# Has Growth in Senegal After the 1994 Devaluation Been Pro-Poor?

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Abstract

The devaluation of the CFA Franc in 1994 generated a public investment boom in Senegal. The increase in public investment was made possible thanks to an improved budgetary situation related to the reduction in real terms of the public wage bill which had been too large for some time. The rise in public investment was subsequently accompanied by an increase in private investment due in part to the attractiveness of Senegal as a place to do business within West Africa. In turn, higher investment led to higher growth rates and substantial poverty reduction, with the share of the population living in poverty declining from 67.9 % to 57.1 %. Poverty in urban areas was reduced faster than in rural areas, as most of the investment benefited the manufacturing and services sectors. Also, a few years of poor rainfall in the second half of the 1990s coupled with an initial drop in the real prices of crops in the aftermath of the devaluation affected negatively rural incomes. As a result, while virtually all segments of the population (including the rural poor) benefited from improved standards of living in 2001 as compared to 1994, growth was not strictly speaking "pro-poor" because the growth in consumption per equivalent adult in the upper half of the distribution was larger than that observed among the poor. This was observed at the national level as well as within urban areas.

## 1. Introduction

Senegal has witnessed a fairly high level of growth over the last decade, which has led to a substantial reduction in poverty (Siaens, Sylla, Toure, and Wodon, 2005). This paper analyzes Senegal's growth experience, with a focus on its impact on the poor. Beside some special features of the country by African standards (including a higher level of urbanization and a lower share of agriculture in GDP), Senegal's economic features reflect largely those of the other countries belonging to the West African Economic and Monetary Union (UEMOA in French). The major macroeconomic event that took place in the UEMOA countries was the 1994 devaluation of the CFA franc, their common currency unit. In many respects, this event draws a clear dividing line between a "before" and an "after" for the affected countries, i.e. two periods characterized by a very different macroeconomic adjustment strategy. Nationally representative household survey data available for 1994/95 and 2001 enable us to assess whether the growth performance observed after the devaluation has been pro-poor or not.

Senegal's economy shares some of the features of the Sahelian countries, like its agriculture dominated by groundnut exports, and frequent droughts. However, its coastal position gives it a definite advantage for industrial development. It is the closest Sub-Saharan African economy to the main European markets by sea. This has also given rise to a long tradition of out-migration, with a resulting large inflow of remittances (Manchuelle, 1997). Hence, many non agricultural sources of income have allowed this country to be one of the most urbanized one in Africa, with almost 50 % of its population living in the urban sector. Its capital city, Dakar, was the capital city of the French AOF (Afrique Occidentale Française) in the colonial days, and still plays a prominent role in the UEMOA (West African Economic and Monetary Union). It hosts in particular the headquarters of the BCEAO (Central Bank of West African States).

Being a medium-sized country by the standards of West Africa, Senegal reflects the evolutions of the UEMOA economies, as far as its macroeconomic experience is concerned, without affecting them much in return. At the same time, its relatively high level of industrial development and of urbanization give this country some relevant idiosyncratic features. In particular, in contrast to many neighboring countries, agriculture plays here a secondary role in determining growth, while manufacturing and services are playing a central part.

Another characteristic of Senegal is the fact that it is the most democratic country of the region, with competitive elections taking place on schedule with very limited violence (Ka and Van de Walle, 1994, Azam, Dia and N'Guessan, 2002). The first two presidents after independence, Leopold Senghor and Abdou Diouf were members of the socialist party. However, the latter was a more technocratic "modernizer" than the poet-president Senghor, whose development strategy was more focused on cementing national unity than on the development of an efficient economy. Until 1993, the ballot was not really secret, and a lot of social pressure were exerted on the voters, especially in the groundnut basin (Schaffer, 1998). There, the Mouride brotherhood was controlling the votes, and benefited from a long-lasting relationship with the government (Boone, 2003). The re-introduction of the secret ballot in 1993 improved the working of the democratic institutions. The last presidential elections saw the replacement of the socialist Abdou Diouf by the liberal Abdoulaye Wade, who took over in April 2000.

The only serious stain on the democratic reputation of the Senegalese government since independence has been the problem of lower Casamance (Boone, 2003). This region is

predominantly peopled by an ethnic minority, the Diola, whose social system is very different from the hierarchical Sahelian social organization characteristic of the other ethnic groups. The latter is based on a typical caste system, with a well-defined ruling elite. The numerically dominant Wolof group is already marginally different from the typical Sahelian type. Their religious leaders have overthrown the traditional aristocracy in the course of the 18th century, giving rise to the current domination by the Sufi brotherhoods. But the Diola, like the smaller groups also present in the area, are radically different. They have no traditional hierarchy, and are resisting any type of authority. The Muslim brotherhoods, which play a crucial role in the political control of the rest of the country, are powerless in this region. There is thus no basis on which the typical African system of political management, relying on the co-optation of the traditional elite into the government-sponsored system, can be grafted onto such an ethnic group (Boone, 2003). The attempts made by the different governments in Dakar to control administratively this area, with an increasing military presence, ended up in a low-intensity civil war. Many civilians were killed by both sides in the 1980s and 1990s. Hence, this potentially rich region, fit for export agriculture as well as for tourism and fishery, has remained relatively under-developed. A peace agreement has however been signed in March 2001, but lower Casamance is the region of Senegal with the highest incidence of poverty (République du Sénégal, 2004).

Figure 1 depicts the growth experience of Senegal over the last three decades or so. Three phases can clearly be identified: (i) the instability phase, until 1984, (ii) the "real-side" structural adjustment phase, 1985-93, and (iii) the post-devaluation boom. The devaluation was a clear success from a macroeconomic viewpoint, as it entailed a significant turnaround from low and unstable growth to a sustained boom. The instability phase that preceded the devaluation was by contrast marked by a series of external shocks, including the groundnuts and phosphates boom, in the wake of the 1974 oil shock (Azam and Chambas, 1999). The subsequent downturn was punctuated by two severe drought periods, in 1978 and in 1983-84, as well as by the world recession of 1980-81. Although Senegal implemented a first stabilization plan as early as 1979, with some support from the Bretton Woods institutions, it is not until 1985 that the government got seriously involved in the adjustment effort (Rouis, 1994, Ka and Van de Walle, 1994). Moreover, a serious banking crisis occurred all across the UEMOA in 1987 and 1988, which seems to have given a "wake-up call" to the political elite of the Zone, entailing the emergence of a genuine "ownership of reforms" in some of these countries (Azam, Biais and Dia, 2004). As a result, structural adjustment really got started in Senegal in the late 1980s, and included among other reforms the privatization of several parastatals (Azam, Dia and N'Guessan, 2002).

In most countries of the CFA Zone, before the 1994 devaluation, the main problem of the "real-side" adjustment policy (i.e. without changing the exchange rate) was the inability of the governments to cut significantly their wage bills. The wages and salaries of the civil servants and the public sector employees have been cut only in some countries, during that period, and only by a marginal percentage. The high level of these wages was correctly perceived as the main adjustment problem by many analysts (e.g. van de Walle, 1991, Azam, 1995, Rama, 1997). This problem had two important dimensions. One was that the government wage bill was then consuming an excessive share of fiscal resources, while these wages were also exerting a strong influence on those of the formal sector. Rama (1997) has shown how the wage rates in the civil service and the public sector play a leading role in the determination of the cost of labor for the whole formal sector, and are thus affecting significantly its competitiveness.

Unfortunately, while reforms were seriously starting in some of the countries of the Zone, the terms of trade of the most important CFA economies deteriorated markedly, and so for several years, from 1987 on (Azam, 1997). In particular, the terms of trade of Côte d'Ivoire deteriorated severely, with a depressing influence on the whole UEMOA area (then UMOA). The early 1990s thus witnessed a relatively disappointing growth experience, which ended up in a serious recession in 1993, affecting more or less the whole UEMOA zone. Together with some uninspired policy decisions, which are spelt out in Azam (1997), this made the 1994 devaluation unavoidable. The latter had been postponed for a long period, and was largely anticipated by the relevant agents in the area.

As shown econometrically by Azam and Wane (1999), the devaluation had little impact on relative consumer prices. Figure 2 depicts the real prices of food, clothing and transport and other services in Dakar, in logarithm. Taken together, these prices account for 79.8 % of the basket of goods included in the CPI. This graph provides a mixed picture of the effects of the devaluation on relative prices. There is some evidence of real depreciation, if one regards clothing as a non traded good. Then, we observe an increase in the real price of food, a tradable good, by a few percentage points. There is a more sizable fall in the real prices of transport, more or less representative of the non tradable service sector, by about 10 %. A similar fall had taken place just before the devaluation. However, the real price of clothing goes even further down, by more than 10 %, while it is hard to believe that this is really a non traded good[1]. Moreover, the transport index is in fact mainly comprised of public transports, which account for 40 % of this item. The data show that this is the price that mainly lagged behind inflation, because it was fully controlled. Lastly, one observes a convergence of the food and transportation indexes at the end of the period, suggesting that the change in relative consumer prices was over at the end of the fourth year after the devaluation. Hence, the examination of these real prices suggests that too much confidence on a growth story emphasizing real exchange rate adjustment would be unwarranted. Moreover, because the relative consumer price changes are at best of short duration, they cannot explain the longer stretch of growth during the post-devaluation boom.

Much more significant is the change in real wages and salaries in the formal sector. The main effect of the devaluation was indeed a highly significant cut in the real wage rates in the formal sector The formal-sector wage cut may have led to a deterioration in the poverty situation of urban areas (Azam, 2004, Azam, Dia, Tsimpo and Wodon, 2005), as has been the case in Côte d'Ivoire and Niger. But the survey data for Senegal used in this paper do not allow a thorough analysis of the dynamics of poverty before and after the devaluation at the national level, because the two high-quality surveys available were both implemented after the devaluation, in 1994/95 (ESAM 1) and in 2001 (ESAM 2). Still, we can analyze the impact on poverty of the growth spur that took place after the devaluation, and analyze whether this post-devaluation boom was pro-poor or not. As shown above at figure 1, the post-devaluation boom was remarkably long lasting. In particular, together with Benin, another democratic regime among the UEMOA countries, Senegal did not experience the recession of the year 2000 that plagued the economies of the zone.

[1] May be the trading margins are the dominant component of the price of clothing, explaining this real fall. However, the clothes "made in Sandaga", the Dakar clothes-producing informal sector, can be found all over West Africa.

In Section 2 of the paper, we provide general background on Senegal's growth experience after the devaluation, suggesting that a public investment boom, made possible by the improved budgetary situation entailed by the devaluation, played a crucial part in boosting growth and keeping it going after 1997. It is only after this additional impulse was given by the government that private investment picked up significantly, turning the post-devaluation boom into a lasting growth episode. Hence, the expected competitive effect of the devaluation did not materialize entirely, as export agriculture did not respond as expected, and its share in GDP shrunk. But in the meantime, its fiscal effect played the central part, through the fall in the real value of the government wage bill, which in turn freed the resources that financed the increased public investment. In other words, the devaluation of the CFA Franc in 1994 generated a public investment boom, and this rise in public investment was subsequently accompanied by an increase in private investment due in part to the attractiveness of Senegal as a place to do business within West Africa.

In turn, higher investment led to higher growth rates and substantial poverty reduction, with the share of the population living in poverty declining from 67.9 % to 57.1 %. However, as shown in Section 3, poverty in urban areas was reduced faster than in rural areas, as most of the investment benefited the manufacturing and services sectors. Also, a few years of poor rainfall in the second half of the 1990s coupled with an initial drop in the real prices of crops in the aftermath of the devaluation probably affected negatively rural incomes. As a result, while virtually all segments of the population (including the rural poor) benefited from improved standards of living in 2001 as compared to 1994, growth was not strictly speaking "pro-poor" because the growth in consumption per equivalent adult in the upper half of the distribution was larger than that observed among the poor. This was observed at the national level as well as within urban areas.

## 2. Patterns of Growth in Senegal After the Devaluation

This section aims at identifying the main determinants of the overall growth observed in Senegal after the devaluation, and the resulting fall in poverty between 1994 and 2001. The analysis starts with a simple sectoral decomposition of GDP growth, which brings out some significant structural change. Berthélemy *et al*. (1996) have shown that the change in the allocation of labor among the different production sectors was the key determinant of aggregate growth in Senegal. The following analysis provides some support to this view.

### *2.1. Production Sector Effects*

As will be discussed in Section 3, a particularly good performance towards poverty reduction has been observed in urban areas after the devaluation. In rural areas by contrast, poverty reduction has been reduced to a lower extent, in part because of a fairly irregular growth path of the agricultural and livestock sector. The latter experienced a serious depression in 1997 and 1998, followed by a brisk recovery in 2000 and 2001.

Figure 3 shows a decomposition of GDP (at constant 1987 prices, in log) over the 1991-2001 decade. It shows that the tertiary sector, which comprises mainly transportation, commerce and other services, experienced a pretty fast growth since the devaluation. In real terms, several of its component sectors experienced some very fast growth episodes during this period, like transportation for example, which grew by 8.1 % per annum on average over 1997-2001. This tertiary sector claims more than half of total GDP in this country (nearly 60

% in fact). It includes also the telecommunication sector, which was profoundly reformed during that period in Senegal, and grew quite fast subsequently (Azam, Dia, and N'Guessan, 2002).

Similarly, the secondary sector experienced a fast growth of output after the devaluation. The chart shows that this sector, which comprises mainly industry and construction and public works (in addition to the relatively negligible mining and oil milling sectors), benefited markedly from the devaluation. It experienced two years of negative growth in 1993 and 1994, during and just after the recession that affected the whole UEMOA area, and recovered briskly after that. In fact, its growth was uninterrupted until 2001.

By contrast, the primary sector, i.e. mainly agriculture and livestock, experienced a slower growth, and its relative share went down. Its growth rate was negative in 1997 and 1998 (- 10.6 % and – 7.4 %, respectively), while it had a very fast recovery in 2000 and 2001, with two digit growth rates (21.3 % and 13.8 %, respectively). These wide fluctuations are largely due to the vagaries of the Sahelian climate, while price effects do not seem to have been very significant determinants of the supply response. This comes out pretty clearly from the following two charts.

Figure 4 represents the level of rainfall on three of the main production areas of the groundnut basin. This chart shows clearly that 1992–93 and 1997-98 were pretty dry years, while 2000-01 were exceptionally good years. By contrast, figure 5 shows that producer prices were recovering from the real shock induced by the devaluation during the period 1997-98. This confirms the well-known result in agricultural economics that price effects on agricultural productions are drawn out, while climatic shocks have immediate effects. On the other hand, the income effects of these real price changes are felt immediately by the farmers[2]. Figure 5 also shows that the real price of millet, which is not exported on the international market, except by cross-border trade, fell in 1993, reflecting the recession observed that year for the whole UEMOA. The fall in the real price of the two export crops at the time of the devaluation suggests that the pass-through rate was pretty low, so that the marketing sector benefited most from this policy move, rather than the farmers. In other words, the tertiary sector benefited from an implicit subsidy from the farmers, in the wake of the devaluation. This probably explains to some extent the fast growth of the tertiary sector observed above, at figure 3. Then, real producer prices picked up somewhat, but hardly recovered their pre-devaluation levels. It is only during the drought years that the real price of groundnut went above its pre-1994 level.

To conclude, two factors would suggest that the pace in the reduction in poverty in the rural sector is likely to have been lower than in urban areas after the devaluation. First, the growth rate in the agriculture and livestock sector was lower than in the secondary and tertiary sectors, in part due to bad weather in selected years in the second half of the 1990s. Second, farmers suffered from a drop in real value for their crops after the devaluation. However, the difficulties in rural areas in the few years after of the devaluation did not prevent the country as a whole to experience a high level of growth. It is among others likely that there was a demand-driven migration into the urban areas, where industry and services were thriving, and this could have helped to reduce rural poverty as well. The drought that

[2] It is likely that the fall in the real prices of the crops that occurred in 1994 resulted in an increase in poverty in rural areas, and an analysis of the household survey data for 1991 and 1994/95 suggests so. However, the poor quality of the 1991 household survey makes it difficult to have full confidence in the results.

took place at the end of the century, which revived certainly the memories of the 1970s and 1980s, also provided some incentive for labor to migrate to the more progressive sectors.

These insights are consistent with those of Berthélemy *et al.* (1996) showing that over the period 1961-1990, the increase in total factor productivity, which can be estimated using an aggregate production function, is in fact entirely due to the reallocation of labor from the low productivity primary sector to the higher productivity secondary and tertiary sectors. Poverty thus probably fell in the rural sector because the least productive farmers migrated to the cities, where they found higher productivity jobs. Hence, in the case of Senegal, it seems that the rural sector can be viewed as a fairly stagnant reserve of labor, somehow in the spirit of the seminal Lewis model (Lewis, 1954). The difference with the latter is that such a diagnosis is true despite the fact that the primary sector is not just a "subsistence sector", but is also exporting a large share of its output. Azam (1993) presents an extension of the Lewis model, motivated by an analysis of Côte d'Ivoire, which brings out the importance for growth of the taxation of the high wages, assumed to accrue to skilled labor, and the productive use of the resulting tax proceeds by the government. The analysis in the next section suggests that the experience of Senegal provides some support to this view, interpreting the outcome of the devaluation as a massive increase in the taxation of the high wages, which was used to boost public investment, with spillover effects on private investments and a gain in overall growth..

### *2.2. The Investment Boom*

Figure 6 shows that the post-devaluation recovery was boosted by a major effort concerning public investment. As a percentage of GDP, it went up from an average share of 4.6 % of GDP in 1991-93 to an average share of 6.8 % of GDP over 1996-2001. The resumption of private investment is also quite remarkable, although its time profile is less smooth. It increased from an average share of 8.9 % of GDP in 1991-93, to an average of 10.6 % of GDP in 1996-2001. It is highly probable that the former played a part in creating the appropriate climate for the latter. The time profile of the private investment share suggests that the devaluation took some time before it elicited a positive response from private investors. This is clearly one of the predictions of the theoretical framework sketched in Azam (2004). Private saving declines in the wake of the devaluation, and because of the low level of intermediation, this affects private investment simultaneously.

However, other mechanisms have also probably been at work. The pre-devaluation slow growth and recession had probably left quite a lot of productive capacity idle, so that firms had to cut significantly in the latter before the creation of new capital stock became a priority. Moreover, the private sector was also waiting for more information to come about the effects of the devaluation, and about the true intentions of the government regarding the management of the post-devaluation boom. The option value of waiting was then probably enhanced by the unprecedented violence taking place in lower Casamance in 1995. This is epitomized by the disappearance of four French tourists between Ziguinchor and Cap Skirring, widely interpreted as a kidnapping by the Casamance rebellion. The military response to this event triggered a lot of violence all over Casamance, with both civilian and military casualties, followed by a relatively calm period until June 1997.

It seems quite likely that the significant increase in public investment, which occurred from 1996 onward, was the true trigger of the private investment recovery. In a financially open economy like Senegal, with a fixed exchange rate, there is no crowding-out effect to be feared, while the demand-boosting and productivity-enhancing effects of public investments

are dominant. This central role of public investment, marking the end of a period of falling private investment, does not mean that the devaluation had no useful effect. It means instead that the positive impact took a more roundabout channel than usually expected.

The improved situation of the government budget, and in particular the fall in the real wages of the civil servants and other government employees, triggered by the devaluation, freed some fiscal resources that the government was able to use for investing. This is the main cause of the investment boom described above. The real wage effect was reinforced by a slight fall in the number of civil servants, which fell from 66,696 in 1994 to 65,259 in 2001, so that the civil service wage bill fell from 7.4 % of GDP in 1994 to 5.2 % in 2001. However, other policy measures have been adopted by the Senegalese government to create an investor-friendly environment. In particular, the tax burden on firms is lighter than elsewhere in comparable countries.

Although it had a self-proclaimed socialist government ever since independence, until the March 2000 election, Senegal has adopted an investor-friendly policy during the course of the reform period, particularly from the end of the 1980s onward. A wave of privatization took place, mainly in the utilities sector, and sent a good signal to investors (Azam, Dia and N'Guessan, 2002). The main incentive comes from the fiscal burden, which is low by African standards. Table 3 represents the scores given to various countries in the UEMOA and its neighborhood by the experts of the Heritage Foundation. This is a composite index that takes into account the highest rate of income tax, as well as the average one, and the most relevant marginal income tax rate for the average tax payer. Additionally, as a check on the credibility of these tax rates, the share of public expenditures in GDP is also taken into account.

Table 1 shows that in general, the UEMOA countries have a slightly more favorable score than the comparison countries, which are taken both from North Africa and from non-UEMOA West Africa. Out of these 15 countries, Senegal has by far the best performance, even among the UEMOA countries. Hence, the boosting effect of the public investment boom described above was supported by a highly favorable tax framework. As a result of the investor-friendly climate that the Senegalese government has created over the last few years of the century, its rating has improved significantly. Since 2001, Senegal is rated $B^+$ by Standard & Poors, a score that only South Africa and Botswana are also getting in Sub-Saharan Africa.

Table 1 also shows the maximum corporate tax rate among the same group of countries. Most of them have a maximum rate of 35 %, with the exception of Niger and Togo, within the UEMOA, which have a slightly higher rate, and the oil producing Algeria and Nigeria, which have a lower rate aimed at compensating for the "Dutch Disease" effect due to oil exports, as well as Ghana. The latter is also a coastal country with a potential comparative advantage in non traditional exports, like Senegal, which pursues quite an aggressive policy aimed at attracting foreign investors.

A further relevant piece of information regarding the investment incentive structure is provided by figure 7. It shows the ratio of public debt to GDP, which is a major indicator of macroeconomic stability in the CFA Zone (Azam, 1997). This ratio can be viewed by investors as a threat of future tax increases, according to the mechanisms described in Cohen (1993) and Eaton (1993). The intuition for this effect is that a high public debt ratio now may be regarded by potential investors as entailing a future increase in taxation, for financing the corresponding debt service. This chart clearly shows that the Senegalese government made a

sustained effort for reducing that threat, the so-called "debt overhang" effect, as the ratio fell from 86.2 in 1994 to 65.8 in 2001. A major dent in this series shows up in 1998, when Senegal reached a Paris Club agreement worth about CFAF 23 billion. Moreover, Senegal will benefit from some debt reduction within the HIPC initiative, as decided in June 2000. The latter will be effective only outside the period under analysis, but has probably a positive effect on expectations. All these developments are taking place against a background of sustained reduction of the debt-to-GDP ratio.

Senegal thus comes out as a particularly attractive investment destination among the countries from North and West Africa. It does not seem that the few breaches of privatization contracts have much damaged this country's good reputation. An example is provided by the re-negotiation of the licenses for the mobile telephone operators Alizée and Sentel (see Azam, Dia and N'Guessan, 2002), which ended up in a surcharge being imposed on them. Its attractiveness is also supported unwittingly by Côte d'Ivoire, whose political instability (the 1999 coup d'état, the 2000 uprising, and the civil war as of 2002) has destroyed its own attractiveness. In many ways, Senegal is left as the unique investment opportunity among Francophone countries.

It is also important to note that the sustained growth of the post-devaluation boom was not hampered by a shortage of human capital. Berthélemy et al. (1996) have a fairly negative diagnosis about the education policy pursued by Senegal between independence and the early 1990s. But they acknowledge that the enrollment rate has increased massively. Between 1960 and 1990, it went from 22 %to 57 % in 1990, as far as primary education is concerned, from 2 % to 16 %, in secondary education. However they estimate that the quality of education is poor and deteriorating, and not fitted for sustaining economic development. They criticize in particular the Senegalese education policy for putting too much emphasis on classical education. By contrast, Diagne et al. (2002) estimate that human capital was not a brake on the resumption of growth after the devaluation. They find a positive and nearly significant impact of enrolment in primary education on growth, with a nine-year lag. This effort has not been reduced during the post-devaluation boom, and the gross rate of enrolment went from 54.3 % in 1993 to 69 % in 2000 (Loum, 2001).

## 3. Poverty Reduction Between 1994 and 2001

The discussion of the previous section suggests that poverty reduction is likely to have been larger in Senegal's urban areas after the devaluation. This section tests this hypothesis by providing measures of poverty for Senegal for the survey years 1994/95 and 2001. The overall poverty measures and the measurement methodology follow the work by Siaens et al. (2005), which was used in a recent report prepared jointly by the Republic of Senegal and the World Bank (2004). In addition, we provide poverty measures for various groups of households. Then, in Section 3.2, we analyze whether Senegal's growth experience has been pro-poor. Not surprisingly, we find that growth was not strictly speaking pro-poor, even though the poor did benefit a lot from growth. Finally, we briefly comment in Section 3 on the perceptions of poverty of the population, again drawing on work by Siaens at al. (2005).

### *3.1. Poverty Trend*

We restrict here our attention to the family of decomposable measures, which allow the partitioning of the population according to various criteria, while providing a consistent set of poverty measures for each group in such partitions. This approach provides some

deeper insights into the changes in poverty, by bringing out the change in poverty occurring within some selected groups, deemed relevant because of the criteria used for partitioning (socio-economic categories, gender, etc.).

Two main measures have emerged from the literature devoted to the measurement of poverty, among the decomposable ones. The most widely used is the so-called FGT measure, due to Foster *et al.* (1984). Denote by $y_i$ the consumption level per equivalent adult of household *i*, and assume that the individuals are ordered by increasing income, and denote by *z* the poverty line. Household *i*'s consumption gap may be defined as the percentage shortfall of consumption level below the poverty line: $G_i = (z - y_i)/z$. More generally, the FGT measures are given by:

$$P_\alpha = \left(\frac{1}{n}\right)\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)^\alpha,$$

where $n$ is the size of the population, $q$ the index of the individual whose consumption level lies just on the poverty line, and $\alpha$ is a parameter capturing the analyst's concern for the depth of poverty. If $\alpha = 0$ is chosen, then this index is just the head-count index $H = q/n$. If $\alpha = 1$ is chosen instead, the poverty measure that we get is the product of the headcount index by the average consumption gap among the poor $H\,\overline{G}$, where $\overline{G} = \sum_{i=1}^{q} G_i/q$. This index thus takes into account not only the incidence of poverty, but its average depth also. More emphasis can be put on the depth of poverty by weighing each individual's consumption shortfall by itself, i.e. by choosing $\alpha = 2$. These three measures are computed for Senegal in table 3 for 1994 and 2001, and are respectively presented under the headings FGT0 (head-count), FGT1 (consumption gap) and FGT2 (distribution sensitive).

Another decomposable poverty measure has been re-discovered recently, originally created by Watts (1968). This Watts measure is:

$$W = \left(\frac{1}{n}\right)\sum_{i=1}^{q}\log\left(\frac{z}{c_i}\right).$$

By using a Taylor expansion of $\log c_i$ about *z*, up to the third order, one can show that $W \cong FGT1 + (1/2)FGT2 + (1/6)\,FGT3$, suggesting that the Watts measure is in fact highly sensitive to the distribution of income among the poor.

Table 2 presents the results of the computations of these different poverty measures for Senegal over the period 1994-2001. As mentioned earlier, the poverty lines used are the "official" ones computed for the *Direction de la Prévision et de la Statistique* and the World Bank by Siaens et al. (2004). They are defined according to the "cost of basic needs" approach, i.e. using a fixed basket of goods, the same one in 1994 and 2001. Three different poverty lines have been defined in order to take due account of the differential cost of living in Dakar, the other urban areas, and the rural sector, respectively. In all the decompositions presented in table 3, each household's consumption shortfall has been computed using the relevant poverty line, depending on the household's location.

The table shows that the growth observed after the devaluation had a dramatic impact towards the reduction of poverty. At the national level, the headcount index decreased from 67.8 % in 1994/95 to 57.1 % in 2001, which represents a reduction in the proportion of the population in poverty of 10.8 percentage points (the share of households in poverty decreased similarly, from 61.4 % to 48.5 %.) The estimates suggest that poverty measures are much higher in rural areas than in urban areas as expected, and lower in Dakar than in other urban areas. Importantly, poverty decreased more in urban areas than in rural areas, as expected given the discussion in the previous section. The trend for the poverty gap, the squared poverty gap, and the Watts measures are similar to those observed for the headcount. Inequality has apparently increased slightly, not only at the national level (again as expected given the more rapid growth in urban centers), but also within urban and rural areas.

In table 3, several partitions of the population are presented, defining the relevant groups according to their sector of activity, their socio-economic category (type of occupation), location, gender of the household head, and literacy level. It is remarkable, but not surprising given the overall high level of growth in the country, that poverty has fallen in all the groupings so defined over this period. In most cases, the fall in poverty is large, but there are exceptions. First, the reduction in poverty observed for Government employees has been lower than for other groups, probably because Government employees suffered the most from the devaluation (while immediately after the devaluation, corresponding to the period of the first survey in 1004/95, these employees may have been able to maintain high levels of consumption thanks to savings, this ability to cope with the loss in real wages must have faded overtime, leading to higher poverty in this group for a while before it started to benefit as did other groups from the growth observed after the devaluation). The reduction in poverty among households self-employed in farming activities was also limited, probably for the reasons mentioned above, including the impact of poor weather in selected years, the fact that growth was somewhat lower in agriculture than in other sectors, and the fact that it took some time for nominal crop prices to adjust to the devaluation.

Table 4 provides decompositions of the changes in poverty due to growth in consumption per equivalent adult and changes in inequality (see Datt and Ravallion, 1994, on the methodology). As expected, the fact that there was an increase in inequality limited to some extent the reduction in poverty that was obtained through growth. At the national level for example, an additional reduction in the headcount index of poverty of about 2 percentage points would have been obtained if inequality had not increased.

The fact that inequality increased tends to suggest that growth in consumption was higher in the upper part of the distribution. Table 5 and Figures 8 and 9 provide an analysis of the extent to which growth did benefit the poor, as summarized by computing the pro-poor growth rate over the post-devaluation period, and presenting the Growth incidence curve (Ravallion and Chen, 2003) at the national level and for urban areas. The pro-poor growth rate is computed as the mean growth rate for the poor, or the percentage change in the Watts index of poverty. It can be clearly seen that the rate of growth in the consumption per equivalent adult at the bottom of the distribution has been below that observed for the population as a whole, suggesting that growth has not been strictly speaking pro-poor. This is confirmed by Figures 8 and 9 that provide the growth incidence curves at the national level and in urban areas. The growth rates in consumption are much lower at the bottom of the distribution than in the upper half of the distribution, confirming that growth has been stronger among better off households. Of course, the fact that growth was not “pro-poor” does not mean that poverty was not reduced, even among the poor. Rather, the conclusion is

simply that proportional gains in consumption after the devaluation were higher for the non-poor than for the poor.

### *3.2. The Persistence of Perceived Poverty*

Despite the remarkable fall in poverty documented above, based on the change in consumption experienced by Senegalese households over 1994-2001, perceived poverty has increased significantly in this country. This result comes out of the EPPS 2001 survey (*Enquête sur la perception de la pauvreté au Sénégal*). This is a survey on subjective perceptions of poverty by Senegalese households, which used the same sample as ESAM 2.

Siaens and Wodon (2004) show that a vast majority of the household surveyed did not perceivfse any improvement in the poverty situation. Indeed more than 85 % of them estimate that poverty remained stable or deteriorated during the 5 years preceding the survey. This is particularly noticeable among the "objective" poor or among those who perceive themselves as poor. Almost two thirds of the sample households perceive themselves as poor, which is a proportion of the same order of magnitude as the objective (i.e., consumption-based) estimates of poverty. However, the survey shows that these two groups of households are somewhat different, as the overlap between the two categories is imperfect, and a significant share of the objectively poor did not perceive themselves as poor. Note that this imperfect overlap between subjective and objective poverty is not based on a conceptually different view about poverty. Indeed, more than 50 % of the respondents to the survey consider "the inability to feed one's family" as the main correlate of poverty, which broadly consistent with the consumption-based approach for measuring poverty adjusted by the number of adult equivalent household members used to measure objective poverty.

The data from the EPPS 2001 survey suggests that there is a strong persistence in the perception of poverty. This disconnection between the subjective and the objective changes in poverty has been observed in other West African countries, and it raises a political problem. In a democratic country like Senegal, this disconnection may reduce the incentive faced by the government to actively fight poverty, as the resulting improvement may not be correctly perceived as such by the voters. President Diouf, who presided over the implementation of the growth-boosting policy in the late 1990s, was beaten at the March 2000 elections, while a sense of "crisis" was widespread in the electorate. However, nothing proves that the perception by the voters of the absence of a positive change in poverty played any part in determining this outcome.

## 4. Conclusion

In 1994, the devaluation of the CFA Franc in Senegal as in other UEMOA countries led to a drop in the real wages of formal, and especially public sector workers. During the three years following the devaluation, despite the fast recovery of GDP growth, and the fall in the real wage rates in the urban sector, private investment did not pick up. It is only after 1996, when the government used the fiscal resources freed by the reduction in the real value of its wage bill for financing a major increase in public investment, that the former picked up. The resulting investment boom stretched out the post-devaluation boom in time, and managed to tide the Senegalese economy over the regional recession of the year 2000. During this phase, from 1996 to 2001, the poverty effect of the accelerated growth was spectacular.

The road which led from a cut in the incomes of the rich to an increase in the incomes of the population as a whole was complex. This is probably true also in most countries of the world. The direct impact, which was dominant in the short run but not observed as such in this paper since we did not have nationally representative survey data prior to the devaluation, entailed a fall in the incomes, especially among formal sector workers, including workers from the public sector. However, the indirect subsequent effect through public and private investment did reduce poverty in the long run. The latter effect is by no means mechanical, and many other governments could have wasted the fiscal windfall created by the devaluation. The bottom line is that poverty reducing growth occurred at the end of the century because the government engineered a sustainable change in the *functional* distribution of income, from wages to profits. This change was obtained by an increase in public investment and the creation of an "investor-friendly" environment, based on low corporate taxation and low public debt. While the growth observed after the devaluation was not "pro-poor" strictly speaking, all segments of the population benefited from higher standards of living in 2001, as compared to those that prevailed in 1994.

This core lesson of Senegal's growth and poverty reduction experience is simply that profitability fuels private investment, and the latter is the engine of sustained growth. This simple message has been emphasized time and again in the literature (e.g. Malinvaud, 1980). As the former chancellor of West Germany Helmut Schmit used to say: *"The profits of today are the investments of to morrow and the investments of to morrow make the employment of the day after to morrow"* (cited in Malinvaud, 1980, p.4). As poverty reduction may lag by some time behind improvements in profitability and growth, it thus takes a sustained effort in favor of profitability to pull a significant number of people out of poverty. The Senegalese experience shows that devaluation was one of the possible means that could be used for that purpose, acting like a tax on formal sector wages, which had been too high for some time. Senegal's experience also suggests that efficient public investment was quite important, as it was important to cut the public debt overhang and improve the business environment.

These are probably not the only ways that profitability can be supported, and other means to the same end should be sought in different institutional and political settings. The unprecedented stretch of fast economic growth that resulted from this strategy managed to pull a large share of the Senegalese population out of poverty. Unfortunately, from the point of view of the incumbent government, the objective reduction in poverty was not correctly perceived by the voters. This was shown by the survey performed in 2001 on the subjective perception of poverty. Maybe, in a democratic polity like Senegal, one of the political challenges faced by administrations is to find a strategy for reducing the subjective as well as objective perceptions of poverty. More generally, subjective perceptions may matter as much as objectively measured trends in standards of living in order to achieve genuine "ownership" of long-term poverty reduction policies in democratic countries.

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**Table 1 : Fiscal Burden Scores and Maximum Corporate Tax Rate, 2003**

| UEMOA Members | Fiscal Burden Score | Other African Countries | Fiscal Burden Score |
|---|---|---|---|
| Senegal | 2.5 | Gambia | 3 |
| Mali | 3 | Ghana | 3.5 |
| Niger | 3 | Guinea | 3 |
| Togo | 3 | Nigeria | 3.5 |
| Benin | 3.5 | Algeria | 3.5 |
| Burkina Faso | 3.5 | Morocco | 4 |
| Côte d'Ivoire | 3.5 | Tunisia | 4 |
| Guinea-Bissau | 4 | | |
| UEMOA Members | Maximum Corporate Tax Rate (%) | Other African Countries | Maximum Corporate Tax Rate (%) |
| Senegal | 35 | Gambia | 35 |
| Mali | 35 | Ghana | 32.5 |
| Niger | 42.5 | Guinea | 35 |
| Togo | 40 | Nigeria | 30 |
| Benin | 35 | Algeria | 30 |
| Burkina Faso | 35 | Morocco | 35 (39.6 for banks and insurance) |
| Côte d'Ivoire | 35 | Tunisia | 35 |
| Guinea-Bissau | 35 (50 for oil) | | |

Source : Heritage Foundation (http://www.heritage.org/research/features/index/), with tax data originally from Ernst & Young *2002 Worldwide Corporate Tax Guide*. Note : The fiscal burden index is coded from 1 (low taxation of profits and incomes) to 5 (high taxation).

**Table 2 : Mean consumption, poverty and inequality measures, Senegal 1994/95 and 2001**

| | Dakar | Urban | Rural | National |
|---|---|---|---|---|
| | 1994/95 | | | |
| Sample size (number of households) | 1,098 | 865 | 1,313 | 3,276 |
| Mean consumption per person | 1,177.3 | 697.4 | 387.4 | 632.4 |
| Mean consumption per equivalent adult | 1,416.2 | 857.3 | 495.7 | 781.3 |
| Headcount index | 56.4% | 70.7% | 70.9% | 67.8% |
| Poverty gap | 17.7% | 24.4% | 25.3% | 23.5% |
| Squared poverty gap | 7.4% | 10.8% | 11.7% | 10.6% |
| Watts poverty index | 23.5% | 33.0% | 35.1% | 32.3% |
| Gini index of inequality | 0.3663 | 0.3403 | 0.2934 | 0.3258 |
| | 2001 | | | |
| | Dakar | Urban | Rural | National |
| Sample size (number of households) | 1,977 | 1,397 | 3,191 | 6,565 |
| Mean consumption per person | 1,334.0 | 778.2 | 391.1 | 710.3 |
| Mean consumption per equivalent adult | 1,638.8 | 1,034.4 | 538.9 | 919.8 |
| Headcount index | 42.0% | 50.1% | 65.2% | 57.1% |
| Poverty gap | 12.0% | 16.1% | 21.4% | 18.3% |
| Squared poverty gap | 4.7% | 6.9% | 9.4% | 7.9% |
| Watts poverty index | 15.6% | 21.7% | 29.0% | 24.6% |
| Gini index of inequality | 0.3728 | 0.3523 | 0.3011 | 0.3417 |

Source: Authors' estimation, following methodology in Siaens et al. (2004)

**Table 3 : Headcount index of poverty by sub-group, Senegal 1994/95 and 2001**

| | WATTS | | FGT 0 | | FGT 1 | | FGT 2 | |
|---|---|---|---|---|---|---|---|---|
| | 1994 | 2001 | 1994 | 2001 | 1994 | 2001 | 1994 | 2001 |
| **SECTOR OF ACTIVITY** | | | | | | | | |
| Government | 12.16 | 8.31 | 31.30 | 28.09 | 9.49 | 6.82 | 3.69 | 2.14 |
| Parastatal or Private Company | 33.27 | 16.99 | 70.48 | 43.45 | 24.34 | 12.80 | 10.92 | 5.24 |
| Self-employee or Family Helper | 51.04 | 26.94 | 88.18 | 61.53 | 36.23 | 19.94 | 18.03 | 8.68 |
| Others | 34.23 | 24.20 | 68.18 | 55.96 | 24.42 | 18.14 | 11.48 | 7.72 |
| Unknown | 26.51 | 23.12 | 64.80 | 51.43 | 20.05 | 17.68 | 8.23 | 7.30 |
| **SOCIO-ECONOMIC CATEGORY** | | | | | | | | |
| Self-employed Non-Farming | 29.51 | 24.31 | 69.29 | 56.22 | 22.26 | 18.19 | 9.35 | 7.74 |
| Self-employed Farming | 36.94 | 30.31 | 73.98 | 69.03 | 26.62 | 22.48 | 12.34 | 9.76 |
| Management | 5.71 | 5.19 | 21.06 | 19.24 | 4.78 | 4.27 | 1.39 | 1.31 |
| Intermediary Professions | 10.38 | 6.91 | 32.76 | 19.10 | 8.37 | 5.12 | 2.87 | 2.22 |
| Workers | 36.24 | 23.77 | 74.90 | 56.91 | 26.61 | 17.61 | 12.05 | 7.58 |
| Employees | 9.07 | 7.57 | 27.48 | 23.00 | 7.40 | 6.16 | 2.44 | 2.05 |
| Others | 34.10 | 23.65 | 68.73 | 54.67 | 24.38 | 17.58 | 11.39 | 7.58 |
| **REGION** | | | | | | | | |
| Dakar | 23.50 | 15.65 | 56.39 | 41.98 | 17.74 | 12.04 | 7.44 | 4.72 |
| Others Cities | 33.01 | 21.71 | 70.71 | 50.09 | 24.40 | 16.10 | 10.79 | 6.92 |
| All Urban Areas | 27.88 | 18.44 | 62.98 | 45.72 | 20.81 | 13.91 | 8.98 | 5.74 |
| Rural | 35.12 | 28.95 | 70.94 | 65.16 | 25.27 | 21.44 | 11.69 | 9.36 |
| **GENDER** | | | | | | | | |
| Male HH | 32.89 | 26.02 | 68.70 | 59.54 | 23.94 | 19.36 | 10.84 | 8.34 |
| Female HH | 28.98 | 17.40 | 63.04 | 44.79 | 21.26 | 13.07 | 9.49 | 5.39 |
| **LITERACY** | | | | | | | | |
| Literate | 25.12 | 20.05 | 58.41 | 48.68 | 18.91 | 15.07 | 7.96 | 6.29 |
| Non-Literate | 36.75 | 27.38 | 73.40 | 62.27 | 26.41 | 20.31 | 12.29 | 8.81 |
| Unknown | 19.33 | 23.17 | 61.58 | 47.41 | 14.49 | 17.77 | 5.92 | 7.44 |
| **SENEGAL** | 32.30 | 24.60 | 67.83 | 57.10 | 23.53 | 18.32 | 10.63 | 7.86 |

Source: Authors' estimation, following methodology in Siaens et al. (2004)

**Table 4 : Growth-inequality decomposition of changes in poverty, Senegal 1994/95 and 2001**

| | 1994 | 2001 | Change | Growth component | Redistribution component | Residual |
|---|---|---|---|---|---|---|
| | **Headcount Index of poverty** | | | | | |
| **National** | | | | | | |
| Base year 1994 | | | | -13.15 | 2.03 | 0.39 |
| Base year 2001 | 67.84 | 57.11 | -10.73 | -12.76 | 2.43 | -0.39 |
| Average effect | | | | -12.96 | 2.23 | 0.00 |
| **Urban** | | | | | | |
| Base year 1994 | | | | -15.45 | -1.25 | -0.56 |
| Base year 2001 | 62.98 | 45.72 | -17.26 | -16.02 | -1.81 | 0.56 |
| Average effect | | | | -15.74 | -1.53 | 0.00 |
| **Rural** | | | | | | |
| Base year 1994 | | | | -7.59 | 1.41 | 0.4 |
| Base year 2001 | 70.94 | 65.16 | -5.78 | -7.19 | 1.81 | -0.4 |
| Average effect | | | | -7.39 | 1.61 | 0 |
| | **Poverty gap** | | | | | |
| **National** | | | | | | |
| Base year 1994 | | | | -7.40 | 2.24 | -0.05 |
| Base year 2001 | 23.53 | 18.32 | -5.21 | -7.45 | 2.19 | 0.05 |
| Average effect | | | | -7.43 | 2.22 | 0.00 |
| **Urban** | | | | | | |
| Base year 1994 | | | | -7.68 | 0.39 | 0.39 |
| Base year 2001 | 20.81 | 13.91 | -6.90 | -7.29 | 0.78 | -0.39 |
| Average effect | | | | -7.48 | 0.58 | 0.00 |
| **Rural** | | | | | | |
| Base year 1994 | | | | -4.51 | 0.75 | -0.064 |
| Base year 2001 | 25.27 | 21.44 | -3.83 | -4.58 | 0.68 | 0.064 |
| Average effect | | | | -4.54 | 0.71 | 0 |
| | **Squared Poverty gap** | | | | | |
| **National** | | | | | | |
| Base year 1994 | | | | -4.01 | 1.53 | -0.30 |
| Base year 2001 | 10.63 | 7.86 | -2.78 | -4.31 | 1.23 | 0.30 |
| Average effect | | | | -4.16 | 1.38 | 0.00 |
| **Urban** | | | | | | |
| Base year 1994 | | | | -4.01 | 0.69 | 0.08 |
| Base year 2001 | 8.98 | 5.74 | -3.25 | -3.93 | 0.76 | -0.08 |
| Average effect | | | | -3.97 | 0.72 | 0.00 |
| **Rural** | | | | | | |
| Base year 1994 | | | | -2.56 | 0.32 | -0.09 |
| Base year 2001 | 11.69 | 9.36 | -2.33 | -2.65 | 0.23 | 0.09 |
| Average effect | | | | -2.61 | 0.27 | 0 |

Source: Authors' estimation, following methodology in Siaens et al. (2004)

**Table 5 : Rate of pro-poor growth, Senegal 1994/95 and 2001**

| **National** | | **Urban areas** | |
|---|---|---|---|
| Growth rate in the mean | 2.59 | Growth rate in the mean | 2.9 |
| Growth rate at median | 1.99 | Growth rate at median | 2.89 |
| Mean percentile growth rate | 2.16 | Mean percentile growth rate | 2.71 |
| | | | |
| Headcount index | Rate of pro-poor growth | Headcount index | Rate of pro-poor growth |
| 10 | 1.88 | 10 | 1.38 |
| 15 | 1.61 | 15 | 1.77 |
| 20 | 1.5 | 20 | 2 |
| 25 | 1.46 | 25 | 2.15 |
| 30 | 1.46 | 30 | 2.27 |
| 40 | 1.53 | 40 | 2.48 |
| 50 | 1.61 | 50 | 2.59 |
| 100 | 2.12 | 100 | 2.67 |

Source: Authors' estimation, following methodology in Siaens et al. (2004)

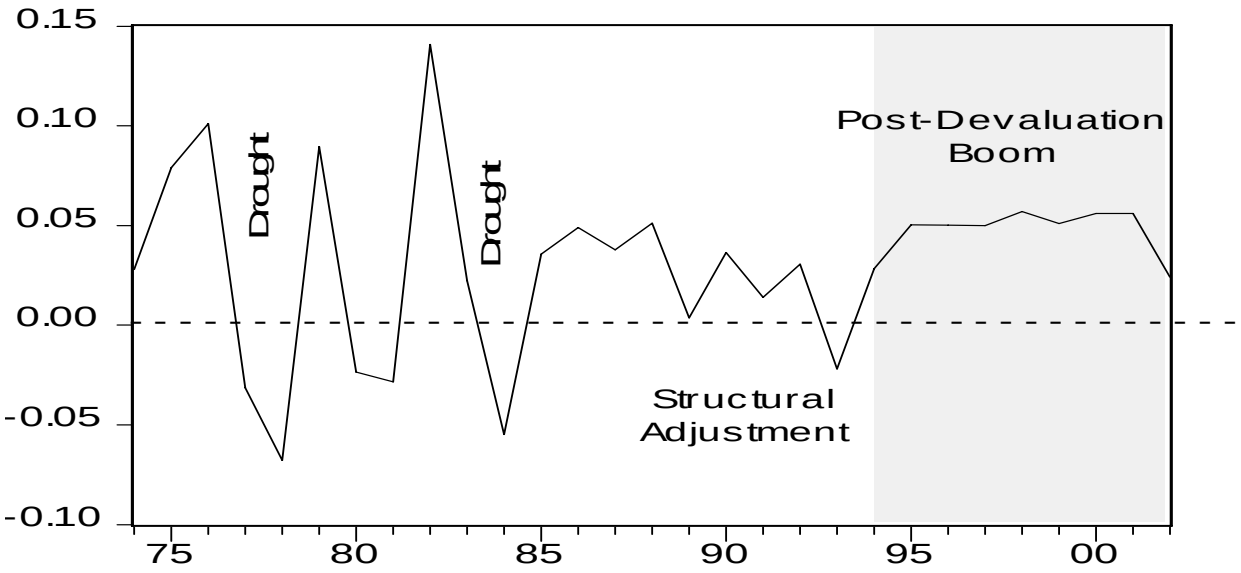


**Figure 1: Senegal's Growth Experience 1974-2002**

**(% per annum)**

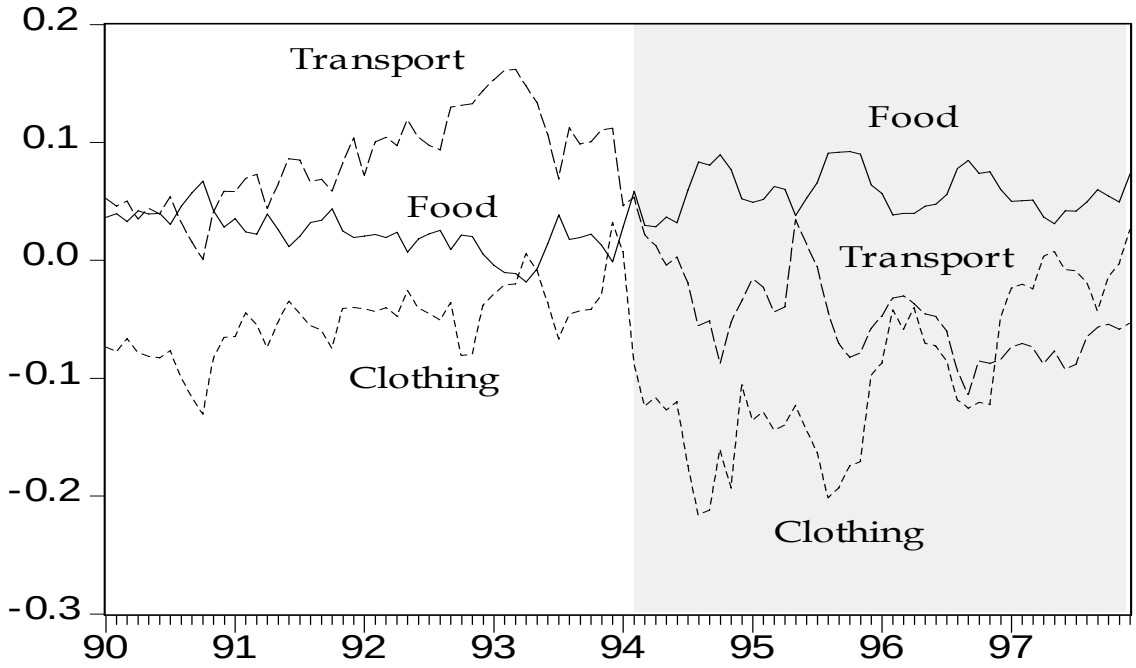


**Figure 2 : Real Consumer Prices**

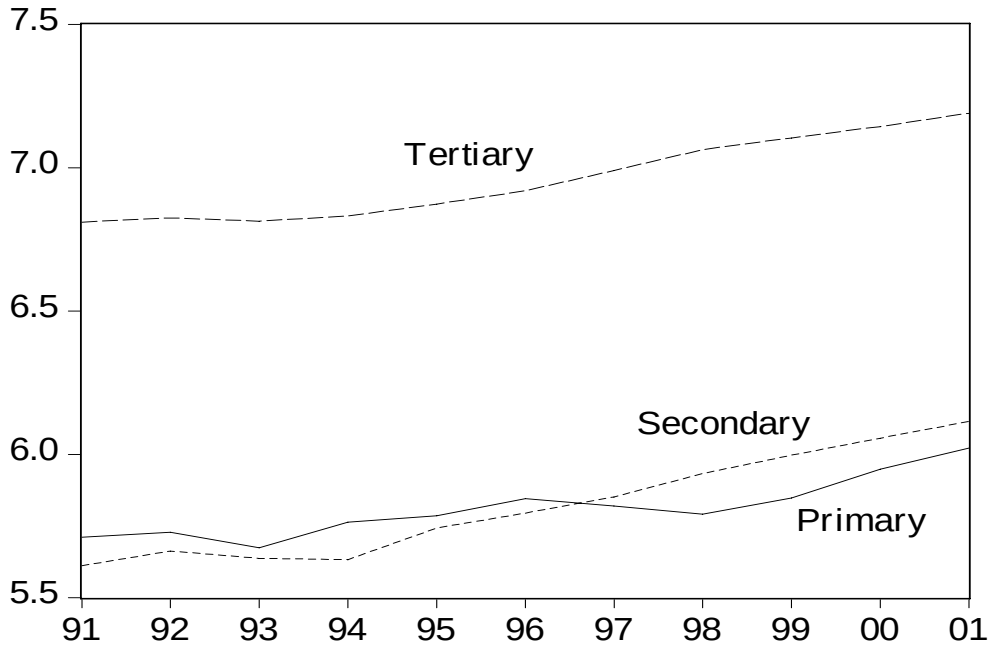


**Figure 3: GDP per Sector (1987 Constant CFA F)**

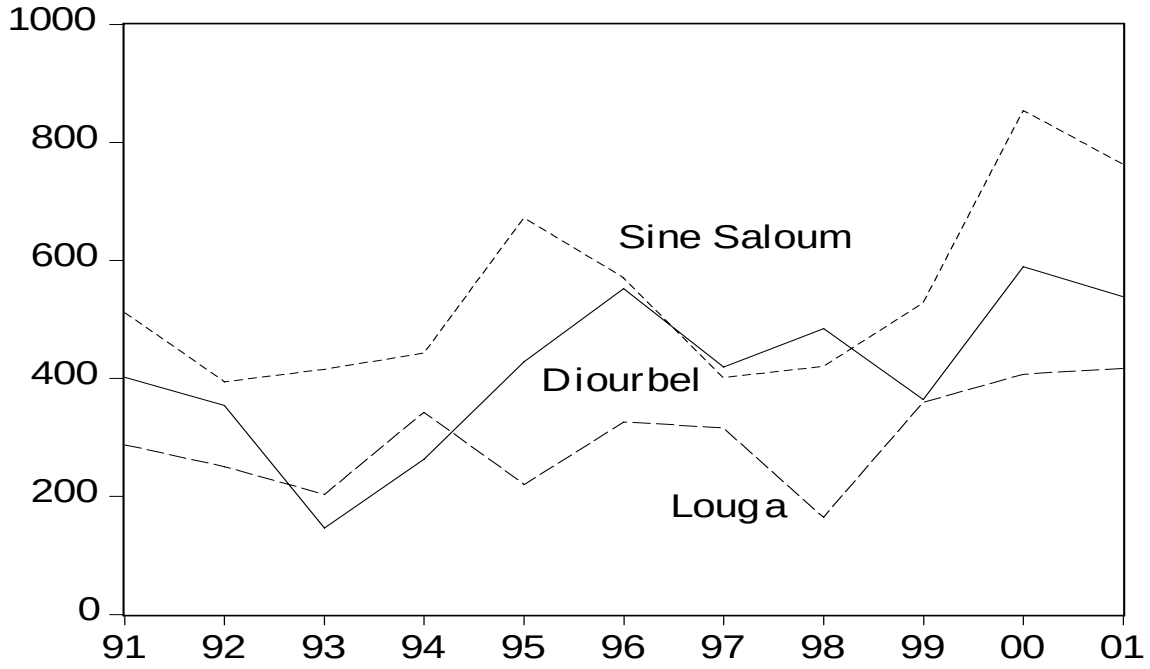


**Figure 4: Rainfall on the Groundnut Basin**

**(millimeters during the rainy season (May-October) preceding the crop year shown)**

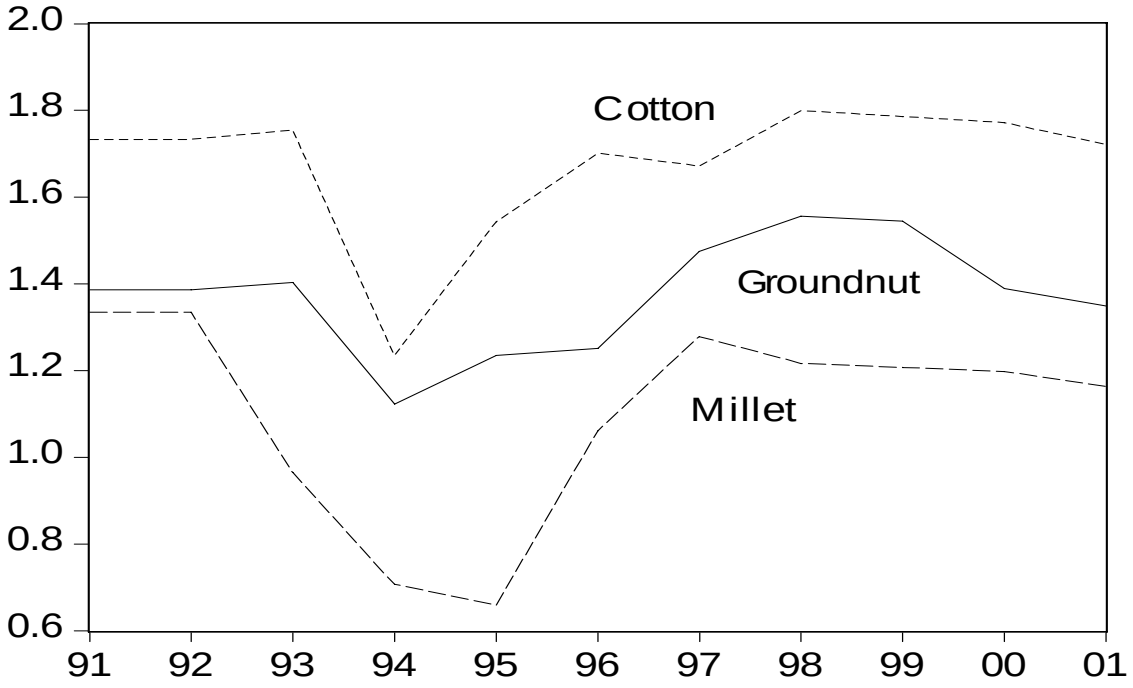


**Figure 5: Real Producer Prices**

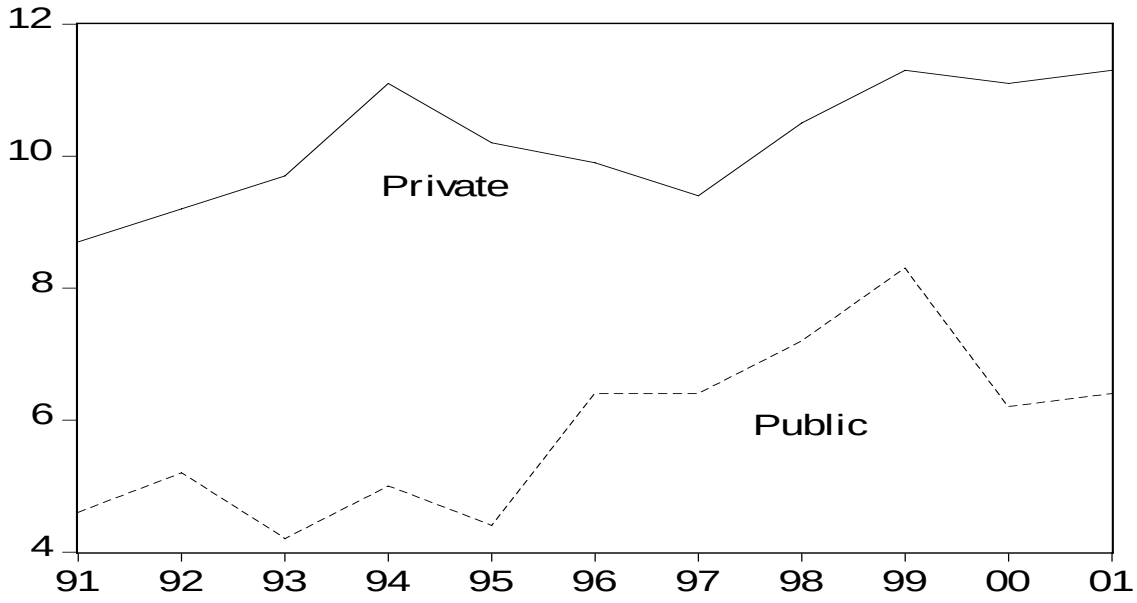


**Figure 6: Private and Public Investment (% of GDP)**


**Figure 7: Public Debt to GDP Ratio (%)**

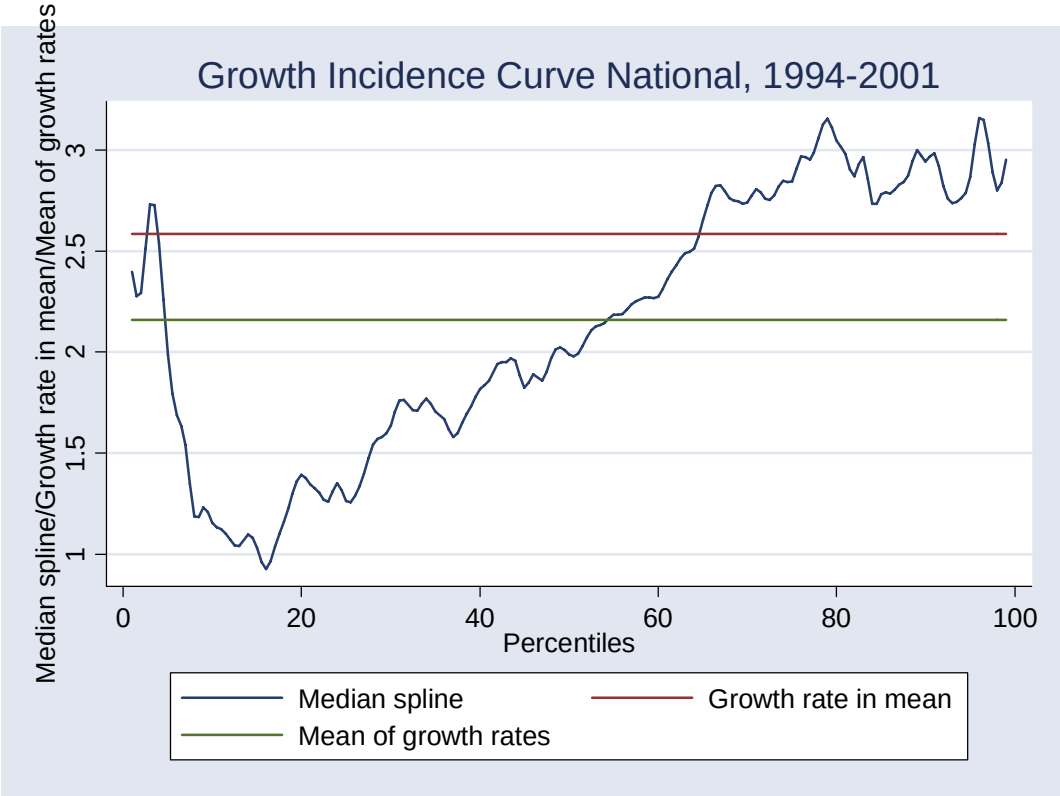


**Figure 8: Pro-poor growth diagnostic, national**

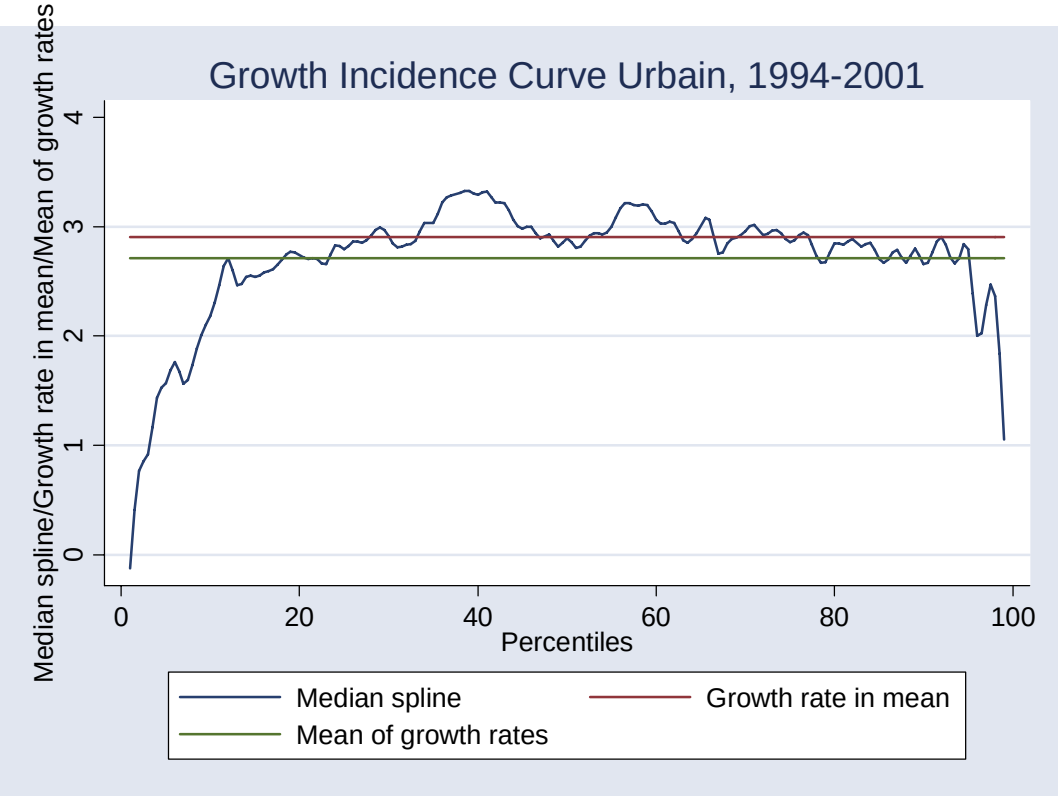


**Figure 9: Pro-poor growth diagnostic, urban**