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## Growth, poverty, and inequality: The case study of Cameroon

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## **Growth, poverty, and inequality**

The case study of Cameroon

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**Abstract:** The purpose of this paper is to analyse the growth performance of the Cameroonian economy from independence in 1960 to date, and then to use this as a background for the analysis of poverty, inequality, and non-monetary outcomes. The analysis of poverty and inequality uses the microeconomic data from three comparable and nationally representative Cameroonian household surveys that were conducted respectively in 1996, 2001, and 2007. These objectives are complemented by an analysis of the four Demographic Health Surveys conducted in Cameroon by Macro International and the National Institute of Statistics of Cameroon in 1991, 1998, 2004, and 2011. This analysis puts more emphasis on spatial differences. We also provide some policy recommendations which generally focus on poverty reduction, especially in disadvantaged regions of the country and on the promotion of a stronger and sustainable economic growth in Cameroon.

**Keywords:** Growth, poverty, inequality, spatial differences, Cameroon

**JEL classification:** I31, I32, O40

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## 1 Introduction

Cameroon, like the majority of developing countries, is witnessing challenges linked to the persistence of poverty which eventually constitute a source of social conflict and vulnerability. In this regard, one of the country's most pressing social development priorities is the need to achieve significant and durable results in the reduction of poverty. Poverty-reduction strategies can be improved not only by an in-depth analysis of the triggers of economic growth, but also by examining the links between economic growth, inequality, and poverty reduction.

### 1.1 Objectives of the study

The objectives of this study are to:

- i) Analyse the main characteristics of growth in the Cameroonian economy during the period 1960–2011, and to examine the evolution of household welfare and poverty during the period 1996–2007, using the data of three household surveys, which are comparable and representative at the national level, in addition to four Demographic Health Surveys (DHS) conducted in Cameroon by Macro International and the National Institute of Statistics (NIS) of Cameroon for four years, namely 1991, 1998, 2004, and 2011.<sup>1</sup> Our goal here is to determine at the national and regional levels not only how the incidence and extent of poverty have evolved, but also the trends in expenditure inequality during the period 1996–2007. Of course, the fluctuations of growth promote certain areas or regions and discriminate against others. It is therefore in the interest of the country's economic decision makers to identify those areas or regions with a view to targeting those that most need government assistance.
- ii) Examine the links between economic growth, poverty, inequality, and non-monetary welfare outcomes during the period 1996–2007. In effect, although it is generally accepted that economic growth has a positive impact on poverty, an increase in income inequality may reduce the impact of economic growth on poverty reduction, hence the need to examine this link in Cameroon over the study period.

### 1.2 Methodology and data

The evolution of monetary poverty is examined with the help of FGT poverty indices (Foster et al. 1984), the Watts poverty index (Zheng 1993), and first-order stochastic dominance curves (Ravallion 1994; Davidson and Duclos 2000). Moreover, trends in rural, urban, and regional inequalities are analysed using the Gini coefficient, and three measures of the class of generalized entropy inequality measures (Kakwani 1980; Shorrocks 1980, 1984; Cowell 1995). The link between growth, inequality, and poverty is analysed both with the help of growth incidence curves (see Ravallion and Chen 2003; McKay 2007; and the method of Datt and Ravallion 1992) on the decomposition of changes in poverty over time into growth and redistribution components.

This study uses two types of data, namely the macroeconomic data of the national accounts such as presented by the NIS of Cameroon, and the microeconomic data which are primary data derived from Cameroonian household surveys and from DHS. The data on gross domestic product (GDP)

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<sup>1</sup> See Appendix 1 for the presentation of the three household surveys and their comparisons.

and sectoral GDP come from the national accounts. The data on consumption poverty and income inequality come from the three Cameroonian household surveys, namely ECAM1, ECAM2, and ECAM3 which were carried out by the NIS of Cameroon in 1996, 2001, and 2007, respectively. The four DHS surveys conducted in 1991, 1998, 2004, and 2011 are used as the chief source of indicators on non-monetary welfare outcomes.

Although there is a small difference in the conception of the questionnaires, the three ECAM surveys are comparable in terms of their main objective which was to measure consumption poverty at a point in time. They contain detailed information on the expenditure on and consumption of food products. The ECAM2 and ECAM3 surveys have samples of 10,992 and 11,369 households, while ECAM1's sample contains only 1,731 households. In the three surveys, the sample is representative of Cameroon taken as a whole and of the rural and urban areas of the country's ten regions as well as its two largest cities, namely Yaoundé (the political capital) and Douala (the economic capital); but sample size means that only ECAM2 and ECAM3 can be disaggregated to the level of the ten regions and two main cities.

After the introduction, the rest of this study is organized into five sections. In Section 2, we provide a description of Cameroon's economic and social development during the period 1960–2009, while Section 3 provides an analysis of the sources of Cameroon's economic growth. In Section 4, we present and discuss aggregate trends in poverty, inequality, and non-monetary outcomes at the national level, focusing on patterns of change over the period. Section 5 then presents a more detailed analysis of consumption poverty and inequality, with a strong focus on spatial differences; while Section 6 presents a similar analysis in relation to non-monetary indicators, based on the DHS data. Finally, Section 7 concludes based on the results of the preceding sections and makes policy recommendations on the way further growth and, more particularly, pro-poor growth may be achieved in Cameroon.

## 2 Economic and social development in Cameroon during the 1960–2007 period

Cameroon is a country of Central Africa which stretches over an area of 475,000 km<sup>2</sup>, with a population of about 22.5 million inhabitants<sup>2</sup> in 2013 and a density of about 39.7 inhabitants per km<sup>2</sup>. It is endowed with huge potentialities not only in the agricultural area, but also in the mining sector. In addition, the country has oil resources at its disposal, which contributed about 43 per cent of its exports in 2004, accounting for 11.1 per cent of its GDP (IMF 2005). Furthermore, Cameroon is a member country of the Franc Zone.<sup>3</sup> Its currency, the Franc of the *Communauté Financière en Afrique Centrale* (the CFAF) is issued by *Banque des États de l'Afrique Centrale* (BEAC)<sup>4</sup>, and pegged to the Euro at the fixed parity of €1 = CFAF655.55).

Compared with other sub-Saharan African (SSA) countries, Cameroon has some of the most diversified production bases and resources, for it produces and exports a wide range of non-oil

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<sup>2</sup> According to the NIS yearbook, the country had a population of 16.6 million inhabitants in April 2003, and a density of 36 inhabitants per km<sup>2</sup>. The annual rate of growth of the population amounted to 2.8 per cent.

<sup>3</sup> Cameroon is also a member of the *Communauté Economique et Monétaire de l'Afrique Centrale*, of the Commonwealth, and of the *Communauté Economique des États d'Afrique Centrale*.

<sup>4</sup> The BEAC is the central bank of six Central African countries, namely: Cameroon, the Central African Republic, Congo, Gabon, Equatorial Guinea, and Chad. The other members of the CFAF currency area are: Benin, Burkina Faso, Côte d'Ivoire, Niger, Senegal, Togo, and since 1984, Mali, whose common central bank is the *Banque des États de l'Afrique de l'Ouest*.

products.<sup>5</sup> Although the country has been a producer and net exporter of oil since 1978, agriculture remains the pillar of the economy and employs about 70 per cent of the labour force.

The recent history of Cameroon as far as economic and social development is concerned may be subdivided into four distinct sub-periods: (i) the sub-period 1960–77 or the sub-period before the exploitation of oil; (ii) the sub-period 1978–86 during which the oil sector played an important role in the country's economy; (iii) the sub-period 1987–93 during which the economy witnessed a serious economic crisis; and (iv) the period from 1994 to date, or the CFAF post-devaluation sub-period relative to the French Franc (FF). On the basis of GDP, per capita GDP, and other macroeconomic indicators, we briefly present Cameroon's economic performance over each of these sub-periods in the following paragraphs.

## **2.1 The sub-period preceding oil exploitation: 1960–77**

Just after the attainment of independence in 1960, Cameroon adopted an interventionist approach to industrialization and economic development. Its trade policy kept import prices high, while its taxation system was heavy with inequalities. During this sub-period, Cameroon witnessed sustained economic growth. Real GDP was growing at the rate of 4.6 per cent per year owing to the stability of the terms of trade and the rapid expansion of agricultural exports. The private investment/GDP ratio rose from 11 per cent in 1963 to about 19 per cent in 1977; by contrast, public investment as a percentage of GDP remained very low at 2 per cent during the same sub-period; government revenues during this sub-period accounted for about 18 per cent of GDP, and the average total budget deficit was low at about 1 per cent of GDP. See, for example, Ghura (1997). The end of this sub-period coincided with the onset of oil exploitation and exportation.

## **2.2 The sub-period 1978–86**

This sub-period starts with the production and exportation of oil in 1978.<sup>6</sup> Real GDP rose by about 8.8 per cent per year during this sub-period, due in part to an increase in oil production which grew from less than 5 millions barrels in 1978 to more than 66 million barrels in 1986. Real GDP per head increased by 52 per cent between 1978 and 1986 (See Appendix Figure A2.1). The oil sector also contributed significantly to the budget of the state, with oil receipts rising from less than CFAF 20 billion (1.4 per cent of GDP and 9 per cent of total revenues) in 1980 to CFAF 330 billion in 1985 (9 per cent of GDP and 41 per cent of total revenue). Total government revenues rose from an average of about 17 per cent of GDP over the sub-period 1965–77 to an average of 21 per cent over the sub-period 1978–86 (Ghura 1997).

Taking advantage of the rise in public resources, induced by an increase in oil prices, the government of Cameroon, as did those of other oil-producing countries between 1980 and 1984, embarked on an expansionary fiscal policy characterized by significant consumption and investment spending.<sup>7</sup> Ambitious development programmes were initiated in the area's economic

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<sup>5</sup> These products are mainly cocoa, coffee, cotton, palm oil, bananas, rubber, and aluminium, etc.

<sup>6</sup> When the government officially announced the discovery and exploitation of important oil fields in Cameroon, it decided to avoid contracting the 'Dutch disease' (see Footnote 8) by making sure that economic operators' centre of interest would remain focused on the pursuit of the green revolution. It achieved this by excluding oil receipts from the normal budgetary process and created a special off-budget account for oil revenues which was directly managed by the Presidency of the Republic.

<sup>7</sup> A large number of public agencies, marketing boards, and public enterprises were set up and developed in all the sectors of the economy, often supported by government subsidies. Moreover, the transport sector suffered from the

and social infrastructures, notably in transport, communications, health, education, and housing. The rise in budgetary and extra-budgetary resources generated by the oil sector thus made it possible to increase the investment rate and to maintain a tolerable level of the country's indebtedness.

There was a risk of 'Dutch disease'<sup>8</sup> through which traditional exports, such as cocoa and coffee, would lose their competitiveness on world markets because of domestic inflation induced by spending oil revenues too fast. However, the 'Dutch disease' was largely avoided owing to the fact that the government had used its liquidity position to increase the prices of agricultural exports, thus keeping the real exchange rate from appreciating and preventing the export sector from catching the disease. Consequently, a large proportion (about three-fourths) of oil revenues was saved abroad. The government spent a large amount of money on capital outlays using domestic resources with very little foreign borrowing, so that during this sub-period, external funding accounted for only 6 per cent of total expenditure, while the external debt amounted to only 27 per cent of GDP in 1988/89 (World Bank 1989). This 'Dutch disease' phenomenon came along on top of an accumulation of the poor performances of public enterprises whose continued survival came to depend increasingly on government subsidies; a situation which led to serious public finance imbalances.<sup>9</sup>

### **2.3 The economic crisis: 1987–93**

The sub-period 1987–93 was marked by a severe economic crisis which manifested itself by a fall of 40 per cent in real GDP (see Appendix Figure A2.1). Economic activity shrank in several sectors, in particular in the construction and public works sector, but also in the production of cash crops, retail trade, and the oil sector. Three major factors account for the deterioration of the economic and financial situation in Cameroon during this sub-period: (i) the persistent and concomitant fall of the US dollar and of the prices of export products such as oil, cocoa, coffee, and cotton; (ii) the appreciation of the effective real exchange rate of the US dollar; and (iii) the decline in the country's oil output.

Between 1986 and 1988, the international price of crude oil fell by about one-third, while the prices of cocoa and coffee literally collapsed by one-half and two-thirds, respectively. On the whole, between 1986 and 1992 the terms of trade declined by about 40 per cent (Ghura 1997). Meanwhile, the effective real exchange rate appreciated to about 40 per cent on a cumulative basis between 1985 and 1992, due not only to the appreciation of the FF, but also to the rise in inflation triggered by expansionary fiscal policies (Ghura 1997). To these causes must be added lax macroeconomic management, and a sudden economic crisis which, despite a sustained growth rate and apparent economic health, lasted for almost a decade. It was able to emerge from this crisis only after a severe 50 per cent devaluation of the relative to the FF which took place in January 1994.

The budgetary balance witnessed an average deficit of 7 per cent of GDP between 1987 and 1993, compared with a surplus of 1 per cent during the sub-period 1978–86, for the government was attempting to put the economy back on its feet through an expansionary fiscal policy by increasing

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strong intervention of the government and was dominated by publicly-owned rail, urban, air, and maritime transport enterprises, including road maintenance, etc.

<sup>8</sup> This disease refers to the deterioration of Dutch export competitiveness which was associated with the exploitation of natural gas fields in the 1970s (Benjamin et al. 1989).

<sup>9</sup> It is estimated that the amount of subsidies disbursed to public enterprises in 1984/85 amounts to CFAF 150 billions (Tchoungui et al. 1995).

total spending by 21.5 percentage points of GDP during the two sub-periods (1978–86 and 1987–93), while facing a total revenue decline of 5.5 percentage points of GDP (Ghura 1997). This deficit had a negative impact on the economy and the social development of the country. Investment plummeted by more than 70 per cent between 1985/86 and 1992/93. During the same period, consumption per head fell by nearly 40 per cent.

The budget deficit was essentially financed by external borrowing and the accumulation of domestic as well as external arrears.

External debt increased to 49 per cent of GDP during the sub-period 1987–93 versus only 31 per cent over the sub-period 1978–86. Non-negligible stocks of payment arrears due to external creditors and domestic suppliers alike were accumulating and led many enterprises not only to interrupt their activities, but also to fail to meet their fiscal obligations and to reimburse their debts to domestic banks. The deterioration of financial conditions during the sub-period 1987–93 revealed the problems facing many domestic banks which were found to be under-capitalized, poorly managed, and only marginally profitable (Doe 1995).

This situation worsened after the highly contested presidential elections of October 1992 and serious confrontations occurred between the government and the opposition (Fambon 2010). These incidents were further aggravated by Cameroon's already severe economic and financial crisis when opposition leaders adopted civil disobedience as their movement's call for action, and instructed their members and the population at large to stop paying taxes. The result of all this was that demonstrations, violence, and strikes increased in number, and the government became financially handicapped and was unable to honour its financial commitments, including its payroll.

To reverse this downward trend, the government attempted by the late 1980s and early 1990s to stimulate the economy with the help of a strategy based only on domestic adjustment measures.<sup>10</sup> The key elements of this strategy were: to maintain the common parity of the CFAF; to reduce the budget deficit by raising tax rates; to cut salaries and subsidies to public enterprises; and to restore external competitiveness by reducing domestic costs and restructuring public enterprises.

At the same time, given the importance of macroeconomic imbalances, it became apparent by the end of 1993 that strategies solely based on internal adjustment were not effective enough to shift the economy back to a sustained growth recovery path. Internal adjustment strategies alone were unable to restore competitiveness given that domestic prices (including salaries and producer prices) had displayed significant downward rigidities. Moreover, owing to declining government revenues, fiscal adjustment mainly consisted of performing deep cuts in investment budgets and non-salary spending on maintenance and other essential services. Such a policy was harmful to Cameroon's economic growth.

## **2.4 The post-devaluation period (1994 to date)**

Given the failure of domestic adjustment strategies alone to stem the crisis and revitalize the economy, Cameroon and the other member countries of the Franc Zone agreed to devalue the

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<sup>10</sup> It is opportune to note that, when faced with unfavourable economic circumstances, Cameroon's public authorities first committed themselves in 1987 to an adjustment policy supported by an autonomous programme, and without the intervention of Bretton Woods institutions. This programme aimed to reduce government spending and to alleviate the weight of the public sector broadly defined. These measures turned out to be inadequate in stemming the economic crisis. Thus, the government ended up adopting an IMF stand-by agreement and a structural adjustment credit from the World Bank.



CFAF vis-à-vis the FF by 50 per cent and to fix its parity at CFAF 100 = FF 1, starting on 14 January 1994.

After the devaluation, the government adopted a stabilization and structural reforms programme supported by the IMF and the World Bank. This programme aimed to maintain the inflation rate at less than 5 per cent starting in 1995 and to increase the annual rate of economic growth by 5 per cent during the same year, based on expectations that the competitiveness of exports from the rural and urban sectors may provide adequate primary and total budget surpluses likely to boost public savings to finance high priority public and social spending.

In August 1997, after the successful implementation of a programme of reference monitored by the IMF during fiscal year 1996/97, the government put in place another economic and financial programme supported by the IMF in the context of the Enhanced Structural Adjustment Facility (ESAF)<sup>11</sup>, which became the Poverty Reduction and Growth Facility (PRGF) in November 1999).<sup>12</sup> This programme aimed at consolidating the reorganization of the position of the country's public finances and to establish conditions conducive to sustained economic growth and a concrete improvement in the living standards of the population.

The combined effects of these measures and of the CFAF devaluation succeeded in restoring the country's economic growth starting in 1995 after almost a decade of economic depression, not to mention the considerable improvements which were achieved in the export and public finance sectors.

In effect, output progressively recovered and Cameroon's external competitiveness was restored. Real GDP witnessed a trend reversal from a 4 per cent average annual rate of decline during the period 1987–93 to an average positive growth rate of about 2 per cent per year over the period 1994–96, and 5 per cent over the period 1996–2000. GDP per head increased by about 1.6 per cent annually while inflation remained moderate at a rate of about 2 per cent per year during the same period (see Appendix Table A2.1). Real GDP growth was accompanied by a rise in private investment from 11 per cent to 13 per cent of GDP over the period 1996–2000. In addition, the fiscal reforms initiated in 1994 boosted non-oil revenues by 2 percentage points of GDP, owing mainly to improvements in tax administration and the introduction of the value added tax in 1999. Balance of payments stability was maintained with a current account deficit of 3.2 per cent of GDP on average during the period 1998–2000.

Furthermore, the satisfactory execution of the ESAF programme gradually restored Cameroon's creditworthiness vis-à-vis the international financial community. As a consequence, by the month of October 2000, the government was ready to implement a second three-year economic and financial programme supported by the IMF in the framework of the PRGF, and covering the period from October 2000 to September 2003. This second PRGF programme, nicknamed 'the second generation programme' prescribed the consolidation of recent gains and the continuation of efforts for the promotion of strong economic growth.

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<sup>11</sup> It is opportune to note that in addition to the change in the parity of currency in 1994, the government programme consisted of domestic adjustment measures, including fiscal enhancement, as well as the implementation of structural reforms linked to the reorganisation and the reduction of the size of the public sector, the privatisation of public enterprises, banking system restructuring, and the liberalization of domestic prices and interest rates.

<sup>12</sup> This programme was supported by a Structural Adjustment Credit of the World Bank and the Structural Adjustment Programme II of the Development Aid Fund.

It should be noted that it is in the context of this ‘second generation programme’ that the public authorities were able to finalize the country’s Poverty Reduction Strategy Paper (PRSP), an interim version of which was adopted in August 2000 (Government of Cameroon 2003). The PRSP was conceived in the prospect of attempting to reduce poverty by half by 2015 through strong and sustainable economic growth. The finalization of the PRSP in 2003 made it possible for the authorities to negotiate the completion point of the enhanced Heavily Indebted Poor Countries (HIPC) initiative, the completion point of which was achieved in April 2006.

Since the attainment of the decision point of the HIPC initiative in October 2000, the economy has generally experienced macroeconomic stability as indicated by the data in Appendix Table A2.1. In fact, oil GDP growth remained robust over the period 2001–05, thus following the same trend as over the period 1995–2000. Concurrently, inflation fell during the second half of the 1990s, and its average annual rate hovered around 2 per cent during the period 2000–07.

Estimated at about 4.9 per cent during the period 1995–2000, the real growth rate of non-oil GDP witnessed a non-negligible recovery as compared with its negative growth trend during the first half of the 1990s. By contrast, the rate of growth of real GDP was only 3.4 per cent per year on average over the period 2000–07, versus a projected average annual growth rate of 7 per cent. In terms of per capita growth, real GDP increased only by 0.6 per cent on average between 2000 and 2007.

Furthermore, the rate of growth of the Cameroonian economy decreased from 2.9 per cent in 2008 to around 2 per cent in 2009. This slowdown in growth might be attributed to the deterioration of the country’s trade balance, the stagnation of the international economic climate, and to fiscal problems linked to the combined effects of the international economic and financial crisis, the food crisis, and the energy deficit. In view of this situation, the government took emergency measures to stimulate the agricultural sector, by giving priority to the production of food crops such as maize, rice, potatoes, and plantain bananas. Given the signs of economic recovery observed in developed countries, forecasts of real GDP growth for Cameroon are on the increase and lie at about 3.5 per cent for 2010 and 4.6 per cent for 2011.

To sum up, it may be said that economic growth in Cameroon was not regular during the study period, as it varied over time in accordance notably with major changes in economic policy orientations and the vagaries of domestic and external shocks. The sub-period 1960–77, which preceded the advent of oil exploitation, was marked by an average annual real GDP growth rate of about 4.6 per cent generated mainly by agricultural sector development. During the sub-period 1978–86, the country witnessed a particularly sustained rate of economic growth, with GDP increasing by about 8.8 per cent per annum owing largely to the production and exportation of oil.

Moreover, with regard to macroeconomic management and real GDP growth, the sub-period 1960–86 is characterized by balanced budgets and increases in investment/GDP ratios and the human capital stock. In contrast, the sub-period 1987–93 was marked by a severe economic crisis which resulted in a sharp fall of about 40 per cent in real GDP between 1987 and 1993, a deterioration in the terms of trade and external competitiveness, a decline in the investment/GDP ratio, a stagnation or reduction in the human capital stock, and the significant public finance imbalances which were at the root of an increasingly heavier indebtedness and accumulation of domestic and external payment arrears.

In response to this serious economic crisis which was to last for almost a decade, the country’s public authorities were forced, by the late 1980s and the early 1990s, to adopt and apply sound management principles in the implementation of a series of economic recovery policy measures

which mainly included economic stabilization and reforms, as well as structural adjustment programmes for the liberalization of the economy, to which were added the practice of good governance as one of the major conditionalities for receiving international financial assistance. The implementation of these programmes, combined with the CFAF devaluation vis-à-vis the FF in January 1994, led to the recovery and acceleration of GDP growth at the rate of about 4.5 per cent annually during the period 1995–2000, which later on slowed down to an average annual real growth rate of about 3.4 per cent over the period 2000–07.

### **3 Sources of growth and total factor productivity**

#### **3.1 Economic growth by sectors**

From independence in 1960 up to the year 1978, a benchmark year in which oil production began in Cameroon, agriculture played a predominant role in the country's economy. In effect, over the sub-period 1963–77, the primary sector (including agriculture, forestry, and fishing) contributed about 34 per cent to total value added, employed a large proportion of the labour force, and was the principal source of economic growth and budgetary revenues mainly through export receipts of cocoa and coffee. The industrial sector accounted for about 25 per cent of GDP and was mainly engaged in import-substitution activities (Benjamin and Devarajan 1989; Kobou et al. 2008; Fambon 2010).

The second phase (1978–86) starts with the production and exportation of oil in 1978.<sup>13</sup> During this sub-period, the share of the secondary sector<sup>14</sup> in GDP increased from 17 per cent over the 1963–77 sub-period to about 28 per cent on average over the 1978–86 sub-period.

At the beginning of the 1980s, the oil sector started to replace the agricultural sector as the engine of growth. Between 1977 and 1981, the average rate of economic growth was about 14 per cent, and it fell to about 7.5 per cent between 1982 and 1986 (Blandford et al. 1994). The share of the oil sector in GDP increased regularly from 1 per cent in 1978 to 20 per cent in 1985. During the same period, the share of agriculture declined from 29 per cent to about 21 per cent. In addition, the share of oil and oil products in total exports increased from 3 per cent to 65 per cent, while the share of agricultural products fell from 87 per cent to 27 per cent.

During the period between 1986 and 1993, which was characterized by a serious economic crisis, GDP witnessed a fall of 6 per cent on average per year. This crisis manifested itself in sectoral terms by the stagnation of agricultural GDP volume-wise, and a significant fall in the secondary and tertiary sectors of the economy. From 1986 to 1995, agriculture improved only slightly, while the volumes produced in the secondary sector (oil, industry, and the building trade) lost about 44 per cent. In addition, the volumes produced in the service sector also lost 29 per cent. Both the secondary and service sectors, however, contributed almost equally to the fall in GDP, considering the share of the service sector in the latter (Aerts et al. 2000).

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<sup>13</sup> When the government officially announced the discovery and exploitation of important oil fields in Cameroon, it decided to avoid contracting the 'Dutch disease' by making sure that economic operators' centre of interest would remain focused on the pursuit of the green revolution. It achieved this by excluding oil receipts from the normal budgetary process and created a special off-budget account for oil revenues which was directly managed by the Presidency of the Republic.

<sup>14</sup> The secondary sector comprises mining, manufacturing, energy production, housing construction, and public works.

From 1993 to 1999, the primary sector (agriculture, forestry, and fishing) contributed between 27.3 per cent and 42.3 per cent to GDP, while the contribution of the secondary sector (mining, construction, and energy) lay between 19.7 per cent and 42.3 per cent. As to the service sector, its contribution (particularly transport, commerce, and communications) amounted on average to more than 36 per cent of GDP (see Appendix 2, Table A2.2).

Examination of Table 1, which presents the sectoral composition of real GDP during the period 2000–07, enables us to make many comments.

Table 1: Sectoral growth rate of real GDP, 2000–07

	2000	2001	2002	2003	2004	2005	2008	2007
Primary sector	4.0	3.7	3.7	3.5	4.4	2.7	3.0	5.9
Agriculture	4.0	3.7	4.7	3.4	4.3	3.0	2.4	4.4
Livestock farming	3.8	8.6	2.6	2.0	4.8	4.4	1.9	4.9
Forestry	4.5	-9.3	-4.5	9.0	6.0	-5.2	13.0	26.9
Fishing	3.5	12.7	2.9	2.3	2.1	4.6	1.7	2.0
Secondary sector	2.1	1.0	0.8	0.5	-0.2	-0.9	1.8	-0.8
Mining	-8.2	-3.9	-4.3	-4.9	-9.1	-9.4	7.6	-5.4
Manufacturing industries	9.7	3.4	3.0	2.4	2.3	2.0	-0.6	0.5
Energy, gas, water	5.0	1.2	-4.6	7.2	6.9	2.1	3.3	4.5
Building and civil engineering works	2.1	3.9	5.7	4.3	8.4	1.1	4.0	0.5
Tertiary sector	9.0	8.5	7.3	7.4	6.6	3.0	3.5	5.0
Trade	7.4	13.8	7.3	10.5	7.2	2.6	1.7	0.8
Repair work	4.3	5.1	6.1	6.5	4.4	0.6	1.6	0.8
Hotels and restaurants	10.3	7.7	8.1	6.0	5.6	3.4	2.6	11.0
Transport	18.4	9.5	9.8	2.8	3.1	-10.5	1.7	1.5
Postal services and telecommunications	45.6	0.3	16.7	35.5	25.3	51.4	25.2	17.2
Other private services	5.5	3.6	5.7	3.7	4.7	1.3	1.7	7.4
Administration	8.0	6.4	5.9	3.1	6.9	0.4	2.9	5.5
GDP at factors costs	5.3	4.7	4.2	4.2	3.9	1.7	2.9	3.5
Taxes on goods and services	-7.9	1.7	1.3	1.4	0.7	10.5	7.3	2.9
GDP at market prices	4.2	4.5	4.0	4.0	3.7	2.3	3.2	3.4

Source: National Institute of Statistics (2008a).

Real GDP reached an average annual growth rate of only 3.4 per cent over the period 2000–07 versus a projected average annual rate of 7 per cent. The growth rates achieved during this period were barely higher than the annual rate of growth of the population which hovered around 2.3 per cent. Therefore, the stability of the macroeconomic framework, despite the prevalence of a reasonable average annual inflation rate of 2 per cent over the period, was not really beneficial to the country.

The rate of economic growth achieved between 2001 and 2007 was mostly driven by the services sector, and more particularly, by the telecommunications sub-sector which achieved a growth rate higher than 25 per cent per year. Thus the contribution of the tertiary sector of the economy to growth was greater than those of the primary and secondary sectors combined.

With an annual average growth rate of 0.2 per cent, the secondary sector was undermined by the poor performances of the oil sector and of the manufacturing sector.

Despite the fact that the price of crude oil was multiplied by a factor of 4 from the end of 2003 to 2007, the extractive industries declined at a negative average annual rate of -4.4 per cent owing to a fall in oil production during the period under study. Crude oil output actually fell from 37.4 million barrels in 2002 to 30.8 million barrels in 2007. For its part, the manufacturing industry found it very difficult to really take off, because of problems such as the shortage of infrastructure, the weakness of solvent demand, and credit market imperfections.

As to the primary sector where most of the population of the country is active, it recorded very average results (3.9 per cent average annual growth rate). The programmes designed for this sector with a view to improve the level of income of rural populations by increasing agricultural production through high yields did not produce the expected results. For example, the prices of cash crops (more particularly cocoa beans, Arabica and Robusta coffees) had been displaying an upward trend during the period 2000–07. But these prices still remained below their levels during the period 1996–2001. In addition, since exported volumes of these products increased little or not at all (except for cocoa and cotton), the incomes earned by their producers were relatively less substantial.

The modest rate of economic growth generally witnessed in Cameroon during the period 2001–07 did not contribute significantly to the creation of income-generating jobs for households. During the period, we may, however, note the resumption of recruitment in certain agencies of the public service, the expansion of the few aforementioned sectors of activity, infrastructural works such as the completion of the Doba–Kribi pipeline, repair work on the bridge on the Wouri River at Douala, and the asphaltting of several major roads.

But the national economy was generally unable to generate enough new and decent jobs, those created being mainly of a temporary nature. This incapacity for job creation was partially due to the low level of investment earmarked for that purpose. During the period 2001–07, the rate of investment actually remained below its level of 2001 which was 20.3 per cent, and it even fell sometimes down to 16.8 per cent as in 2006 and 2007. Therefore, much remains to be done to bring up the country's investment rate to around 25 per cent of GDP, a level which is empirically established for an economy to take off and to achieve a growth rate of about 7 per cent, at which point more wealth is likely to be created and more jobs generated. From a policy point of view, this seems to be the best and most effective strategy to accelerate the reduction of poverty.

### **3.2 The macroeconomic determinants of growth**

The examination of the macroeconomic factors affecting the growth of Cameroon's economy may be carried out by using a growth accounting framework based on Solow's (1957) growth model.

According to this accounting framework, output growth may be broken down into an accumulation of inputs such as labour, capital, and technical progress (or improvement in productive efficiency). Based on the assumptions of competitive markets, constant returns to scale, and Hicks-neutral technical progress, Solow (1957) shows that total factor productivity growth (TFPG) may be measured by the share of output growth not explained by input growth, according to the following expression:

$$TFPG = \dot{A}/A = \dot{Y}/Y - \alpha \dot{K}/K - (1-\alpha) \dot{L}/L$$

Where,  $L$   $K$  are the labour and capital inputs;  $A$  is the technology coefficient; the variables with a dot on top are time-derivatives;  $\alpha$  is the output elasticity relative to capital (which is equal to the capital income share). Generally speaking, TFPG is considered as that growth which is not explained by the known factors of production such as labour and capital, and which reflects the result obtained using inputs more efficiently through the adoption of new technologies.

By applying this method to Cameroon data, Kobou et al. (2008) have shown that during the last four decades (i.e. from the 1960s to the 1990s), economic growth in Cameroon was basically driven by the major factors of production without taking account of technical progress (Table 2). Thus, for an average annual GDP growth rate of 1.16 per cent per head, the physical capital ratio recorded an average annual growth rate of 1.6 per cent versus 0.29 per cent for the human capital ratio. The average annual growth rate of total factor productivity (TFP) was negative and stood at -0.74 per cent during the period 1960–2000. This result suggests that, on average, TFP had a negative impact on growth during the whole period, and this probably explains why the Cameroonian economy still remains relatively lethargic to date.

However, this overall view of the period 1960–2000 conceals some contrasts that appear in the sub-periods of the study. In effect, during the first sub-period (1960–85), the physical and human capital ratios contributed two-thirds of per capita GDP growth, while TFP contributed the remaining one-third. The modification of factors in the growth process may be linked to the deliberate action of decision makers whose objective was to provide Cameroon with appropriate infrastructure and production units likely to contribute significantly to a large-scale industrialization process.

The last sub-period presents a different image to the two preceding periods. Between 1986 and 2000, the capital and labour ratios increased at an average annual rate of 1.28 per cent, but these rates remained low compared with the rates previously recorded. The restructuring of the whole economy might explain this situation. TFP weighed heavily on the growth process, given that the economy was shrinking at an average annual rate of -3.86 per cent during the period.

Table 2: Contribution of factors to growth in Cameroon

Sub-period	Real GDP per capita	Contribution of capital per head	Contribution of education per head	Contribution of global productivity of factors
1960–77	1.41	1.40	0.22	-0.22
1978–85	7.66	3.17	0.47	4.01
1986–2000	-2.58	1.00	0.28	-3.86
Mean	1.16	1.61	0.29	-0.74

Source: Kobou et al. (2008).

Considering the shortcomings of the growth accounting framework based on Solow's (1957) growth model to explain growth and its inability to measure the intensity of the link between per capita GDP and the other macroeconomic aggregates, the authors combined this framework with a regression model to provide a comprehensive picture of the macroeconomic factors which affect economic growth.

In this context, and in order to define the impact of several variables on economic growth in Cameroon, the authors analysed the role played by the macroeconomic framework, investment, and human capital.<sup>15</sup>

By concentrating on the variables of the ‘new’ growth theories (see for instance, Easterly et al 1991; Renelt 1991; Levine and Renelt 1992), the authors found that the per capita GDP growth rate in Cameroon stood at 1.37 percentage points below the world’s average over the entire period of the study. During the same period, the main macroeconomic variables, including inflation, the parallel market exchange rate premium, and unproductive government spending, all considered, reduced the rate of growth by 0.16 percentage points compared with the average of the period (see Table 3). The contribution of inflation was slightly positive (0.04 per cent), and so was that of the parallel market premium which shows a relatively more substantial contribution of 0.14 per cent. Differences in per capita GDP changes in Cameroon over the sub-periods were compatible with the overall evolution of GDP per capita in Cameroon.

Table 3: Contribution of macroeconomic variables to deviation vis-à-vis average real GDP per capita

Sub-period	Deviation vis-à-vis average of sample	Political instability index	Macroeconomic framework			Total contribution
			Inflation rate	Black-market premium	Unproductive government expenditure as a ratio to GDP	
1960-77	0.03	0.18	0.04	0.13	-0.37	-0.20
1978-85	0.75	0.18	0.03	0.15	-0.34	-0.17
1986-2000	-4.45	0.13	0.04	0.15	-0.33	-0.14
Average	-1.37	0.15	0.04	0.14	-0.34	-0.16

Source: Kobou et al. (2008).

However, by taking account of the relative importance of each of the variables, it becomes apparent that although the rate of inflation did not fall during the 1990s, its contribution did not significantly change during the different sub-periods, which is quite surprising. Moreover, it was during the sub-period 1976–85 that its effect on the deviation of the growth rate was low, which confirms a certain negligence (or laxity) in the implementation of fiscal policy. The parallel market premium had a positive contribution and remained unchanged over the whole period of the study. The effect of all the transactions outside the financial market displayed all the rigidities inherent in this market. In spite of the restructuring of the whole economy, this phenomenon was still very important. Unproductive government spending contributed -0.34 percentage points to the deviation of the growth rate. In other words, this spending played a big role in the reduction of the growth attributable to economic policy variables: their evolution over time was synchronous with the evolution of the contribution of economic policy variables to the growth- rate deviation.

It is during the sub-period 1978–85 that GDP per capita stood closest to average GDP per capita. During this sub-period, the ratio of investment at international prices over investment at national

<sup>15</sup> It should be noted that several other studies have been carried out on Cameroon’s economic growth, but they do not take account of the variables of the new theory of economic growth. In effect, the study by Amin (2002) indicates that labour and capital inputs are the main factors which affect economic growth in Cameroon. Mbaku (1993) and Most and Van Den Berg (1996) show that domestic savings have a stronger impact on growth.

prices in GDP fell from 0.44 per cent between 1960 and 1977 to 0.41 per cent between 1978 and 1985. This fall seems to confirm the relatively attractive nature of investment over the period. This result could be due to the investment code in force at that time, which made it possible to eliminate certain obstacles to foreign investment. The slowdown observed later in the deviation of GDP per capita is attributable to the economic crisis which set in between 1985 and 1993 in combination with a deterioration of most macroeconomic aggregates. In particular, the fall in investment by more than half from 27 per cent in 1985 to less than 11 per cent in 1993 had a catastrophic impact on growth. Likewise, the share of public investment in total investment, which accounted for more than 50 per cent over the previous periods, witnessed a considerable fall to about 20 per cent during the last period.

The effect of human capital on the per capita growth rate amounted to -0.08 percentage points on average during the period under review, but it also improved with time. From an average reduction of 0.13 per cent between 1960 and 1977, it fell to 0.08 per cent between 1978 and 1985 and to about 0.01 per cent during the third period. It would be difficult to disassociate this evolution from that of the level of education which improved in Cameroon during the same time interval.

Finally, the trend in the contribution of the different sectors to GDP has changed over time. The agriculture sector was the sole engine of growth and foreign exchange earnings until the late 1970s when oil became the primary engine of growth. By contrast, the analysis of the evolution of real GDP by sector of activity clearly shows that between 2000 and 2007, economic growth was above all driven by the service sector, and notably by telecommunications which achieved a growth rate exceeding 25 per cent per year during this period. The contribution of this sector to growth is more important than that of the primary and secondary sectors combined. Moreover, the negative growth rate of TFP over the period 1960–2000 had unfavourable effects on the overall growth of the economy.

By contrast, economic growth during this sub-period was driven by both capital and labour, but more so by the capital factor. Under these conditions the country could not achieve sustained growth, since productivity rather than capital stock is crucial in the growth process.

Boosting productivity will require institutions and policies which affect the incentive to generate and disseminate innovations in the country.

#### **4 National level patterns of changes in poverty, inequality, and household welfare**

We turn now to the key part of the paper, the analysis of the impact of growth (and other factors) on poverty reduction in Cameroon. As noted in the introduction, the sources of data for the household level analysis of poverty, inequality, and welfare are the three ECAM household surveys from 1996, 2001, and 2007, and the four DHS conducted in 1991, 1998, 2004, and 2011. The former surveys enable an analysis of poverty and inequality measured in consumption terms; the latter surveys provide information on a wide range of non-monetary poverty measures, though some evidence on non-monetary measures from the ECAM surveys will also be briefly presented. This section focuses on trends at the national level; the two sections which follow focus on a disaggregated analysis, first of monetary and then of non-monetary outcomes. In this, a strong emphasis will be placed on geographic disaggregation, as it is clear from both data sources that there are very strong spatial dimensions of difference in household well-being in Cameroon.



## 4.1 Trends of poverty

### *Trends of monetary poverty at the national level*

Table 4 shows changes in Watts's index, and in the incidence of poverty, the poverty gap ratio and the poverty gap index squared between 1996 and 2007 at the national level, and Table 5 presents summary measures of inequality: the Gini coefficients and three measures of the generalized entropy class of inequality indices. All these measures were calculated using household expenditure per adult equivalent as the measure of well-being, and household weights were applied in the calculation (see Appendix 1 for details on the calculation of the welfare indicator and the poverty line).

Table 4: Trends in monetary poverty in Cameroon over the 1996–2007 period

	Survey period		
	1996	2001	2007
$P_0$	0.533 (0.0326)	0.402 (0.0146)	0.399 (0.0134)
$P_1$	0.191 (0.0167)	0.141 (0.0085)	0.123 (0.0062)
$P_2$	0.090 (0.0095)	0.070 (0.0061)	0.050 (0.0031)
Watts	0.2665 (0.0249)	0.2091 (0.0174)	0.1611 (0.0086)

Note: Figures in parentheses represent standard errors.

Source: Computed by the authors from ECAM2 and ECAM3 survey data.

At the national level, monetary poverty decreased during the period 1996–2001, but the incidence of poverty remained almost stable between 2001 and 2007.<sup>16</sup> Between 1996 and 2001, all poverty measures indicate a non-negligible and statistically significant reduction in poverty. The percentage of the Cameroonian population living in poverty fell from about 53 per cent in 1996 to approximately 40 per cent five years later in 2001. The depth (poverty gap) and severity measures, the latter assigning a heavier weight to the poorest of the poor, also show significant reductions over this period. In effect, the index of the depth of poverty ( $P_I$ ) showed a reduction of 5 percentage points during the period, falling from 19 per cent in 1996 to 14 per cent in 2001; and the severity index showed a decrease of 2 percentage points, falling from 9 per cent in 1996 to 6.9 per cent in 2001.

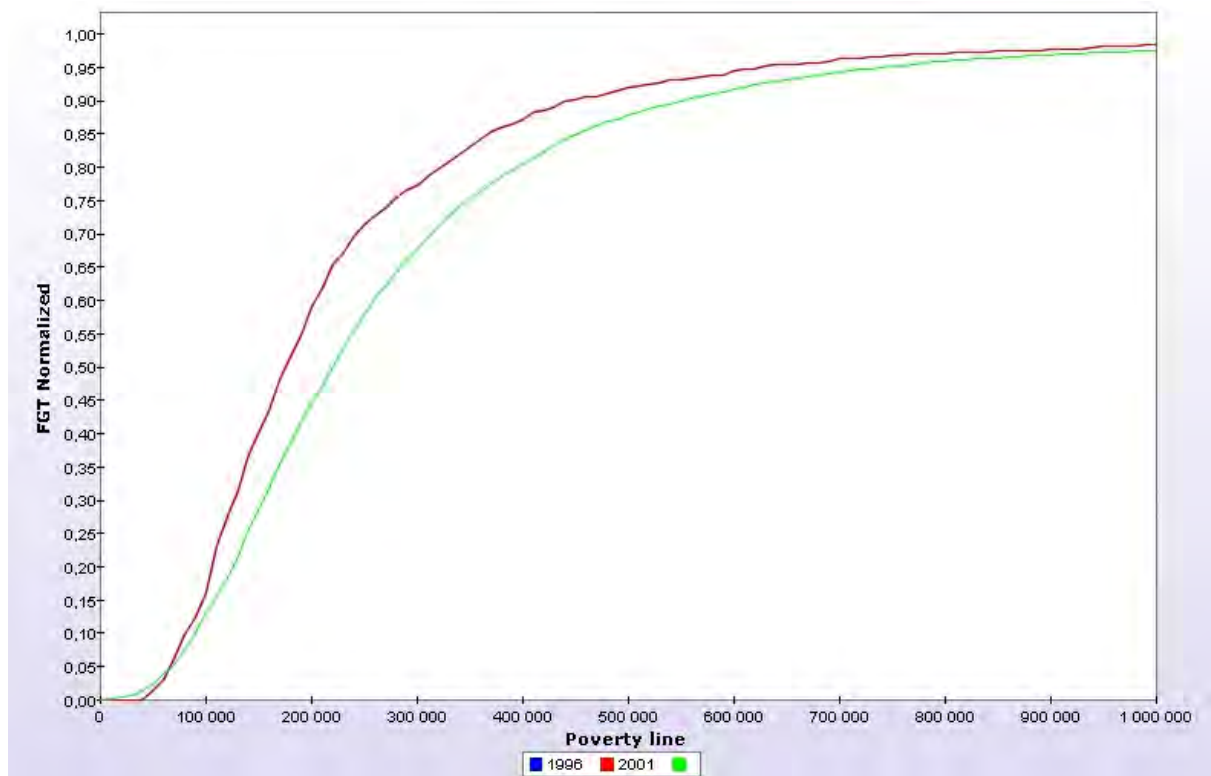
On the other hand, poverty changed little during the period 2001–07, characterized as it was only by a marginal decrease in the incidence and depth indices. The headcount measure fell only slightly, from 40.2 per cent in 2001 to 39.9 per cent in 2007; and the index of depth of poverty decreased from 14.1 per cent in 2001 to 12.3 per cent in 2007, much less than the reduction in the earlier period. This result shows that the government did not take advantage of either the macroeconomic stability witnessed by the country during the period 2001–07, or of the opportunities offered during this period, notably the resources released by the IMF and the World Bank following the achievement of the decision point (in 2003) and the completion point (in 2006) of the HIPC debt-

<sup>16</sup> For the comparison of falling levels of poverty in Cameroon with those of other African countries such as, Benin, Burkina Faso, Ethiopia, Guinea, Kenya, Malawi, Nigeria, and Senegal, see McKay and Perge (2009).

relief initiative. The severity measure though does improve from 6.9 per cent in 2001 to 5 per cent in 2007.

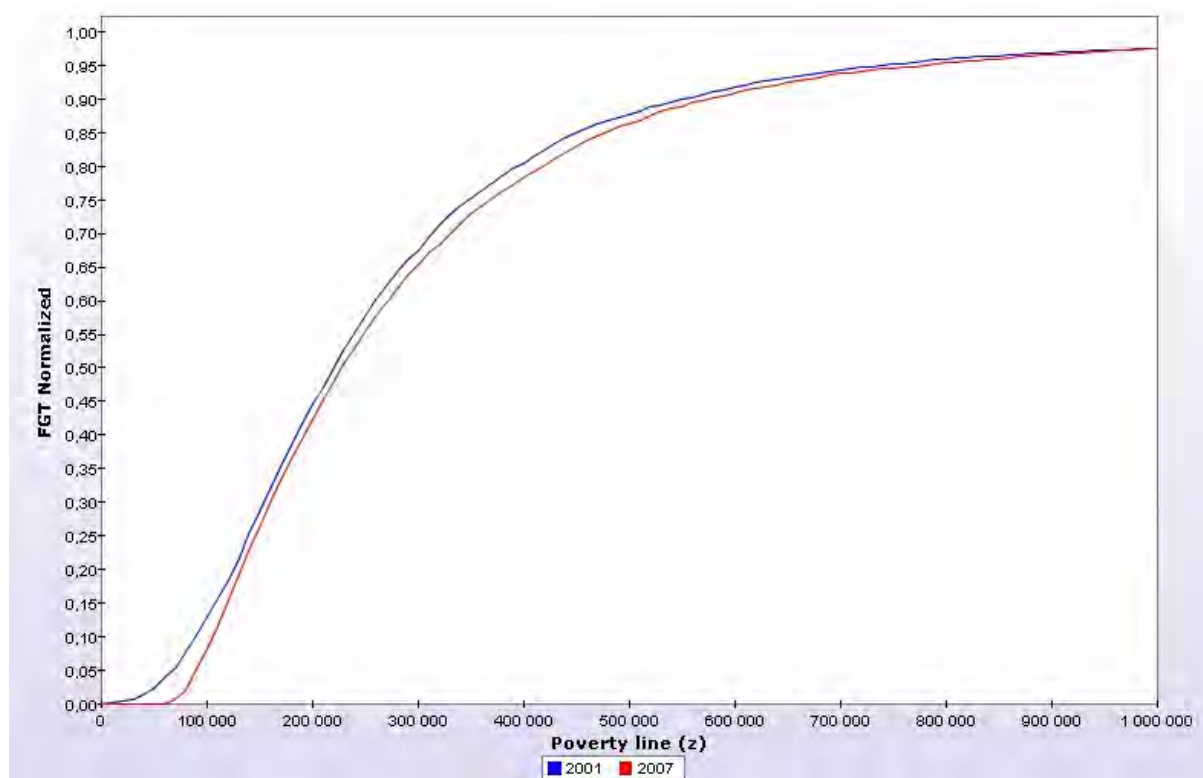
Poverty incidence curves (Figures 1 and 2) confirm the significant poverty reduction from 1996 to 2001 and their very limited progress between 2001 and 2007, except perhaps at the very bottom in both cases. This suggests that the pattern of changes in poverty discussed above are not likely to be sensitive to the precise location of the poverty line, in any reasonable range.

Figure 1: Poverty incidence curve for Cameroon, 1996–2001



Source: Computed by the authors from ECAM1, ECAM2 and ECAM3 data.

Figure 2: Poverty incidence curve for Cameroon, 2001–07



Source: Computed by the authors from ECAM1, ECAM2 and ECAM3 data.

The data in Table 5 show that at the national level, inequality in consumption per adult equivalent increased marginally between 1996 and 2001 according to three of the four measures, but the changes were relatively small in each case and statistically insignificant. Between 2001 and 2007 there were statistically significant reductions in all measures of inequality.

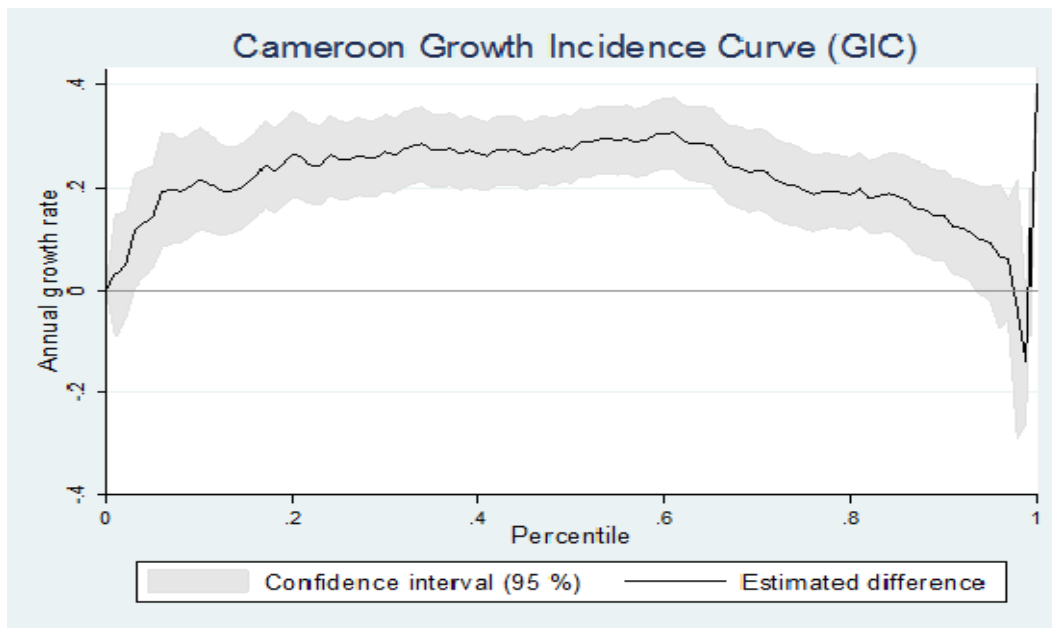
Table 5: Trends in inequality in Cameroon over the 1996–2007 period

	Survey period		
	1996	2001	2007
Gini coefficient	0.406 (0.0169)	0.408 (0.0078)	0.390 (0.0060)
GE(0)	0.272 (0.0227)	0.291 (0.0142)	0.248 (0.0077)
GE(1)	0.317 (0.0300)	0.316 (0.0155)	0.279 (0.0106)
GE(2)	0.544 (0.0786)	0.556 (0.0528)	0.445 (0.0286)

Note: Figures in parentheses represent standard errors.

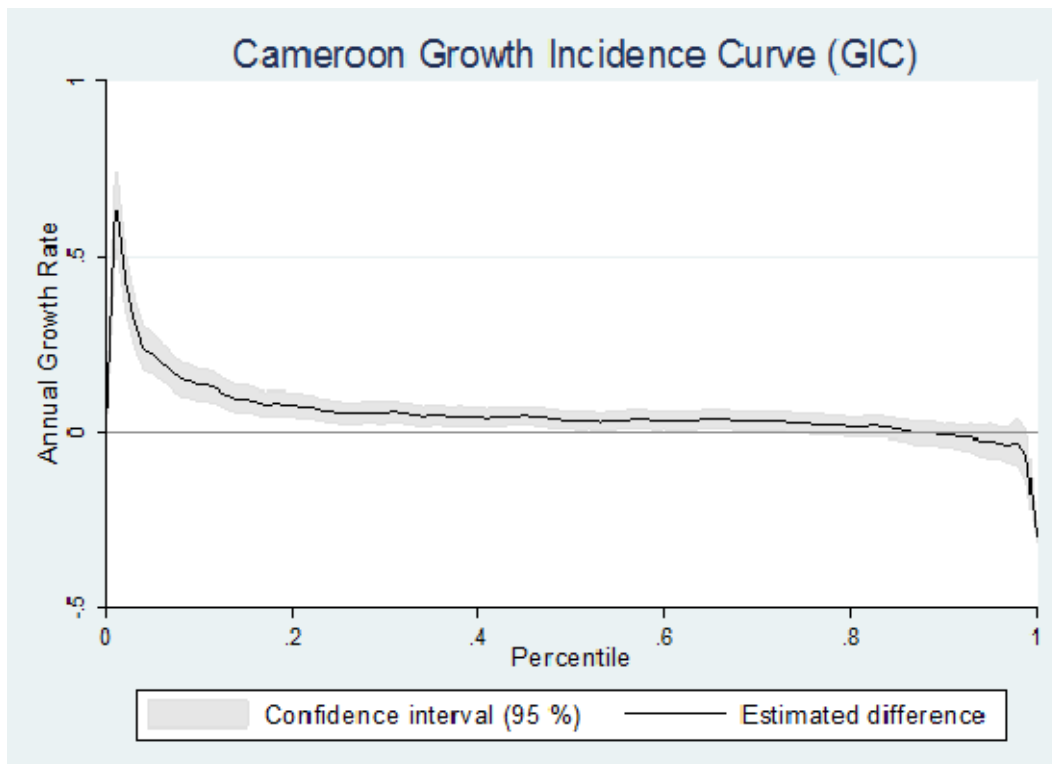
Source: Computed by the authors from ECAM1, ECAM2 and ECAM3 data.

Figure 3: Cameroon growth incidence curve, 1996–2001



Source: Computed by the authors from ECAM1 and ECAM2 data.

Figure 4: Cameroon growth incidence curve, 2001–07



Source: Computed by the authors from ECAM2 and ECAM3 data.

Growth incidence curves (Figures 3 and 4) show the distributional pattern of growth over these periods and explain the observed changes in inequality and poverty.

Between 1996 and 2001 there was faster growth in consumption, but generally at faster rates in higher percentile groups; consumption actually fell at the bottom (seen also in Figure 1). This reflects the improvements in indicators of poverty but also the increases in inequality. Between 2001 and 2007 the growth rate in consumption is close to zero throughout much of the distribution, but is positive at the bottom of the distribution. This is consistent with the reduction in inequality, little change in the incidence of poverty, but a reduction in the severity of poverty associated with the improving outcomes for the poorest.

Now turning to non-monetary indicators, Table 6 presents the pattern of changes at the national level of different aggregate welfare indicators from the four DHS surveys. The indicators presented include health indicators (mortality, malnutrition, and vaccination), education, ownership of durable goods, and housing amenities.

Cameroon's under-five mortality rate remains high for a middle-income country, and did not fall at all during the period 1991–2004; only since then has the mortality rate fallen though it still remains at 128 per thousand live births. In terms of malnutrition, the numbers of those stunted and underweight are also quite high; and malnutrition if anything worsened over the 1991–2004 period. Again, since then the situation has moderately improved though the rates still remain quite high. And while the situation in relation to the number of children under 12 months, who had been fully vaccinated, improved over the 1998–2011 period, by 2011 nearly half of children in this age range still were not fully vaccinated. This suggests significant questions about the coverage or effectiveness of the health care system in Cameroon. The rate of fertility remains high in Cameroon, but decreased significantly from 5.8 per cent in 1991 to 4.8 per cent in 1998, remaining more or less at that level since.

Table 6: Summary national level indicators from DHS surveys

Indicator	1991	1998	2004	2011
Under-five mortality rate	144	146	148	128
% of children fully vaccinated	40.0	35.8	48.2	53.2
Height-for-age below -2 SD	22.9	29.3	29.7	24.1
Weight-for-height below -2 SD	3.8	5.9	6.7	6.2
Weight-for-age below -2 SD	16.3	22.2	19.4	18.1
% of respondents with secondary education or above	26.5	33.3	39.1	46.2
Fertility rate	5.8	4.8	5.0	5.1
% of households with electricity	29.0	40.7	47.1	53.7
% of households with adequate drinking water source	63.9	64.2	71.6	74.4
% of households owning radio	54.0	52.5	62.5	56.1
% of households owning refrigerator	10.2	9.7	11.4	15.1
% of households owning bicycle	15.7	13.3	18.2	14.7

Source: Computed by the authors from DHS surveys.

Education improved significantly over this period; by 2011 the proportion of the population who had secondary education or more almost doubled compared to 20 years before. The number of households having electricity also increased substantially over this period, though there was a much more modest improvement in the proportion having access to an adequate drinking water source. Ownership of durable goods did not increase a lot over this period, except for the percentage of households having a refrigerator, this presumably also being linked to the greater access to electricity.

In short, though many of these indicators give an impression of very slow improvement over the period, the situation, in particular in relation to health indicators, improved more noticeably in recent years, though the absolute level of outcomes remains disappointing for a country with this level of per capita GDP. The time pattern of change here is somewhat different from what was seen above for consumption poverty. For the latter the situation improved between 1996 and 2001, but made limited progress between 2001 and 2007. The DHS indicators by contrast show least progress between 1991 and 2004, but quite good progress between 2004 and 2011. However, this difference is not surprising; the surveys were conducted in different years, and consumption estimates in particular can be quite sensitive to the economic conditions when the surveys were carried out. In addition there is no reason why monetary and different non-monetary measures should show the same trends.

## 5 A disaggregated analysis of monetary poverty

We turn now to analysing poverty in Cameroon at a more disaggregated level, firstly considering monetary poverty. Beginning with a geographic disaggregation, Table 7 presents poverty indices separately for urban and rural areas for the three ECAM surveys, along with mean consumption levels. Table 8 then presents similar information for the 12 commonly identified regions of Cameroon for 2001 and 2007; here the 1996 survey cannot be disaggregated to the regional level.

Table 7: Trends in monetary poverty in urban and rural areas over the 1996–2007 period

	Urban			Rural		
	1996	2001	2007	1996	2001	2007
$P_0$	0.414 (0.0297)	0.221 (0.0115)	0.122 (0.0085)	0.596 (0.0464)	0.499 (0.0193)	0.550 (0.0176)
$P_1$	0.147 (0.0134)	0.063 (0.0039)	0.028 (0.0024)	0.214 (0.0242)	0.183 (0.0122)	0.175 (0.0086)
$P_2$	0.069 (0.0074)	0.027 (0.0020)	0.010 (0.0010)	0.101 (0.0138)	0.093 (0.0090)	0.072 (0.0045)
Watts	0.205 (0.0199)	0.085 (0.0056)	0.035 (0.0032)	0.299 (0.0362)	0.275 (0.0257)	0.230 (0.0123)
Average per adult consumption	400,607	484,450	515,391	235,881	315,012	280,224
Gini coefficient	0.449 (0.0203)	0.406 (0.0096)	0.352 (0.0075)	0.346 (0.0310)	0.369 (0.0161)	0.322 (0.0065)

Note: Figures in parentheses represent standard errors.

Source: Computed by the authors from ECAM1, ECAM2 and ECAM3 survey data.

These tables reveal very important differences. It is quite clear from Table 7 that the trends have been very different for urban and rural poverty. Both urban and rural poverty fell between 1996 and 2001 according to all indices, but reduction was much greater in urban areas. But between 2001 and 2007 the pattern is somewhat different: the incidence of poverty continued to fall in urban areas but rose significantly in rural areas. Average consumption fell over this period in rural areas but continued to rise in urban areas. It is clear that the national level pattern of very little change hides very different patterns in urban and rural areas. However, the  $P_1$  and  $P_2$  measures fell in rural areas over this period, though not to a statistically significant extent. This shows an improvement in the situation of the extreme poor in rural areas over this period; the rural growth

incidence curve over this period (Appendix Figure A2.5) has a very similar pattern to the national level curve. The Gini coefficient shows that while urban inequality was much higher to start with, it fell quite sharply and to a significant extent over the period. The rural Gini coefficient increased to an insignificant extent between 1996 and 2001, before falling significantly between 2001 and 2007.

Growth incidence curves for urban and rural areas over the 1996–2001 and 2001–07 periods are presented in Appendix Figures A2.2 to A2.5. The urban curves are decreasing with the percentile for both periods, reflecting the falling inequality; the rural curves are quite similar to the national ones presented above.

The regional level analysis of poverty in 2001 and 2007 shows sharp differences between regions. Consistent with the above table, poverty is lowest by far and average expenditure highest by far in the big cities of Douala and Yaoundé. The differences in average expenditure between the other regions is not vast in either 2001 or 2007. Among the other regions, the Southwest, West, and South had the lowest levels of poverty in both 2001 and 2007. The Centre, the Northwest, and the North were the poorest regions in 2001; by 2007 the highest levels of poverty were in the Far-North, the North, and Adamaoua (so the northern part of the country), followed by the Northwest and the East. Poverty severity was particularly high in the Far-North and the North in 2007. The situation generally worsened in the northern region of the country between 2001 and 2007, while over the same period the situation improved in some previously high poverty areas such as the Centre or the Coast.

Average consumption fell between 2001 and 2007 in the North and Far-North (as well as the East), in contrast to what was observed in many other regions. Over this period, poverty fell sharply in the two main cities of Douala and Yaoundé, and there was also a significant fall in the incidence of poverty in the provinces of the West, Centre, and Southwest. In addition, the provinces of the Coast, South and Northwest witnessed a slight decrease in poverty over the period 2001–07.

Table 8: Poverty in Cameroon by region

Regions	Population Share	2001 $r_0$	$r_2$	Average consumption	2007 $r_0$	$r_2$	Average consumption
Douala	9.7	0.186 (0.0165)	0.0195 (0.0030)	538,44	0.055 (0.0121)	0.0021 (0.0006)	621,546
Yaoundé	8.7	0.183 (0.0205)	0.0213 (0.0033)	584,761	0.059 (0.0120)	0.0024 (0.0008)	649,305
Adamaoua	4.5	0.458 (0.0489)	0.0667 (0.0102)	314,310	0.530 (0.0439)	0.0541 (0.0101)	361,753
Centre	7.8	0.604 (0.0444)	0.1353 (0.0383)	337,206	0.412 (0.0313)	0.0310 (0.0053)	320,579
East	4.8	0.470 (0.0509)	0.0768 (0.0188)	371,334	0.504 (0.0520)	0.0622 (0.0107)	359,194
Far-North	17.7	0.418 (0.0419)	0.0556 (0.0105)	344,475	0.659 (0.0365)	0.1121 (0.0101)	310,484
Coast	4.9	0.441 (0.0466)	0.0876 (0.0196)	321,806	0.308 (0.0272)	0.0270 (0.0039)	340,499
North	7.3	0.491 (0.0337)	0.0694 (0.0067)	357,269	0.637 (0.0394)	0.0858 (0.0078)	327,396
Northwest	11.5	0.528 (0.0515)	0.1432 (0.0294)	327,933	0.510 (0.0341)	0.0683 (0.0084)	378,374
West	12.1	0.381 (0.0296)	0.0501 (0.0058)	348,849	0.290 (0.0286)	0.0227 (0.0041)	341,515
South	3.4	0.386 (0.0818)	0.0516 (0.0158)	357,987	0.292 (0.0474)	0.0265 (0.0061)	428,543
Southwest	7.5	0.350 (0.0572)	0.0692 (0.0188)	413,935	0.275 (0.0382)	0.0247 (0.0061)	463,977
Cameroon	100.0	0.402 (0.0146)	0.0698 (0.0061)	391,700	0.399 (0.0134)	0.0503 (0.0031)	411,629

Note: Figures in parentheses represent standard errors.

Source: Computed by the authors from ECAM2 and ECAM3 survey data.

On the other hand, as already noted the proportion of the population below the poverty threshold increased significantly in the provinces of Adamaoua, the East, the North, and Far-North, with particularly large increases in the two latter cases<sup>17</sup> (13.6 and 9.6 percentage points respectively). The significant poverty increase in the Far-North province may be due to situational obstacles such as the advent of floods and invasions of granivorous birds in this province of the country in 2007, which resulted in a serious loss of goods and harvests that negatively affected the population. In addition, structural obstacles such as anarchic agricultural practices and the chronic rainfall deficit contributed to the fall in agricultural production and the aggravation of food insecurity. Moreover, the peasants are victims of the lack of conservation techniques which leads them to sell

<sup>17</sup> It is opportune at this point to mention the fact that the region of the Far-North has been for a decade the privileged target of poverty reduction projects and programmes, as well as actions for the benefit of women in the Far-North province such as PREPAFEN, the programme for the improvement of rural family income (PARFAR), and the Logone and Chari project. In this respect, poverty should have decreased faster than elsewhere in the country.



the bulk of their agricultural output at harvest time, only to borrow money during hard times at high interest rates to buy vital commodities to make ends meet.<sup>18</sup>

In the East province, the increase in poverty may be explained by the slowdown in forestry activity which is very important in this region. Moreover, some companies in the timber industry were delocalized to establish their headquarters in Douala, a move which was likely to limit the employment opportunities of the population and the tax revenues of the municipalities of the province.

The poverty increase in the regions of Adamaoua and the North may be due to the loss of earnings in terms of revenues caused by the completion of the construction work of the Doba-Kribi pipeline.<sup>19</sup>

Regional level inequality data are not presented here, but generally show reductions over this period, many statistically significant, but inequality in the North and Far-North does not show a statistically significant change over this period.

A decomposition of changes in poverty into growth and redistribution components using the technique developed by Datt and Ravallion (1992)<sup>20</sup> presented in Table 6 shows that the growth effect plays an important part in accounting for urban poverty reduction and rural poverty increase, but there is also a strong poverty-reducing redistribution effect in urban areas. By-region growth effects contribute to strong poverty reduction in Douala, Yaoundé, the Centre, and the South, and there are strong poverty-reducing redistribution effects in Douala, Yaoundé, the Southwest, Coast, and the Centre. The increase in poverty in the northern regions of Adamaoua, the North, and the Far-North reflects sharply adverse growth and redistribution effects.

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<sup>18</sup> In addition, the slowdown of the activity of the Société d'Expansion et de Modernisation de la Riziculture in the plain of Yagoua, SEMRY, and the cessation of that of the Programme National de Vulgarisation et Recherche Agricole, PNVRA which supervise the peasants, further complicated the situation of households in this region of the country.

<sup>19</sup> It can be noted that this type of project offered in 2001, both the possibilities of direct incomes and of incomes mainly induced in the informal sector of the regions concerned.

<sup>20</sup> In short, the Datt-Ravallion methodology (1992) focuses on the decomposition of changes in poverty measured in terms of growth and redistribution components. The growth component alludes to a change in poverty which occurs when we assume that inequality does not change. The redistribution component is the change in poverty when the income level is not altered (i.e. when growth has not taken place). Finally, the residual captures the interaction between the growth and redistribution effects on poverty. If we represent by  $P(\mu_t, L_t)$  the poverty measure corresponding to an average income of  $\mu_t$  for period  $t$ , and a Lorenz curve  $L_t$ , the decomposition becomes:

$$\Delta P = (P(\mu_2, L_\pi) - P(\mu_1, L_\pi)) + (P(\mu_\pi, L_2) - P(\mu_\pi, L_1)) + R$$

The first element of the second member of the above equation is the change which may occur in poverty, if the Lorenz curve remains unchanged between time periods  $t_1$  and  $t_2$  (Impact of growth), whereas the second member corresponds to the change which may occur if average income does not witness any changes (Impact of inequality). The last element of the second member of the above equation is a residual.

Table 9: Changes in the incidence of poverty 2001–07, decomposed into growth and redistribution effects, by residence areas

Areas	Growth component	Redistribution component	Residual	Total change in poverty
Urban	-0.0448	-0.0624	0.0069	-0.1004
Rural	0.0548	-0.0139	0.0104	0.0513
Douala	-0.0606	-0.0820	0.0102	-0.1324
Yaoundé	-0.0524	-0.1052	0.0322	-0.1255
Adamaoua	0.0401	0.0053	0.0261	0.0714
Centre	-0.0778	-0.0590	-0.0552	-0.1920
East	0.0312	-0.0305	0.0330	0.0337
Far-North	0.1780	0.0759	-0.0127	0.2412
Coast	-0.0228	-0.0887	-0.0220	-0.1335
North	0.0931	0.0159	0.0369	0.1459
Northwest	-0.0163	0.0080	-0.0099	-0.0182
West	-0.0319	-0.0332	-0.0260	-0.0911
South	-0.1158	0.0264	-0.0045	-0.0045
Southwest	0.0067	-0.0892	0.0066	-0.0759
Cameroon	-0.0079	0.0039	0.0003	-0.0037

Source: Computed by the authors from ECAM2 and ECAM3 survey data.

A similar decomposition by the main activity of the household (Table 10) shows a sharp poverty reduction among those in non-farm activities, both formal and informal though faster in the latter, but a sharp poverty increase among those working in agriculture. These changes predominantly reflect growth effects.

Table 10: Changes in the incidence of poverty 2001–07, decomposed into growth and redistribution effects, by main economic activity

Activity	Growth component	Redistribution component	Residual	Total change in poverty
Salaried public sector	-0.2512	-0.0680	-0.0025	-0.3217
Private formal sector	-0.2511	0.0156	-0.0525	-0.2880
Informal agricultural sector	0.2289	-0.0996	0.0653	0.1946
Informal non-agricultural sector	-0.0931	-0.0601	-0.0096	-0.1628
Unemployed	-0.2380	-0.0962	0.0026	-0.3317
Others	-0.0991	-0.0006	0.0309	-0.0689
Cameroon	-0.0079	0.0039	0.0003	-0.0037

Source: Computed by the authors from ECAM2 and ECAM3 survey data.

## 6 Changes in non-monetary poverty

We now consider the regional picture in relation to the same DHS indicators already discussed above. The 2004 and 2011 DHS surveys enable an estimation of indicators at the level of the 11 standard regions of Cameroon; in 1991 and 1998 the sample size means that disaggregation is only possible into five regions, which are an aggregation of the 11 regions. To enable comparability the tables show figures for these five regions for each of the four survey years, and more detailed

figures for the last two survey years. In some cases other forms of disaggregation will be shown, for instance by urban/rural or by wealth quintile defined using the DHS asset indices.

Again starting with health indicators, Table 11 presents data for under-five mortality. Mortality rates are higher for boys than girls. By region, sharp differences are seen; in particular mortality rates are much higher in the Adamaoua, North, and Far-North regions. The detailed data for 2004 and 2011 show that it is in the more remote North and Far-North regions that rates are highest. These rates are twice as high as those in the region with the best mortality outcomes, the main cities of Douala and Yaoundé. The other regions have mortality rates more similar to those of the main cities, though even here important differences are apparent, notable between the Northwest (where rates in 2011 are lowest in the country) and the adjacent Southwest (where rates are much higher). Most regions show a pattern of change in mortality rates over time which reflects the national pattern, with little change (or sometimes worsening) between 1991 and 2004, before improving significantly between 2004 and 2011. But it is clear from these figures that the high national level mortality figure reflects in particular very poor outcomes in the northern part of the country.

Table 11: Disaggregated under-five mortality rates for Cameroon

	1991	1998	2004	2011
<b>By location</b>				
Region: Yaoundé/Douala	103	91	93	75
Yaoundé			112	76
Douala			74	75
Region: Adamaoua/North/Far- North	199	202	186	171
Adamaoua			136	129
North			204	191
Far-North			185	168
Region: Centre/South/East	124	146	148	110
Centre			120	121
South			153	103
East			186	96
Region: West/Coast	109	91	123	101
West			126	99
Coast			113	105
Region: Northwest/Southwest	87	98	116	93
Northwest			98	68
Southwest			143	127
Boy	144	148	154	135
Girl	143	144	141	122
<b>Total</b>	<b>144</b>	<b>146</b>	<b>148</b>	<b>128</b>

Source: Computed by the authors from DHS surveys.

Turning now to malnutrition, Table 12 reports on rates of stunting of children aged under 36 months and Table 13 on underweight rates. Appendix Table A2.3 also reports in a similar format tables on weight-for-height indicators. As well as the geographic disaggregation, these tables also report malnutrition figures by wealth quintile.

Geographically, we observe that the patterns are similar to the patterns for mortality: outcomes are worst by far in the Adamaoua/North/Far-North region and best in Douala and Yaoundé, with a very wide margin of difference between these; the three other large regions are in-between.

Again, in the northern region the worst outcomes are in the North and Far-North regions. In relation to stunting, outcomes in the other regions of Cameroon are still quite poor and much worse than Douala/Yaoundé with, for instance, 29.4 per cent being stunted in the East and 25.5 per cent in the Northwest in 2011, and 16.8 per cent and 17.5 per cent being underweight in the South and East respectively. Again the pattern of change in most regions reflects the national pattern, with significant improvements mostly only happening between 2004 and 2011.

Table 12: Percentage of under three-year-olds with height-for-age Z score less than -2

% with height-for-age Z score less than -2	1991	1998	2004	2011
<b>By location</b>				
Region: Yaoundé/Douala	8.7	14.7	19.6	10.2
Yaoundé			13.7	11.0
Douala			25.0	9.4
Region: Adamaoua/North/Far-North	29.0	35.6	34.5	32.7
Adamaoua			25.5	25.9
North			42.0	34.8
Far-North			32.5	32.9
Region: Centre/South/East	23.0	30.8	27.6	20.6
Centre			25.9	14.8
South			27.7	21.9
East			30.1	29.4
Region: West/Coast	23.0	21.2	27.5	21.6
West			29.3	22.1
Coast			22.4	20.2
Region: Northwest/Southwest	22.7	25.8	30.2	22.7
Northwest			30.0	25.5
Southwest			30.6	18.7
<b>By wealth quintile</b>				
Lowest	31.7	36.4	35.4	36.8
Second	29.1	32.2	33.5	31.4
Middle	30.8	31.9	33.6	21.6
Fourth	17.3	26.0	25.4	17.0
Highest	9.1	15.3	13.5	9.9
<b>Total</b>	<b>22.9</b>	<b>29.3</b>	<b>29.7</b>	<b>24.1</b>

Source: Computed by the authors from DHS surveys.

A very sharp gap in both stunting and underweight outcomes by wealth quintile is also apparent, the difference between first and fifth quintile often being a factor of 3 in relation to stunting, and 4 or 5 in relation to underweight outcomes. In part, this reflects geographic differences already seen, but sometimes the differences by quintile are even larger. But what is also apparent from the quintile disaggregation is that the improvements have not been seen in the first or second quintile (in some cases worsening in the first quintile), but only in higher quintile groups. In fact, stunting

and underweight outcomes worsened in the first quintile. It appears that many of the poorest have not benefited from better nutritional outcomes, which is a matter of particular concern.

Table 13: Percentage of under three-year-olds with weight-for-age Z score less than -2

% with weight-for-age Z score less than -2	1991	1998	2004	2011
<b>By location</b>				
Region: Yaoundé/Douala	6.5	6.8	5.5	5.0
Yaoundé			8.4	4.1
Douala			2.9	5.9
Region: Adamaoua/North/Far-North	29.1	33.4	31.8	33.0
Adamaoua			16.7	22.2
North			32.7	32.2
Far-North			34.4	36.2
Region: Centre/South/East	17.8	22.2	15.2	13.0
Centre			9.2	8.9
South			18.4	16.8
East			22.7	17.5
Region: West/Coast	6.6	10.1	10.2	6.7
West			10.5	6.4
Coast			9.3	7.5
Region: Northwest/South/West	8.1	13.6	13.3	9.1
Northwest			12.6	8.0
Southwest			14.6	10.7
<b>By wealth quintile</b>				
Lowest	28.4	32.6	28.3	34.3
Second	18.8	25.8	24.4	23.8
Middle	18.5	20.5	19.9	12.5
Fourth	12.7	16.6	10.1	10.3
Highest	7.5	9.1	6.5	6.0
<b>Total</b>	<b>16.3</b>	<b>22.2</b>	<b>19.4</b>	<b>18.1</b>

Source: Computed by the authors from DHS surveys.

The rates of wasting are low in most places except in Adamaoua/North/Far-North, and here again the situation has in fact worsened in the first quintile. There are very serious concerns about malnutrition worsening among the poorest in Cameroon.

Focusing now more on health inputs, Table 14 reports on vaccinations disaggregated by location and wealth quintile. This shows many of the same patterns: vaccination rates are consistently much lower in Adamaoua/North/Far-North, and especially in the latter two regions, and the rate actually fell in the Far-North between 2004 and 2011. Here, the best outcomes are actually not in the big cities, but rather in the Northwest and Southwest, both of these regions showing a big improvement between 2004 and 2011.

Vaccination rates in the lowest quintile are less than half of those in the richest quintile, and again the outcome worsened between 2004 and 2011 in the first quintile, in contrast to the others. The

biggest improvements are seen at the top of the distribution. Urban rates are better than rural rates, but even by 2011 more than a third of children in urban areas were not vaccinated.

Table 14: Proportion of children less than one-year-old who are fully vaccinated

	1991	1998	2004	2011
<b>By location</b>				
Region: Yaoundé/Douala	67.7	53.6	58.5	63.1
Yaoundé			53.3	59.9
Douala			63.7	67.3
Region: Adamaoua/North/Far-North	25.9	25	34.1	36.2
Adamaoua			47.2	53.7
North			20.3	38.1
Far-North			38.6	30.9
Region: Centre/South/East	29.4	25.5	43.2	47.5
Centre			47.4	51.6
South			42.3	35.2
East			37.5	47.3
Region: West/Coast	41.9	43.7	60.5	64.4
West			58.2	63.7
Coast			67.9	66.3
Region: Northwest/Southwest	57.2	51.4	64.4	79.6
Northwest			71.7	82.5
Southwest			53.1	75.2
<b>By wealth quintile</b>				
Lowest	27.4	23.5	36.4	32.3
Second	27.3	24	47.4	51.1
Middle	29.9	37.5	50.8	56.7
Fourth	46.5	45.6	50.8	61.3
Highest	63.5	56.9	60.3	70.3
Urban	50.5	48.6	54.9	63
Rural	32.9	31.2	42.4	46.1
<b>Total</b>	<b>40</b>	<b>35.8</b>	<b>48.2</b>	<b>53.2</b>

Source: Computed by the authors from DHS surveys.

There are also sharp regional differences in fertility rates (Table 15), once again being lowest in the main cities and highest in the northern regions, especially in the North and Far-North. What is striking from this table is that fertility rates in these northern regions have not fallen at all over this 20-year period, in contrast to all other regions. The slow progress in reducing child mortality is likely to be a factor here.

Urban fertility rates have fallen significantly but rural rates have not, and fertility rates remain high in the West, Coast, East, and Centre regions as well. However, fertility rates have fallen significantly in the Northwest and Southwest.

Table 15: Disaggregated fertility rates for Cameroon

	1991	1998	2004	2011
Region: Yaoundé/Douala	4.4	3.0	3.2	3.3
Yaoundé			3.2	3.5
Douala			3.2	3.2
Region: Adamaoua/North/Far-North	6.4	6.2	6.2	6.5
Adamaoua			5.4	5.2
North			6.0	6.5
Far-North			6.4	6.8
Region: Centre/South/East	6.3	5.1	5.4	5.3
Centre			5.5	5.6
South			4.6	4.6
East			6.0	5.4
Region: West/Coast	6.0	4.5	5.5	5.6
West			6.0	6.0
Coast			4.3	4.6
Region: Northwest/Southwest	5.7	4.1	4.3	4.2
Northwest			4.7	4.4
Southwest			3.7	4.0
Urban	5.2	3.8	4.0	4.0
Rural	6.3	5.4	6.1	6.4
Total	5.8	4.8	5.0	5.1

Source: Computed by the authors from DHS surveys.

In relation to education, the same regional pattern is apparent in all tables so far, with significantly worse outcomes in all the northern regions especially in the North and Far-North. By 2011, fewer than 12 per cent of respondents had secondary education or above; this contrasts dramatically with Douala/Yaoundé where an impressive 79 per cent are educated to this level. Education levels are much higher in other regions compared to the northern regions, but range from 69.7 per cent in the South to 44.8 per cent in the Northwest. All regions show the same pattern of consistent improvement in education rates over the period analysed here, but the gaps between regions remain constant or in some cases widen.

Table 16: Percentage of respondents with secondary education or above

Percentage of respondents with secondary education or above	1991	1998	2004	2011
By location				
Region: Yaoundé/Douala	62.5	72.8	71	79.3
Yaoundé			74.6	79.5
Douala			67.7	79.1
Region: Adamaoua/North/Far-North	3.7	5.8	7.7	11.8
Adamaoua			20.3	22.6
North			6.6	12.6
Far-North			5.2	7.9
Region: Centre/South/East	34.4	38.1	46.7	55.3
Centre			46.7	57.5
South			60.7	69.4
East			34.5	42
Region: West/Coast	32.7	45.2	47.3	58.8
West			45	56.9
Coast			52.9	63.8
Region: Northwest/Southwest	22.8	32	37.9	48.7
Northwest			31.6	44.8
Southwest			47	53.8
Total	26.5	33.3	39.1	46.2

Source: Computed by the authors from DHS surveys.

Turning to housing characteristics, access to electricity (Table 17) has also improved consistently over time in all regions. Here, unsurprisingly there is a very wide gap between urban and rural areas, though both have seen significant increases over this 20-year period. The same geographic gap seen everywhere else also applies here. The number of households having electricity is highest in the big cities, followed by West/Coast and Centre/South. The particularly high rates of access to electricity in the Centre, the Coast, and the Southwest regions are explained by their proximity to the largest electric power distribution centres in the country. The three northern regions of Adamaoua, the North, and the Far-North, have low access rates to electricity because of their remoteness from large distribution networks, low pluviometry for the construction of hydroelectric dams, and low household income.



Table 17: Percentage of households having access to electricity

	1991	1998	2004	2011
Region: Yaoundé/Douala	85.0	94.9	96.0	98.4
Yaoundé			96.2	99.1
Douala			95.9	97.6
Region: Adamaoua/North/Far-North	14.4	13.8	17.8	20.3
Adamaoua			35.5	41.0
North			14.3	23.3
Far-North			15.0	12.8
Region: Centre/South/East	18.7	30.9	47.8	56.2
Centre			50.9	61.6
South			56.8	61.2
East			34.3	43.4
Region: West/Coast	27.6	51.4	51.3	63.1
West			48.4	58.9
Coast			57.4	73.1
Region: Northwest/Southwest	25.7	50.7	41.4	49.0
Northwest			29.7	45.0
Southwest			58.5	53.2
Urban	63.0	79.0	77.1	87.5
Rural	8.7	22.0	15.5	18.5
Total	29.0	40.7	47.1	53.7

Source: Computed by the authors from DHS surveys.

In relation to drinking water (Table 18), the pattern, however, is a bit different. An adequate drinking water source here was defined to include piped water, water from well, water from trucks, and bottled water; inadequate sources include surface water and rain water. Defining an adequate water source is difficult, and wells in particular do not necessarily guarantee good quality potable water, but are certainly preferable to surface water (the largest among the sources deemed to be 'inadequate' here).

The outcomes are best in the big cities where piped water is very common, and in urban areas in general. Here though the outcomes in the northern regions are quite good, because of the very widespread use of wells as a drinking water source there. It is unfortunate though that the survey does not give information to judge how potable the water from these wells is likely to be. Here outcomes are worst in the West/Coast region, because of the common use of surface water there. This though appears to be the one indicator for which the outcomes from the northern region are not the worst in the country.

Table 18: Percentage of respondents having access to an adequate drinking water source

	1991	1998	2004	2011
Region: Yaoundé/Douala	90.6	91.2	85.8	95.0
Yaoundé			93.6	94.9
Douala			78.8	95.0
Region: Adamaoua/North/Far-North	72.3	84.1	82.9	79.3
Adamaoua			71.0	83.9
North			76.0	76.9
Far-North			89.5	79.5
Region: Centre/South/East	63.7	36.3	58.7	63.8
Centre			70.7	71.3
South			54.6	68.3
East			42.7	47.6
Region: West/Coast	42.0	50.1	58.5	58.3
West			53.9	53.9
Littoral			68.1	69.2
Region: Northwest/Southwest	48.3	61.2	61.8	65.1
Northwest			53.1	65.0
Southwest			74.7	65.1
Urban	88.8	89.1	83.8	87.9
Rural	49.4	52.0	58.8	60.5
Total	63.9	64.2	71.6	74.4

Source: Computed by the authors from DHS surveys.

Finally in this section we turn to durable goods owned by households. Three different assets were selected for this purpose: a radio as a key means of communication; a refrigerator as an important electrically operated, consumer-durable good; and a bicycle as a potentially important means of transport in rural areas. The geographic patterns of ownership are summarized in Tables 19, 20, and 21.

Table 19: Percentage of households owning a radio

	1991	1998	2004	2011
Region: Yaoundé/Douala	84.6	82.5	82.5	67.4
Yaoundé			83.2	69.1
Douala			81.9	65.7
Region: Adamaoua/North/Far-North	41.9	31.8	47.4	44.4
Adamaoua			64.2	55.8
North			52.3	43.3
Far-North			40.4	41.9
Region: Centre/South/East	59.5	54.8	66.7	58.2
Centre			71.1	62.0
South			69.7	64.4
East			56.7	47.6
Region: West/Coast	47.6	54.8	67.2	59.1
West			67.1	60.2
Coast			67.4	56.6
Region: Northwest/Southwest	54.6	61.3	59.5	59.0
Northwest			53.2	59.8
Southwest			68.7	58.2
Total	54.0	52.5	62.5	56.1

Source: Computed by the authors from DHS surveys.

Table 20: Percentage of households owning a refrigerator

	1991	1998	2004	2011
Region: Yaoundé/Douala	39.3	40.3	36.0	42.4
Yaoundé			32.3	41.0
Douala			39.4	43.7
Region: Adamaoua/North/Far-North	4.2	2.7	2.6	3.0
Adamaoua			5.8	7.2
North			2.6	4.0
Far-North			1.8	1.3
Region: Centre/South/East	7.6	5.3	8.3	13.0
Centre			8.3	15.1
South			8.8	14.5
East			8.0	8.5
Region: West/Coast	7.0	8.1	7.9	11.2
West			7.1	9.4
Coast			9.6	15.4
Region: Northwest/Southwest	4.5	8.1	6.5	9.2
Northwest			3.3	5.3
Southwest			11.1	13.4
Total	10.2	9.7	11.4	15.1

Source: Computed by the authors from DHS surveys.

The ownership of radios does not increase much over the period and in fact falls in Douala and Yaoundé; it is again lowest in the North and Far-North regions. With refrigerators, there is an increase in ownership over the period, consistent with the significant expansion of electricity availability; ownership is certainly highest in the big cities and is very low in the northern regions as well as the Northwest.

Table 21: Percentage of households owning a bicycle

	1991	1998	2004	2011
Region: Yaoundé/Douala	4.5	5.3	4.5	5.4
Yaoundé			3.5	6.0
Douala			5.5	4.9
Region: Adamaoua/North/Far-North	29.8	29.9	41.5	34.6
Adamaoua			22.4	13.8
North			38.2	30.5
Far-North			48.1	42.6
Region: Centre/South/East	7.7	4.0	7.2	4.6
Centre			8.6	4.3
South			6.9	4.4
East			5.3	5.2
Region: West/Coast	8.6	7.5	10.2	6.4
West			11.1	6.1
Coast			8.2	7.1
Region: Northwest/Southwest	12.4	8.4	11.3	6.7
Northwest			13.3	7.3
Southwest			8.2	5.9
Total	15.7	13.3	18.2	14.7

Source: Computed by the authors from DHS surveys.

We complement this DHS analysis with a brief discussion of non-monetary indicators estimated from the ECAM surveys based on Appendix Tables A2.4 and A2.5, because this allows a link to be made between non-monetary outcomes and consumption-poverty status. Appendix Table A2.4 shows a very slight increase in the net schooling rate of children aged between six and 14 between 2001 and 2007, but the ratio actually fell for the rural poor. Over this period the access of rural areas in general, and the poor there in particular, to potable water and electricity worsens (Appendix Table A2.5).

In summary, the dynamic analysis of monetary poverty over time reveals that poverty substantially decreased between 1996 and 2001, and then decreased marginally over the period 2001–07. In fact, the poverty ratio for the country as a whole decreased significantly from 53 per cent in 1996 to 40 per cent in 2001, and only dropped to 39.9 per cent in 2007. Throughout the three survey years of the study period, urban poverty remained considerably lower than rural poverty: it decreased significantly from 41 per cent in 1996 to 22 per cent in 2001 and to 12 per cent in 2007. On the other hand, the poverty ratio in the rural area decreased from 60 per cent in 1996 to 50 per cent in 2001, only to rise again to 55 per cent in 2007.

On the spatial level, we note wide disparities in poverty ratios between 2001 and 2007. In the cities of Douala and Yaoundé, poverty clearly fell by about 5 percentage points between 2001 and 2007.

In addition, the incidence of poverty fell in all the regions of the country, with the exception of the East, the Far-North, and the North regions.

The study shows that there also exist sharp divergences between areas and regions as concerns the non-monetary dimensions of welfare.

## **7 Conclusion and recommendations for decision-making**

This study has analysed the major features of growth in the Cameroonian economy, investigated trends in the evolution of poverty and income inequality throughout the national territory during the period 1996–2007, as well as the evolution of non-monetary welfare outcomes between 1991 and 2011.

The results of the study show that the Cameroonian economy witnessed an irregular growth trend during the study period, varying from sub-period to sub-period under the impetus of changes in economic policy orientations and the vagaries of domestic and external shocks. That is how the sub-period 1960–77 recorded an average annual real GDP growth rate of only 4.6 per cent per year, while the sub-period 1978–86 witnessed a particularly sustained growth rate in the neighbourhood of 8.8 per cent per annum. The sub-period 1987–93 was marked by a serious economic crisis which resulted in a plunge of about 40 per cent in real GDP between the outbreak of the crisis in 1987 and the bottom-most point of the trough in 1993, the year when a trend reversal occurred and led the economy to recover its growth path and to accelerate at the rate of 4.5 per cent per annum during the sub-period 1995–2000, only to slow down again over the sub-period 2000–07 with an average annual growth rate of 3.4 per cent. With continued fast population growth, this translates into very small increases in per capita GDP in the 2000s in particular. Over the 1990s and 2000s, the period for which poverty changes are analysed here, the growth rates were lowest in the agricultural sector, the sector in which the largest number of the poor were employed; this poor performance of the sector is especially apparent in the 2000s. The secondary and tertiary sectors, which are predominantly urban-based, performed significantly better.

The monetary poverty outcomes reflect the growth outcomes quite closely. With fluctuations in macroeconomic performances, monetary poverty at the national level decreased substantially between 1996 and 2001, and then dropped only marginally over the period 2001–07. There are, however, significant urban–rural differences in the 2000s in particular. Between 2001 and 2007 urban poverty continued to fall, but rural poverty in fact rose over this period. This pattern reflects the sectoral pattern of GDP growth over this period. Inequality as a whole did not change substantially in Cameroon over this period. In urban areas it fell in both the 1996–2001 and 2001–07 periods; in rural areas it rose in the first but fell in the second, the latter contributing to a reduction in the rural  $P_2$  index between 2001 and 2007. The between-areas or between-regions component of overall inequality was not a major determining factor in overall inequality.

The non-monetary indicators of well-being show a somewhat different pattern. Health indicators and assets show little improvements between 1991 and 2004, only starting to improve between 2004 and 2011; and some of the health indicators remain very poor for a middle-income country. Some other indicators such as electrification and education do though improve consistently over the period.

However, both monetary and non-monetary welfare indicators show striking degrees of spatial diversity. In both cases the outcomes are by far best in the two big cities of Douala and Yaoundé; and most indicators there showed larger than average improvements over the period. Almost all indicators are worst in the three northern regions of Adamaoua, North and Far-North, where the

differentials with the rest of the country are often very large. A number of non-monetary indicators in these regions did improve over the period, but not sufficiently to reduce the very large gap with the rest of the country. The Northwest and East also show relatively poor outcomes for most monetary and non-monetary indicators. In general, it is regions located closer to the main cities or the coast that have the best outcomes. The extent of spatial inequality in Cameroon is large and consistent across different indicators, and it shows no signs of narrowing; this is one of the most striking findings of this study. Lower growth rates over the 2001–07 period in some of the more peripheral regions account for the lower poverty reduction often seen there.

The results derived from the measurement and decomposition of poverty and expenditure inequality indicate the existence of a strong link between economic development and the strategies for poverty relief and for the reduction of expenditure inequality. They also help to show that not only do poverty and expenditure inequality vary across urban and rural areas and the ten regions of the country, but also to identify the causes of such differences. The objective here is therefore to conceive better policies which might reduce poverty and at the same time decrease income inequality within and between sub-groups of the population. In general, poverty relief and inequality-reduction strategies include macro- and microeconomic features of which the most important in the case of Cameroon are highlighted below.

The preceding conclusions suggest that the government of Cameroon could actually reduce poverty and income inequalities, and promote stronger growth by adopting the following recommendations:

- Improve the macroeconomic framework;
- Improve the business climate and governance;
- Place a high priority on seeking to promote agricultural production;
- Put in place policies to address the sharp spatial inequality in both monetary and non-monetary outcomes;
- Widen the fiscal space in order to finance increasing priority investments, chiefly in the areas of agriculture and infrastructures, by mobilizing additional non-oil revenues and reducing support to public enterprises;
- Improve the effectiveness of public spending, more particularly, public spending on infrastructure (road, railway, and other transport infrastructure), and spending linked to human capital, health, etc.;
- Develop basic infrastructure (education, health, agriculture, etc.);
- Promote private investment in the agricultural private sector;
- Diversify exports beyond oil products which now account for a large part of total exports;
- Pursue policies which ensure effective pricing and fair trade in international markets for commodities produced by the poor;
- Invest to protect the poor from the adverse shocks of trade liberalization;

- Increase access to the major factors of production such as credit; and
- Keep on investing in programmes targeted at poverty reduction, while making sure that specific investments are consistent with the long-term development strategy of the country.

Given that improvement in the living standards of the population is the fundamental objective of economic development and a crucial factor in increasing domestic demand and boosting sustained economic growth, public authorities should reinforce measures to create more jobs, increase the income of the population, achieve an equitable distribution of income, and ensure a more comfortable life for the population.

## APPENDIXES

### Appendix 1

#### 1 **Cameroonian household survey data (ECAM series) and methodology of poverty estimation**

The microdata used in the present study derive from the series of three Cameroonian household surveys ECAM1, ECAM2, and ECAM3 carried out by Cameroon's National Institute of Statistics (NIS) in 1996, 2001, and 2007, respectively.

##### 1.1 **The 1996 Cameroonian Household Survey (ECAM1)**

The first Cameroonian household survey ECAM1 was conducted over three months (February to April 1996); it covers the ten provinces of the country and has a national sample of about 1,700 households distributed into 150 blocks. Its overall objective was to measure the impacts of the economic crisis and of structural adjustment policies on household living conditions and standards, and to analyse the interrelations between the dimensions of these living standards. ECAM1 was a 2-degree stratified sample survey in Yaoundé and Douala (the two largest cities, and respectively the political and economic capitals of the country), and a 3-degree stratified sample survey in the other cities of the country, with a distinction between urban and rural areas. As to the rest of the country, a 2-degree stratified probability survey was carried out to select households, both strata being respectively composed of 'rural' and 'semi-urban' areas as defined during the General Census of the Population and the Habitat of 1987.

Two types of questionnaires were drawn up, one for the cities and large cities, and the other for the rest of the country. All these questionnaires were given to selected households and each of them comprised 11 sections, of which several are useful to this study on poverty and inequality. For more details on the methods used in the ECAM1 survey and the application of its results to evaluate living standards, see, DSCN/MINEFI (1997). See Volume I of the survey which is devoted to methodology.

##### 1.2 **The 2001 Cameroonian Household Survey (ECAM2)**

The second Cameroonian household survey ECAM2 deals with the measurement of household living conditions in Cameroon in 2001. Its purpose was also to set up the basis of a permanent monitoring and evaluation system focused on household living conditions and poverty-reduction programmes, thus making it possible to establish a situation of reference which can be used periodically to assess the impacts on poverty of policies and programmes implemented in the country.

ECAM2 is a survey covering the whole national territory and it has a sample of up to 12,000 households.<sup>21</sup> Its overall objective was to construct a poverty profile at the national and provincial levels of the country. To this end and, as in the case of the 1996 ECAM1, the biggest cities of Douala and Yaoundé were considered as special cases, and thus deserving to be raised to the status of separate strata in their own right. Moreover, each of the ten provinces of the country were

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<sup>21</sup> The ECAM2 concerns the set of ordinary households (as opposed to institutional households such as boarding schools, army barracks, hospitals, convents, etc.) residing over the whole national territory to the exclusion of the members of the diplomatic corps and their households.



divided into two strata: an urban area and a rural area. The survey was therefore carried out within 22 strata, of which ten were rural and 12 urban. For the sake of making comparisons with ECAM1 survey results, the urban area was divided into two sub-strata, namely cities with at least 50,000 inhabitants, and those having between 10,000 and 50,000 inhabitants. For more information on the sampling basis, the draw of the sample, and the extrapolation of the results see the National Institute of Statistics (NIS) (2002a.)

The questionnaire was organized into 16 sections with a view to analysing the different dimensions of poverty in Cameroon.<sup>22</sup> Data gathering lasted for three months in each of the three urban, semi-urban, and rural areas from September to December 2001. Moreover, a particular constituent of the survey dealt concurrently with the price data in order to evaluate home consumption, and to render the household expenditures of different regions comparable.

### **1.3 The 2007 Cameroonian Household Survey (ECAM3)**

ECAM3 was designed to update the 2001 poverty profile, to evaluate the extent of progress achieved as far as poverty reduction and the MDGs were concerned, and in order for it to serve as an input into the review of the PRSP adopted by the Cameroon Government in April 2003.

The sample of ECAM3, as that of ECAM2, comprises about 12,000 households. Its sampling basis is the list of count zones defined during the General Census of the Population and the Habitat in 1987.

As in the case of ECAM2, 12 survey regions are defined. They comprise the cities of Douala and Yaoundé, in addition to the ten administrative provinces of the country, the Centre province being defined as excluding the city of Yaoundé, and the Coast province also being defined as excluding the city of Douala. Three strata are defined in each survey region: an urban stratum composed of large cities, a semi-urban stratum composed of medium-sized cities, and a rural stratum composed of villages. The regions of Douala and Yaoundé are considered as being wholly urban. The strata involved in the survey therefore add up to 32 strata of which 12 are urban, ten semi-urban, and ten rural.

Data gathering lasted for three months from September to December 2007. The questionnaire of the survey was based on 13 modules, namely: (1) household composition and characteristics; (2) health; (3) education; (4) employment (including the labour of children aged five to 17) and the income derived from these activities; (5) anthropometrics and vaccinal cover; (6) housing and equipment; (7) migration of households; (8) accessibility to basic infrastructure; (9) perception of poverty; (10) household capital; (11) retrospective non-food household expenditure; (12) daily household expenditure; and (13) the price constituent.

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<sup>22</sup> The 16 sections of ECAM2 are the following: (1) household composition and characteristics; (2) health; (3) education; (4) employment and earned income; (5) fecundity, birth rate, and overall mortality; (6) anthropometry and vaccine cover; (7) housing and household equipment; (8) household migration; (9) accessibility to basic infrastructure; (10) perception of poverty; (11) non-agricultural family enterprises; (12) household capital; (13) agriculture and other rural activities; (14) retrospective non-food household expenditure; (15) daily household expenditure; and (16) the price constituent.

## **2 Methodology of the study: the welfare indicator and the poverty line**

The estimation of poverty requires that we measure consumption (welfare or aggregate consumption) and that we establish a line such that persons lying below such a line are considered as being poor (poverty line). The choice of both of these measures may considerably affect the poverty estimates and even the profile of the poor.

This section deals with the methodology used in the study to estimate consumption and the poverty lines, as well as the adjustments made to take account of temporal changes in prices and differences in the costs of living across the regions of the country.

### **2.1 The welfare indicator**

Household consumption expenditure is used as a welfare measure to analyse poverty and inequality. Several reasons argue in favour of the decision to use consumption expenditure or more precisely aggregate consumption as a proxy for household income and the main indicator of household welfare (Deaton and Muellbauer 1980; Deaton 1997). One of the main reasons is the factor of the seasonality of income distribution, especially in the case of farmers' households. In addition, on the empirical level, it can be shown that expenditure is measured with greater accuracy than income, notably in cases where the major proportion of that income derives from the informal sector of the economy. This argument is particularly pertinent in developing countries such as Cameroon where, as in the case of the 1996 ECAM1 survey (which is one of the databases used in the present study), only 8.6 per cent of the households interviewed declared their income. In other words, income was widely underestimated everywhere, thus justifying its exclusion from the present study as a household welfare indicator (See Fambon et al. 2000; Fambon et al. (2005).

The living standard indicator used in analysing changes in poverty and inequality over the period 1996–2001 includes: food and non-food expenditure (clothing and footwear, household equipment, transport and communications, miscellaneous services and housing services); the use value of durable goods common to both surveys; home consumption and in-kind transfers received. Once evaluated according to the same approach, the expenditure of 1996 and 2001 is temporally and spatially adjusted for price fluctuations, using 2001 as the base-year. This double deflation of aggregate consumption data makes it possible to compare the 1996 expenditure to that of 2001 directly, and to run stochastic dominance tests that can yield more accurate and better results (see, for instance, Ravallion 1994 and Davidson and Duclos 2000 for more details of the stochastic dominance tests).

To deflate the 2001 expenditure to the level of that of 1996, a temporal price index was worked out by considering the month of October 2001 as the base-month. The expenditure of each survey month is divided by the price index of the corresponding month as shown in Table A1.1.

Table A1.1: Temporal price indexes used (base = 100 in October 2001)

Price	ECAM1 (1996)			ECAM2 (2001)			
	Feb.	March	April	Sept.	Oct.	Nov.	Dec.
Levels	147.3	148.3	149.1	177.6	178.1	176.5	178.1
Indexes	0.827	0.833	0.837	0.997	1.0	0.991	1.0

Source: ECAM2 and reports on the evolution of household consumer prices NIS (2002b).

On the spatial level, Yaoundé is the region of reference for both years. To deflate expenditure, the spatial index of 2001 is used for both operations under the assumption that the relative cost of living between the regions did not change much. The Paasche index is used to deflate the expenditure used for comparisons at the level of regions, for it takes account of the weights of each region.

Since households differ in size and composition, the standard of living indicator finally retained in the present study is total household expenditure per adult equivalent. After aggregating household consumption expenditure, the expenditure per adult equivalent is obtained first by dividing the latter by the number of household adults equivalents<sup>23</sup>, then by dividing it by a spatial price deflator to take account of cost of living differences between the regions, these differences being caused by such factors as different sources of supply, transport costs, and other transaction costs.

In 2007, aggregate consumption comprises: food expenditure (including meals taken outside the household); non-monetary food consumption resulting from home consumption, and donations; the purchase value of non-durable goods and services; an estimate of the use value of durable goods; and the imputed value of housing for those households who own their accommodation or are housed for free by a third party (for more details on the estimates of these different consumption types, see NIS 2008a).

As in 2001, the welfare indicator computed at the household level is standardized by the number of household adult equivalents to obtain the expenditure per adult equivalent of the household. Moreover, aggregate consumption is divided by a spatial cost of living deflator. In 2001, deflators were worked out for each of the 22 survey regions (Yaoundé, Douala, and the 10 provinces), Yaoundé being the base-region. These deflators are Fisher-price indices with a basket of goods much larger than the one used for the poverty threshold. The calculation of deflators and of the poverty threshold of 2007 is presented in the next section. To deflate the 2007 expenditure to the level of 2001, the 2007 expenditure is multiplied by the ratio of the poverty line of 2001 to the poverty line of 2007.

## 2.2 The poverty line

After constructing the indicator of well-being, it is necessary to determine a poverty threshold. By definition, the poverty threshold is a level indicator of well-being that leads to determining whether a household is poor (when the indicator of well-being is less than the poverty line) or non-poor (otherwise). This threshold is designed to allow people to be classified as non-poor to meet at least their basic needs. The difficulty is to define these basic needs of food and non-food.

<sup>23</sup> The equivalence scale used in this study is 'the recommended dietary allowances' scale. It makes it possible to weight the level of consumption with age and sex. It assigns a heavier weight to men and increases consumption with age up to 50, an age from which consumption begins to decline.

The costs of basic needs method was used to construct the poverty line of 2001. This method firstly consists of determining a food poverty line and then adding an amount for non-food basic needs. The food poverty line is calculated from the cost of consumption of a basic number of kilocalories (kcal) needed to survive. Commonly used standards vary from 1,800 to 3,000 kcal per adult per day. In 2001, it was decided to use 2,900 calories per adult equivalent per day. A basket of 61 goods mostly consumed by households, representing 80 per cent of food consumption, was identified. Valuing the basket in the prices of Yaoundé enables the food poverty line  $z_a$  to be determined.

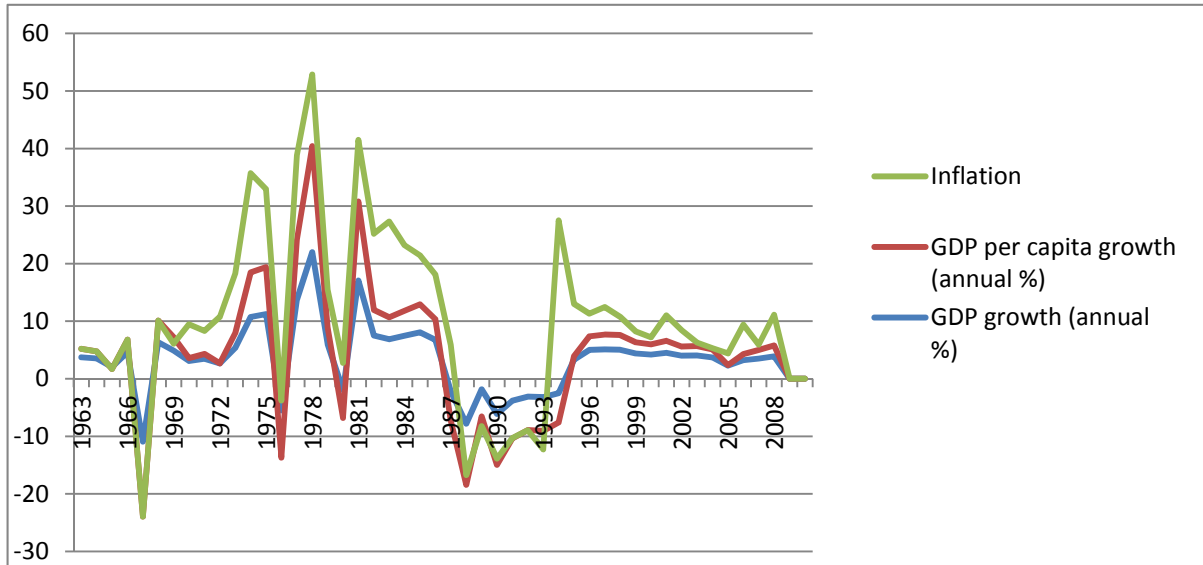
For non-food threshold, this standard does not exist. The INS took as non-food threshold, the non-food consumption of those whose total consumption per adult equivalent is just equal to the poverty line (Ravallion 1996, 1998). In the case of Cameroon, the non-food threshold was estimated indirectly from a linear regression. This model has as dependent variable the share of food in household spending, and as independent variables the logarithm of the ratio of total household expenditure on food poverty and other variables of household consumption. The intercept of the regression ( $a$ ) is the share of food expenditure of households whose total expenditure is equal to the poverty line and with  $(1-a)$  is their non-food share. Therefore, the total poverty line is:

$$z = z_a - z_a(1-a) = z_a(z-a)$$

To calculate the food poverty line in 2007, the INS used the 2001 basket, valued at 2007 prices. It is useful to emphasize two important points. First, it is important to maintain the same threshold to capture the evolution of the cost of living. Second, the basket must be valued at the prices of Yaoundé, as in 2001. This approach was not feasible because the number of observations was insufficient for robust estimates of average prices. Prices above those of the basket were used to estimate the line. In this way it was possible to calculate an index for each area of food and non-food price index. From thresholds (food and non-food) Yaoundé 2001 and deflators of the same year, the thresholds of food and non-food poverty have been estimated for all regions. These results were inflated to produce poverty lines (food and non-food) for all regions in 2007. The procedure was to apply to the food poverty line in 2001, the food inflation rate in this region for the period 2001–07, and similarly for the non-food poverty in each region. The sum of two thresholds for each region gives the total level of each region. Finally, to follow the same logic as in 2001, the threshold of Yaoundé is retained as the national threshold, and the ratio of the threshold of each region to the threshold of Yaoundé provides a deflator of aggregate consumption per adult equivalent of the region to produce the indicator of well-being (see previous section).

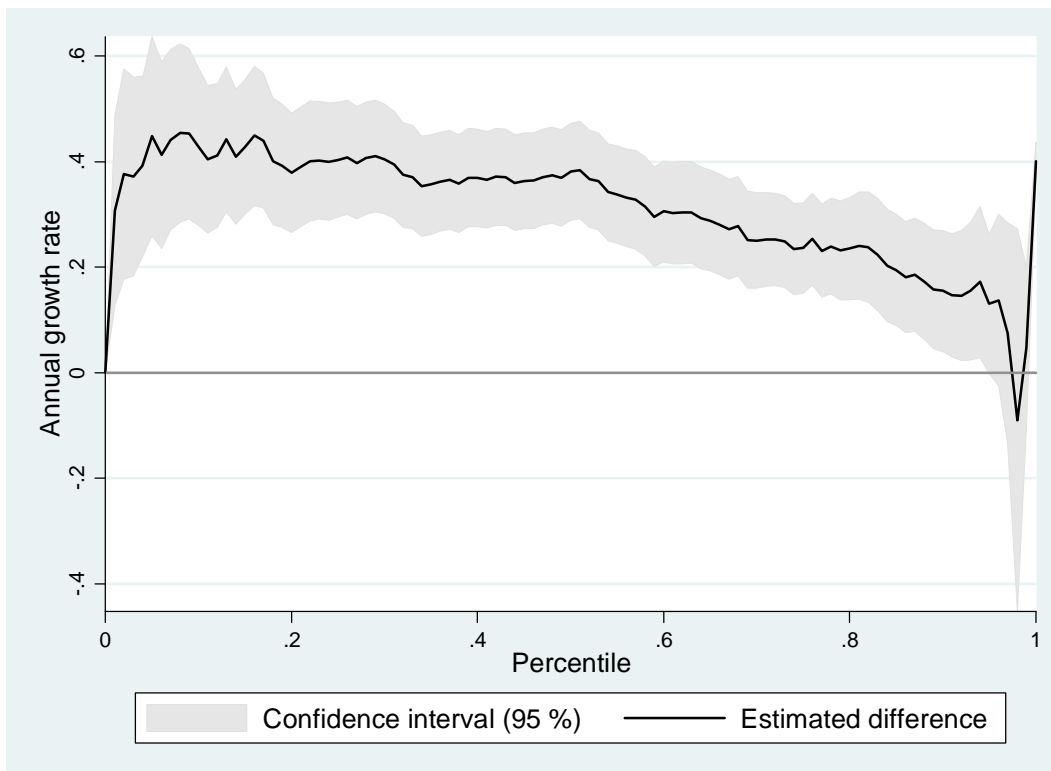
## Appendix 2: Tables and figures

Figure A2.1: Trends of real GDP, real GDP per capita, and inflation



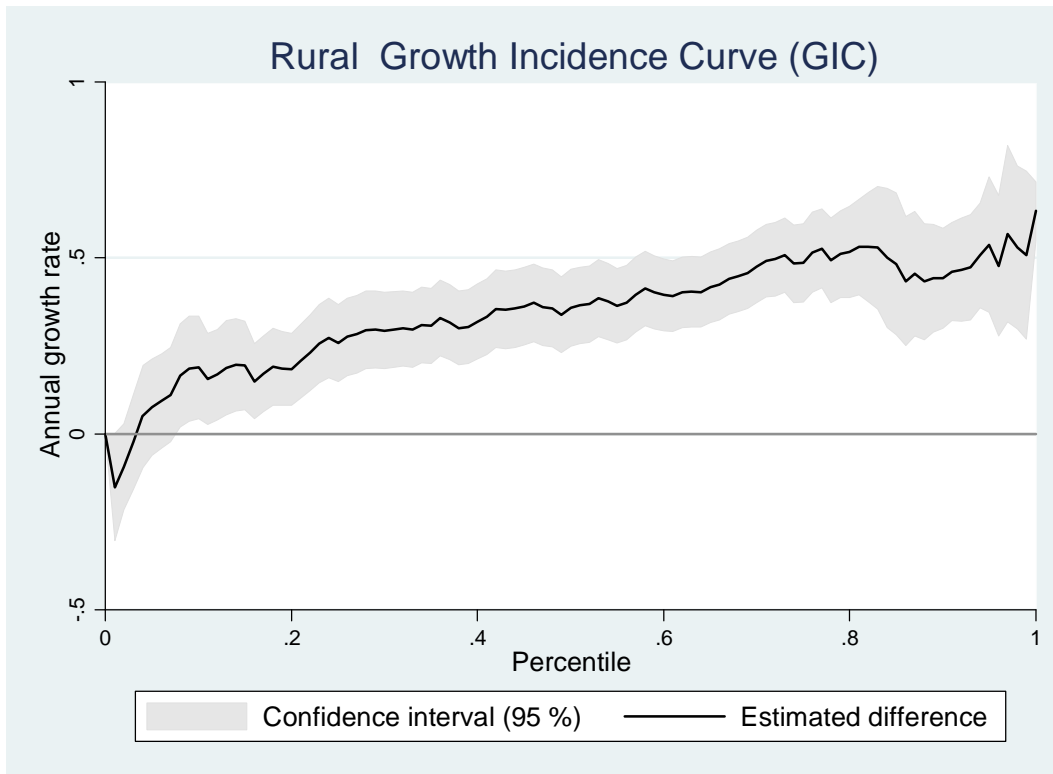
Source: Authors' computation from World Development Indicators (2010).

Figure A2.2: Urban growth incidence curve, 1996–2001



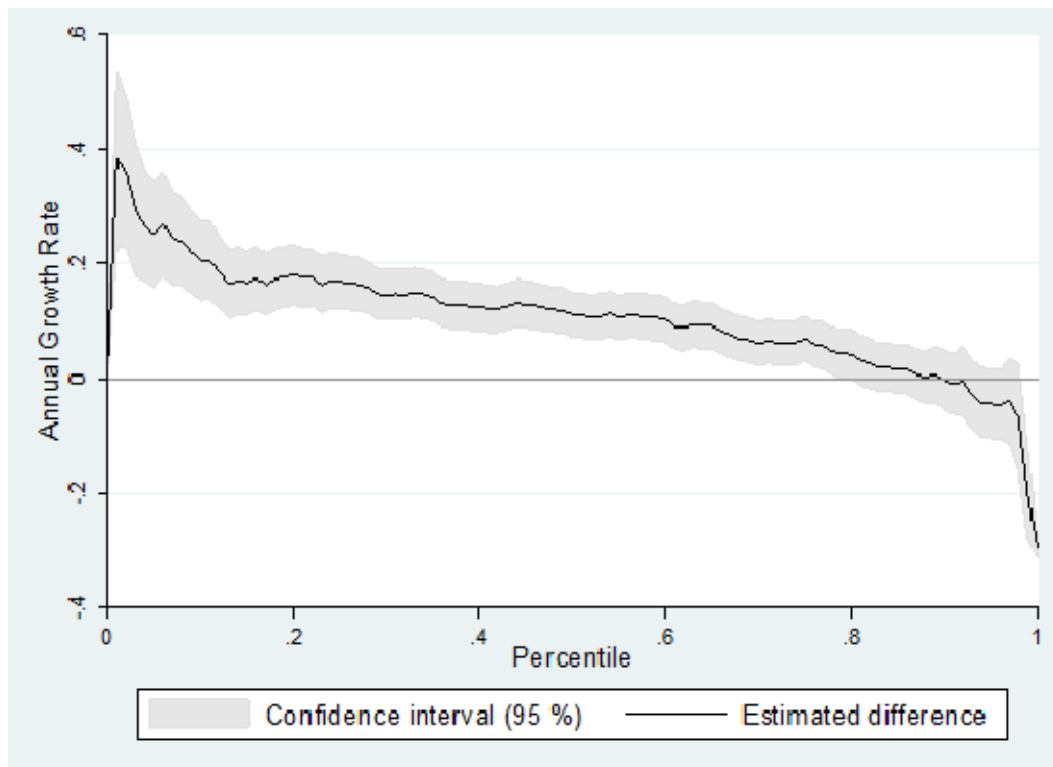
Source: Authors' computation from ECAM1 and ECAM2 data.

Figure A2.3: Rural growth incidence curve, 1996–2001



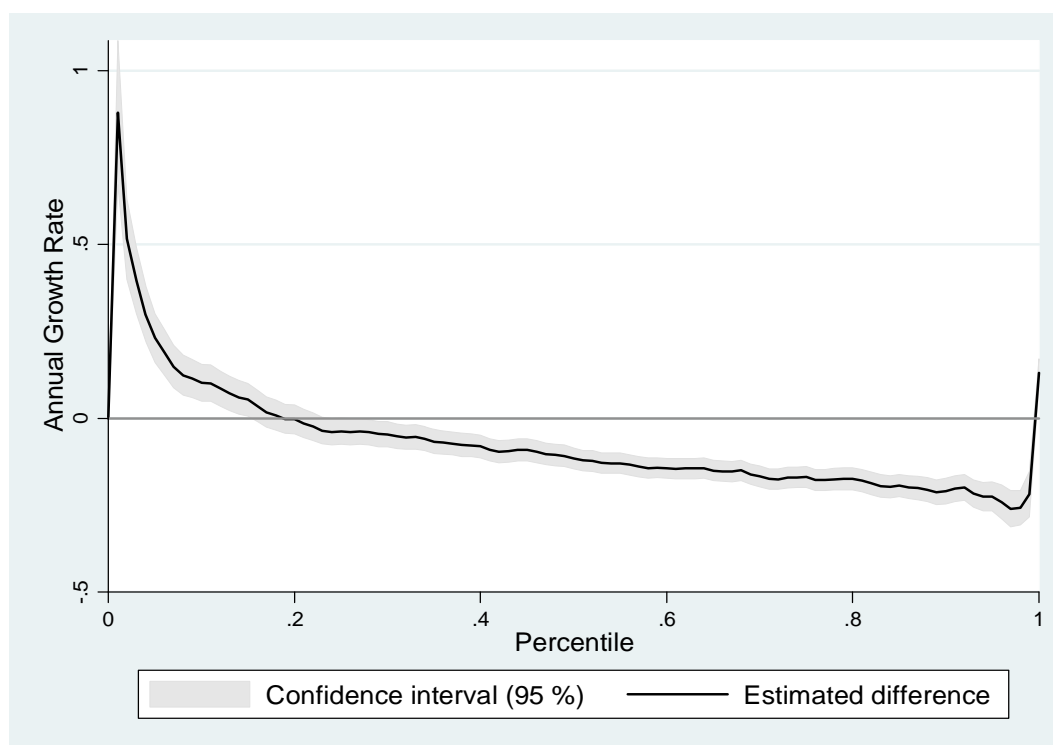
Source: Authors' computation from ECAM1 and ECAM2 data.

Figure A2.4: Urban growth incidence curve, 2001–07



Source: Authors' computation from ECAM2 and ECAM3 data.

Figure A2.5: Rural growth incidence curve, 2001-07



Source: Authors' computation from ECAM2 and ECAM3 data.

Table A2.1: Evolution of selected macroeconomic indicators (annual average % change)

	1963–77	1978–86	1987–93	1994–96	1997– 2000	2001–07
Real GDP growth rate	4.6	8.8	-4.0	1.9	4.7	3.6
Per capita real GDP	1.2	5.6	-6.5	-1.1	2.2	1.3
Inflation	17.9	24.9	18.2	15.2	2.7	2.8
Gross domestic investment (% of GDP)	6.6	11.3	2.1	16.6	15.4	18.5
Total debt (% of GDP)	37.3	46.3	131.6	102.8		
Total debt service (% of exports)	14.6	22.5	42.9	45.2		

Source: Authors' computations from Department of Statistics and National Accounts Cameroon, World Bank and IMF tables various issues.

Table A2.2: Sectors' contribution to GDP (%)

	Primary sector	Secondary sector	Tertiary sector
1993	27.3	42.3	46.4
1994	38.7	23.0	36.1
1995	39.2	23.3	35.1
1996	40.2	22.0	35.0
1997	40.9	21.5	34.8
1998	41.2	21.0	34.9
1999	42.3	19.7	35.2
2002	20.4	29.6	42.4
2003	20.1	28.4	44.1
2004	19.0	28.4	45.5
2005	19.0	29.6	43.8
2006	19.3	30.6	42.1
2007	19.8	29.5	43.1
2008	19.8	29.0	43.7

Source: Authors' computations from IMF (2000), and NIS (2008b).



Table A2.3: Percentage of children with weight-for-height Z scores less than -2

	1991	1998	2004	2011
By location				
Region: Yaoundé/Douala	1.3	1.5	3.5	2.2
Yaoundé			4.2	1.1
Douala			2.9	3.4
Region: Adamaoua/North//Far-North	7.5	8.0	9.2	11.7
Adamaoua			3.5	5.3
North			9.0	11.3
Far-North			10.5	13.6
Region: Centre/South/East	2.7	4.0	5.8	4.7
Centre			6.0	3.7
South			9.0	3.9
East			3.5	6.8
Region: West/Coast	2.3	5.3	1.9	0.6
West			1.8	0.6
Coast			2.1	0.6
Region: Northwest/Southwest	1.9	6.6	8.0	2.9
Northwest			9.5	2.5
Southwest			5.1	3.3
By wealth quintile				
Lowest	3.1	7.9	9.1	11.2
Second	5.0	6.1	10.1	8.4
Middle	5.5	5.6	5.4	4.9
Fourth	3.5	5.6	3.0	3.3
Highest	2.1	3.4	3.2	2.0
Total	3.8	5.9	6.7	6.2

Source: Authors' computation from DHS surveys.

Table A2.4: Net enrolment rate of 6-14 year olds, by residence and poverty status (%)

	2001	2007
National	78.8	79.8
Poor	71.1	70.4
Non-poor	85.9	88.9
Urban	90.5	93.3
Poor	79.6	87.0
Non-poor	93.4	94.5
Rural	73.5	73.9
Poor	69.8	68.5
Non-poor	79.1	83.3

Source: Government of Cameroon – MINEPAT (2010).

Tables A2.5: Proportion of households with water and electricity by residence and poverty status

Areas	Year	Potable drinking water			Electricity		
		Poor	Non-poor	Total	Poor	Non-poor	Total
Cameroon	2001	34.3	57.5	50.5	22.5	56.2	46.1
	2007	24.8	59.0	49.0	17.3	60.6	48.0
Urban	2001	71.5	88.3	86.2	68.2	91.0	88.2
	2007	68.9	88.3	86.8	64.8	92.5	90.4
Rural	2001	28.2	33.4	31.3	14.9	29.0	23.4
	2007	20.0	31.7	26.8	12.1	30.9	23.1

Source: Government of Cameroon – MINEPAT (2010).

### Appendix 3: Map of Cameroon showing principal regions



Source: Authors' elaboration based on Government of Cameroon (2002) and Tchoungui et al. (1995).

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