the real stock of external debt doubled between 1984 and 1990. In the meantime, the real stock of internal debt continuously declined since 1985, and its share was only 25% by 1990.

The fourth period covers from 1990 to 2003. A central role would be performed by the internal public debt. Up to 1996 there was a deliberate substitution of internal for external debt destined to reduce an unintended accumulation of international reserves.

At that time, the access to external indebtedness was in the hands of the private sector. Between 1990 and 1996 the stock of external public debt in real terms fell by 39% while the stock of internal public debt in real terms increased by 89%. As a result, the share of the internal debt doubled, reaching 50% in 1996. In the second half of the 1990s and first three years of the new decade, when external private indebtedness receded, both external and internal public debt increased in tandem, multiplying by four their real stocks.

An important factor which affects the composition of the public debt in national currency is the depreciation of the exchange rate, since the external debt is contracted in foreign currencies. Some examples can be mentioned regarding important changes in the share of external debt as revealed in Graph 15. As for the period 1962-1973 during which the share of the external debt increased from 32% to 67%, only 23% of the increment in the nominal stock of external debt (in Pesos) can be ascribed to changes in the stock (in US dollars), 18% to variations in the exchange rate, and 58% to a mixed effect of changes in both the dollar stock of debt and the exchange rate. Also during the 1982-1986 period, during which the real external debt doubled, only 11% of the change in the nominal stock can be explained by the increase in the stock (in US dollars), 63% by depreciations of the exchange rate, and 26% by a combined effect of both variables.

These descriptions corroborate previous observations that the internal debt tended to move in the opposite direction of the external debt. It has also been established that important changes in the composition of total debt in national currency, in favour of the external component, are largely explained by debt-revaluation effects of exchange rate changes.

5. The intertemporal government budget constraint

Having observed the evolution of government expenditures, government revenues and public debt, is there any way in which to employ the government accountancy to discuss the "internal consistency" of fiscal expenditures, revenues and indebtedness over time? The accounting framework suggests that such an assessment can be carried out with reference to the present value government budget constraint. Put in the context of the rational-actor framework, the question amounts to ask whether governments have followed sustainable financial policies in the long run.

Sustainability has been a recurrent topic in public debt theorizing. The solvency of a nation was the focus of attention in Domar (1950) application of Harrod-Domar models to foreign debt issues, and the common thread in analyses of Latin American and other international borrowers written for the World Bank in the 1960s (Avramovic and Gulhati, 1958, 1960; Avramovic et al. 1964). This literature revived during the debt crises of the 1980s (general illustrations are provided in Cline [1983], Kharas [1984], and Simonsen [1985]).

Rather than the national solvency, the solvency of the central government is the main interest in this section. As for methodology, the discussion follows an approach which is closer to representative-agent models, than to the tradition of Harrod-Domar models.

The budget constraint faced by the government in period $t+1$ can be written as follows:

$$B_{t+1} - B_t = rB_t + G_{t+1} - T_{t+1}$$

where the left-hand side shows the change in total (internal and external) real public debt during $t+1$, and the right-hand side shows the interest service (domestic and world interest rates are assumed equal) paid on the real stock of debt at the end of t , and the primary deficit incurred at $t+1$. The single-period budget constraint can be transformed into an intertemporal relationship by performing recursive substitutions for successive future values of the real stock of debt (B_{t+j} , $j=1,2,\dots$). Taking expected values (E) at time t , the solvency constraint of the national government is:

$$B_t = -\sum_{j=1}^{\infty} V^j E_t [G_{t+j} - T_{t+j}] + \lim_{j \rightarrow \infty} V^j E_t B_{t+j}$$

where $V = 1/(1+r)$.

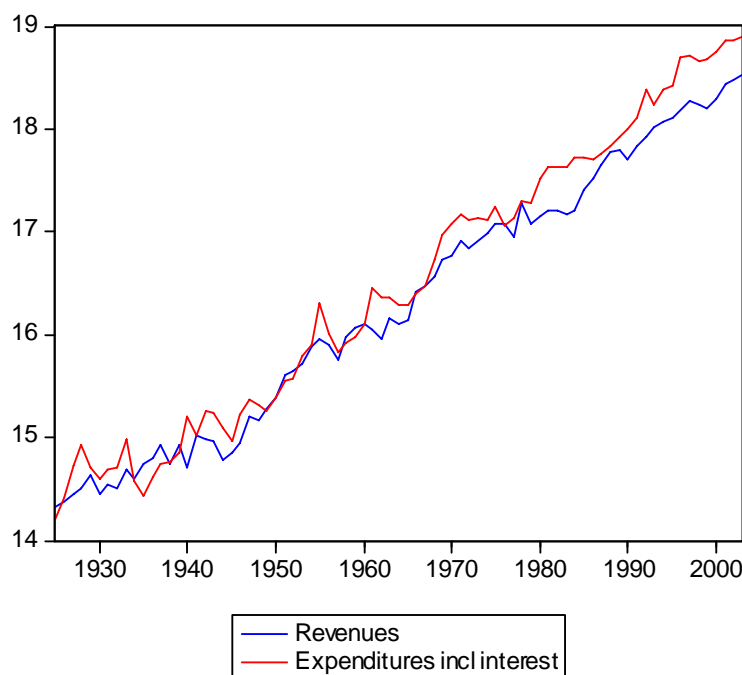
For the solvency constraint to hold, the following terminal condition has to be satisfied:

$$\lim_{j \rightarrow \infty} V^j E_t B_{t+j} = 0$$

This terminal condition shows that the solvency constraint holds so long as B does not increase faster than r . An alternative reading of the solvency constraint indicates that provided the terminal condition is satisfied, the outstanding value of B is equal to the present value of future government surpluses.

The empirical implications of the solvency constraint have been examined since the 1980s. As indicated by McCallum (1984) and Hamilton and Flavin (1986) the present value budget constraint is compatible with a constant budget deficit inclusive of interest payments. This implication is developed in a stochastic context by Trehan and Walsh (1988). These authors propose a test of the solvency constraint which relies on the cointegration of $(G_t + rB_t)$ and T_t (Graph 19 for the paths of government revenues and government expenditures inclusive of interest)).

Graph 19
Government revenues and government expenditures
1925-2003



Notes:

Real government revenues and government expenditures in logs.

As shown in Table 3 there is one unit root in the process for (G_t+rB_t) and also one unit root in the process for T_t . Being these two processes integrated of order 1, both are cointegrated, provided the residuals obtained from regressing one on the other are stationary (Engle and Granger, 1987). Following the results provided by causality tests, a regression between the two series was performed, having T_t as the independent variable. Having estimated the long-run equilibrium relation, its residuals were checked for unit roots, and it was possible to reject the null hypothesis of no cointegration.

Table 3
Tests for Unit Roots*
Sample Period: 1925-2003
Real values in logs

	Government Expenditure inclusive of interest	Government revenues	Annual changes in public debt
Constant	0.1301 (0.6273)	0.0257 (0.1573)	0.0620 (2.659)
Lagged level	-0.0042 (-0.3379)	0.0029 (0.2888)	-0.7685 (-6.9982)
Number of lags of			

differenced variable	1	1	0
* Augmented Dickey-Fuller Tests t-statistics are given in parentheses.			

Table 4 exhibits pairwise Granger causality tests as well as weak exogeneity tests. Results suggest that revenues Granger cause expenditures, but not the other way round. Additionally, weak-exogeneity tests establish that government revenues are weakly exogenous³¹.

Table 4		
Granger causality tests and weak-exogeneity tests		
Series: Revenues and Government expenditures inclusive of interest		
Sample: 1925-2003		
1. Granger causality		
77 annual observations	F-Statistic	Probability
Null hypothesis:		
1. $G_t + r_t B_{t-1}$ does not Granger cause T_t	0.8282	0.4409
2. T_t does not Granger cause $G_t + r_t B_{t-1}$	10.344	0.0001
2. Weak exogeneity		
	Revenues	Expenditures
LR test $\chi^2(1)$	0.53	19.43

Table 5 summarizes the cointegration results according to the Johansen methodology. Both the trace tests and the maximum eigenvalue tests draw to the conclusion that there was cointegration, and that there existed a single cointegrating vector between government revenues and government expenditures inclusive of interests during the period 1925-2003. Then, it is possible to speak about a long-run equilibrium relationship between those key series of government financial behaviour over time.

³¹ / According to the Engle-Granger testing procedure, the long-run equilibrium relationship between government expenditures inclusive of interest payments and government revenues is estimated by using an equation like $(G_t + r_t B_{t-1}) = \beta_0 + \beta_1 T_t + e_t$. The estimated coefficients and the corresponding tests (according to the t-statistic) are the following:

	Estimated coefficient	t-statistic
Constant	-0.99	-4.17
Revenues	1.07	74.54, $R^2 = 0.99$

Residual regression:

Lagged level coefficient: -0.6517

ADF test -5.15. Critical value at 1% level: -3.51

Lags of differenced variable: 2

Normality of the residuals. Test of Jarque-Bera: 0.745. Critical value at 5% level (χ^2 distribution): 5.99

Table 5
Cointegration tests
Sample period: 1925-2003

A. Testing hypothesis. Determining the rank of matrix π

1. λ_{trace} tests

Null	Alternative	λ_{trace} value	Critical value (95%)
$r = 0$	$r > 0$	25.04	15.49
$r \leq 1$	$r > 1$	0.242	3.84

2. λ_{max} tests

Null	Alternative	λ_{max} value	Critical value (95%)
$r = 0$	$r = 1$	24.80	14.26
$r = 1$	$r = 2$	0.242	3.84

B. Normalized cointegrating vector β and speed of adjustment vector α

1. Normalized cointegrating coefficients (t-student in parenthesis)

Revenues: 1.0000

Expenditures: -0.9218
t-value (-56.247)

2. Adjustment coefficients

Revenues: -0.0767
t-value (-0.7040)

Expenditures: 0.6073
t-value (4.5402)

c. Tests for normality and serial correlation

Joint test Jarque-Bera for the null hypothesis that the residuals are multivariate normal, with 4 degrees of freedom: 5.97; 95%; critical value (χ^2 distribution): 9.49

Under the null of no serial correlation, the Lagrange Multiplier test gives the following results, up to the specified order:

LM(1), $\chi^2(4) = 7.64$; 95% critical value: 9.49

LM(4), $\chi^2(4) = 2.08$; 95% critical value: 9.49

Notes:

Matrix π is defined as $(A_1 - I)$ where A_1 is a matrix of parameters and I is an identity matrix.

Similar results should be expected if instead of testing for cointegration between revenues and expenditures, it is the stationarity in the first difference of the stock of public debt which is examined. As seen in Table 3 it is possible to reject the null hypothesis of a unit root in the series of annual changes in public debt.

To sum up, the accounting framework of present values makes possible to get a further understanding of the consistency of long-run government financial policies in the case study. This survey of fiscal facts since the 1920s can be enriched by the general idea that the Colombian government has led sustainable financial policies over time.

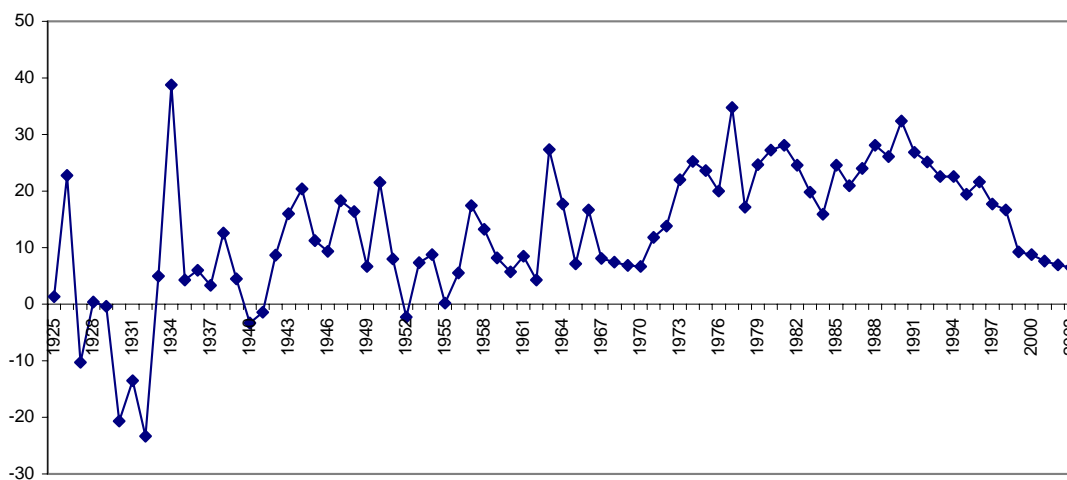
6. Tax rates and inflation

Graph 20 shows the rate of inflation path along the period of study; the series follows a stationary process³². Three great phases can be observed. The first one -1925 through 1955- reflects the dramatic changes of the external sector which accompanied the boom of the late 1920s, the impacts of the great depression which led to an average deflation rate of 19% during 1930-32 (23% only in 1932) and a new deflationary episode after the outbreak of World War II. A one-shot spectacular increase in the rate of inflation right to the peak of 39% in 1934 followed activist reflationary policies implemented after the suspension of the gold exchange standard. Inflationary waves arose under different external contexts: during the second half of the War when with a blocked imports trade a rapid and unprecedented accumulation of international reserves resulted in a huge expansion of base money; and in the immediate postwar years, in spite of the contractionary effects of boosting imports which drained the stock of foreign reserves previously accumulated. Both episodes were followed by deflationary policies which abated the inflationary upsurge, and even reached nil or negative rates in the early 1950s.

Graph 20

^{32/} The ADF test equation is:
 $\Delta\text{Inflation}(t) = 5.52 - 0.42\text{Inflation}(t-1)$
 t-values (3.41) (-4.54)
 Critical values: At 1% level, 3.52

Inflation rate
Percentage rate of change CPI
1925-2003



Notes:

CPI: Consumer Price Index

Sources

Cepal (1957)

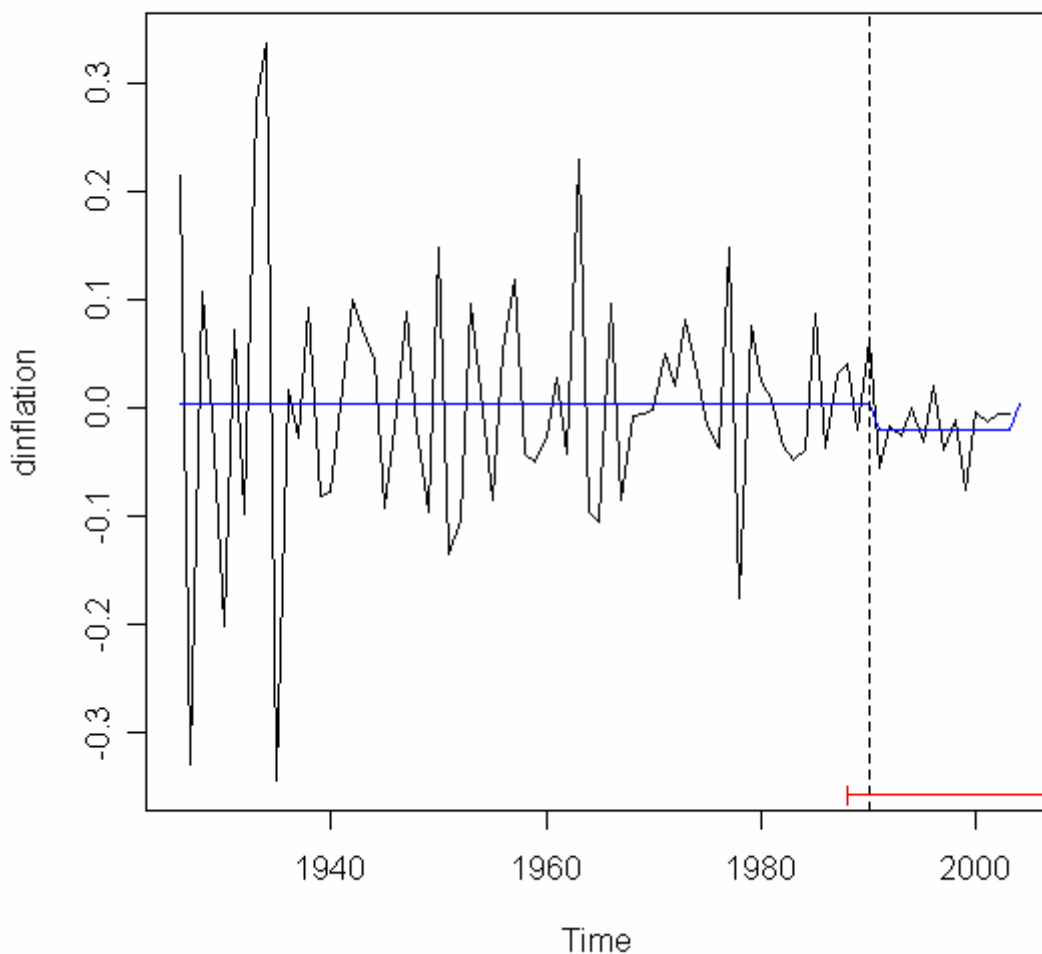
IMF. International Financial Statistics

In the second great phase two subperiods can be differentiated: an interval of mild inflation between 1956 and 1970 when disregarding a notable once-for-all increment in 1963 the average inflation rate did not exceed 9%; and an interval of higher inflation between 1971 and 1990 when the average inflation rate was above 22%. A distinctive characteristic of this last subperiod was the permanence of inflation rates at high levels. Inflation rates crossed the threshold of 20% after the first oil-price shock and remained at that height revealing the presence of inertial components which tended to reproduce past rates of inflation.

The last phase covers the 1990s and the first quinquennium of the new century. It is characterized by a gradual, almost uninterrupted fall of the inflation rate. This fall was more acute when the economy was subjected to a substantial slowdown at the end of the century. In Graph 21, the presence of a break point in 1990 emphasizes this entirely new behaviour of inflation in the 1990s and beyond³³.

Graph 21
Growth rates of CPI
Annual changes
1925-2003

^{33/} The estimated coefficients for the break point in 1990 are as follows:
For the period 1926-1990: 0.004785; t-value: 2.00
For the period 1991-2003: -0.019923; t-value: 2.13



Notes:

D'inflation: Annual changes in growth rates of CPI (Consumer Price Index)

Why this concern about the evolution of inflation rates in the middle of the discussion of government expenditures, tax revenues and debt? An important approach to public finance analyzes inflation from a public finance viewpoint. This approach follows Phelps contributions (1972, 1973). The optimal public finance model sees inflation rates as a result of an optimal choice of taxation. Additionally, the theory predicts a positive and proportional relationship between tax rates and the rate of inflation. The previous description, however, does not seem to support the idea that inflation rates have resulted from a deliberate choice of taxation. Nor it appears to exist a direct and proportional relationship between tax and inflation rates (graphs 16 and 20).

An important strand of literature follows Mankiw (1987) who combines Barro (1979) original modern exposition of the tax-smoothing theory and Phelps (1973) contribution to the theory of public finance³⁴. Mankiw aims to show that if monetary and fiscal

^{34/} While in Barro's contributions the revenue from money creation is disguised within the whole array of distortionary taxes (on personal income, etc.), Mankiw and subsequent contributors explicitly and formally discuss the role of the inflation tax.

policies are used to optimally finance government expenditures, the inflation rate and the tax rate will behave like random walks, and evolve together over time. The inflation rate is taken as a proxy of the tax rate on real money balances.

A simple test of the central implication of the theory that higher inflation rates and higher tax rates are associated over time may be performed by examining the correlation of average tax rates with the inflation rate (Table 6)

Table 6

Inflation rates and Tax rates
1925-2003

$$\text{Inflation} = 12.61 + 0.73 \text{ Time Trend} - 4.39 \text{ Tax Rate}$$

(4.14) (6.59) (-4.51)

$R^2 = 0.38$; DW = 1.44

This simple exercise is similar to that applied by Mankiw (1987) to the U.S. experience during the period 1952-85, and by Roubini and Sachs (1989) to the performance of 15 OECD countries during the period 1960-85. Mankiw found a positive and significant correlation between the average tax rate and the rate of inflation, in support of the tax-smoothing theory. Roubini and Sachs confirmed Mankiw finding for the United States and found support for the underlying hypothesis in the case of two other OECD countries; however, no significant correlation between (INFL) and (TAX) was found for other 12 countries, and even for five countries the sign of the relationship between these two variables was negative.

In the present case, there is a significantly negative correlation between the variables under discussion, therefore rejecting the applicability of the theory to the Colombian experience. The coefficient on (TAX) is notably large, suggesting that an increase in taxes of 1% of GDP is associated with a reduction of 4.4% in the inflation rate. The absence of positive correlation between (INFL) and (TAX) is not a strange result after the discussion of the paths followed by the average tax rate and the inflation rate (graphs 16 and 20). While the theory implies that governments choose inflation rates as part of optimal tax decisions, the description of episodes did not leave that impression³⁵.

The testing procedure employed by Mankiw, and Roubini and Sachs, has been questioned for not exploring the full implications of the theory, in particular for not inquiring about integration and cointegration properties of the processes for inflation and tax rate. Authors such as Grilli (1989) and Trehan and Walsh (1990) show how under the tax smoothing framework, non-stationarity of the processes for (INFL) and (TAX) is a necessary condition. In the present case, it was previously shown that contrary to the theoretical requirement, both processes are stationary. These results should be interpreted with some precaution, however, since as recalled by Grilli et al. (1991), the prediction that "optimal" tax rates are non-stationary is obtained from models which do not take into account that tax rates are bounded between zero and one.

^{35/} That inflation cannot be exclusively explained from a public finance perspective is a position sustained by the inspirators of the theory (Phelps, 1972). The theory was formulated on prescriptive rather than on descriptive grounds.

In conclusion, the discussion of graphs 16 and 20 suggest that inflation rates have not been a public finance fact in the Colombian experience. Further insights indicate that the processes for the inflation rate and the tax rate do not match with theoretical predictions.

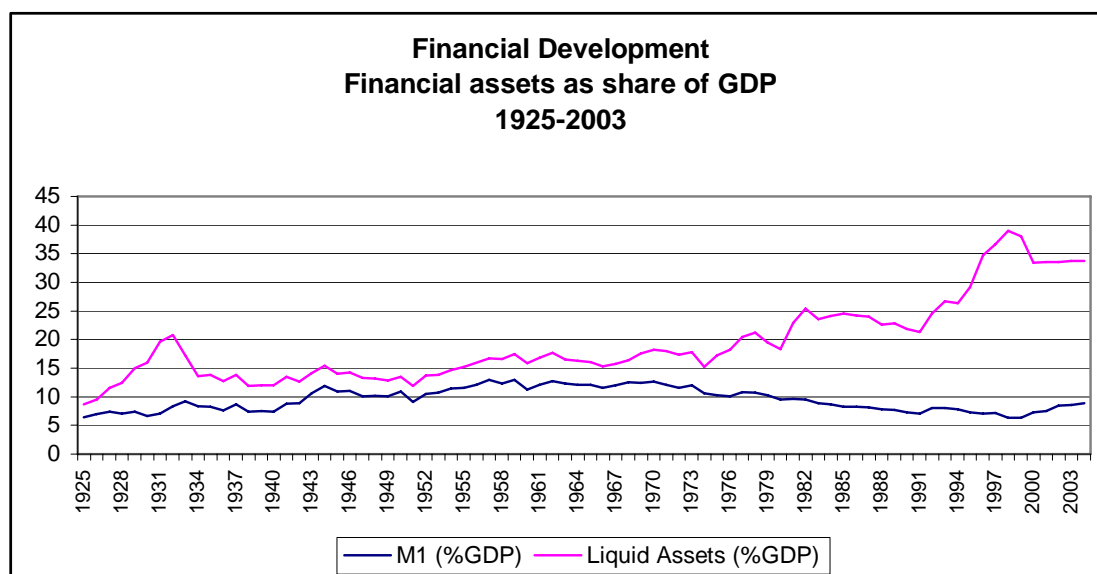
D. Financial intermediation and public debt

This last section shows how financial intermediation in Colombia has been affected by the boom-and-bust cycles of external capital markets, and how under extreme circumstances the collapse of financial institutions has been prevented by the use of internal public debt. A description of ups and downs of the financial intermediation system adds new elements to the picture of external and internal debt.

Graph 22 depicts the evolution of two standard indicators of financial deepening: one is the ratio of the money supply to output (M_1/GDP); and the other one the ratio of financial assets in the hands of the public which are liabilities of financial institutions, to output (Financial assets/GDP). Three phases are clearly distinguished: an extraordinary development of the financial system relative to the size of the economy during the booming late 1920s interrupted by a sudden collapse in 1932; nearly four decades of stagnated financial progress until the late 1960s; a substantial and sustained process of financial deepening in the 1970s, interrupted during the international financial crisis of that time; and finally, an extraordinary advance in financial deepening in the 1990s, only comparable to the financial boom of the 1920s; both experiences of the 1920s and the 1990s ended up in major financial crises.

Crucial institutional changes opened the first phase. A financial reform in 1923 instituted the system of central bank and commercial banks following the model of the U.S. Federal Reserve System. Commercial banks were assumed to do the job foreseen in the English private banks model, namely, lending operations on a short-term basis (trade and working capital loans). As for the long run, mortgage banks were created or reorganized to compete for savings, locally and abroad, and to grant loans to agriculture and housing sectors.

Graph 22



Sources

Banco de la República. Informe del Gerente a la Junta Directiva (1925-1980)

For the period 1980-2003: www.banrep.org/

Why the ephemeral success of financial intermediation during the first phase? External capital markets proved to be critical. With the apogee of private long-term funds in the New York financial market in the mid-1920s mortgage banks could sell an important proportion of their long-term issues to foreign investors. At the same time commercial banks enjoyed an easy access to short-term funds in U.S. commercial banks. Long-term funds for mortgage banks were sharply suspended after the 1929 crash, and short-term finance dried out in 1931. While the external expansion flourished, internal financial intermediation burgeoned with the general prosperity of the economy; and with the cessation of international lending and the negative impacts of the great depression (deep recession cum deflation) the process of financial deepening came to a halt.

Only a decisive government intervention in 1932-33 avoided the collapse of the banking system, and more generally, of the credit structure in the economy. The internal public debt played a vital and extraordinary role in this process. Through a variety of ways which are spelled out in detail in other place, the internal public debt helped restore the machinery of private credit³⁶. One outstanding measure was the creation of official banks destined to replace the bankrupt mortgage banks; the initial capital of the new institutions was largely financed by the central bank through the acquisition of equity shares, or through loans whose liability was assumed by the government.

A model of centralized financial decisions -in the sense of Gurley and Shaw (1955,)- predominated since the early 1930s through the late 1960s. The newly organized official banks were destined to supply credit to agriculture, industry and construction, according to government policy priorities. Interest rates were subjected to regulations after the great depression, and demand deposits became the main source of funds of private commercial banks; Graph 22 shows how financial intermediation ratios hinged on changes in the money supply rather than on interest-bearing deposits, for over three decades. During this period commercial banks became regular suppliers of loans to the government, and important investors on bonds of the internal public debt.

During the phase of stagnated financial deepening, which largely coincided with inactivity of world private capital markets (1930s to 1960s), the access of private commercial banks to external funds was basically limited to the financing of external trade operations. However, some official banks were granted loans from developmental institutions. The Eximbank was an important source of funds even before the end of World War II. Later the World Bank and other agencies continued these special operations. Finally, during the 1960s developmental loans were granted by international organizations to newly created investment banks; these banks were established to attract long-term domestic and international funds required by the financing of projects in manufacturing, import-competing, and export-promoting sectors.

A new phase of accelerated financial deepening characterized the 1970s, as a result of policies of financial liberalization and greater access to external private capital markets. The former favoured a major diversification of financial assets, and stimulated

^{36/} Avella (2003)

competition (e.g. the creation of building societies in the early 1970s which disputed the predominance of commercial and investment banks. Competition began eroding the traditional centralized-financial-decisions model, and a rapid increase in financial deepening indicators was lived through the mid-1970s as revealed in Graph 17). The latter coincided with the boom of foreign commercial bank loans in the second half of the 1970s. Colombian banks not only tripled their external debt between 1978 and 1981 but some of them opened offshore branches and engaged in lending operations to foreign debtors.

By 1981 there were clear examples of crisis in the domestic financial system after the end of a coffee bonanza which dominated the second half of the 1970s. In this context, the aftermath of the Mexican debt crisis in 1982 had devastating effects on a system which was increasingly relying on external short- and medium-term funds. Domestic branches of Colombian banks faced a virtual paralysis of external trade financing, and some offshore branches practically went bankrupt. Offshore branches confronted the simultaneous effect of accumulating unpaid loans which immobilized their assets, and the suspension of external credits; headquarters had to accept the burden left by failed offshore expansion and consider solutions as a whole.

Repeating the experience of the 1930s authorities intervened to avoid the collapse of the financial system. Governments resorted to increase internal public debt to strengthen the capital of some banks. Additionally, an important proportion of the external debt of private offshore branches was nationalized; as a matter of fact, it was the pressure of creditors (syndicates of commercial banks) during negotiations which eventually led to the extreme measure of nationalization. These episodes are extreme illustrations of how originally private-sector debts are transformed into public-sector debts. In the mid-1980s the financial system was back on its path of financial deepening: in 1985 the percentage ratio of total financial assets to GDP reached 38% compared with 23% in 1970 when the economy just recovered the peak level of financial deepening achieved before the great depression.

The institutional reforms of the early 1990s made possible financial opening up along with the real opening up of trade flows. There was a constitutional recognition of central bank independence, and new laws in favor of competition in the financial sector were enacted. Financial assets grew at unprecedented rates, in great part fueled by the increased availability of foreign funding. By 1998, financial assets represented 40% of GDP, when in 1990 they barely represented 20%. The crisis of the end of the century interrupted that process of financial deepening, and in the last quinquennium of the series, financial assets became a rather constant share of GDP, at the level of 35%. Once again, as in the 1930s and 1980s, public finances came to the rescue of the financial sector; but instead of a once-for-all and substantial enlargement of the internal public debt, it was decided to distribute over a period of years the budgetary implications of that rescue.

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