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▶ **To cite this version:**

Denis Cogneau, Kenneth Houngbedji, Sandrine Mesplé-Somps. The fall of the elephant. Two decades of poverty increase in Côte d'Ivoire (1988-2008). Growth and Poverty in Sub-Saharan Africa, pp.44, 2016. hal-01288423

HAL Id: hal-01288423
https://hal.science/hal-01288423

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UNITED NATIONS UNIVERSITY
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WIDER Working Paper 2014/144

The fall of the elephant

Two decades of poverty increase in Côte d'Ivoire (1988-2008)

Denis Cogneau,[1] Kenneth Houngbedji,[2] and Sandrine Mesplé-Somps[3]

November 2014

Abstract: At the end of the 1980s, Côte d'Ivoire entered a deep macroeconomic crisis that put an end to the often-praised 'Ivorian miracle'. After the death of the founding father Houphouet-Boigny, unrestrained political competition added to bad economic conditions and led to the nightmare of civil war. Drawing from a series of five household surveys covering two decades (1988-2008), we tell the story of this descent into hell from the standpoint of poverty and living standards. In 2008, after five years of civil war and another episode yet to come (2010-11), the extreme US$1.25 poverty headcount had reached a historical record, with Northern areas deeply impoverished by the partition.

Keywords: economic history, poverty, Côte d'Ivoire, welfare
JEL classification: I32, N17, N37, O55

Acknowledgements: We thank Shrike Zynga Coulibaly (Afristat) and Jonas Yao N'Dri (Institut National de la Statistique - Côte d'Ivoire) for their contributions to this study. We thank the National Institute of Côte d'Ivoire for giving us access to the survey data. We also thank workshop participants at UNU-WIDER, especially Channing Arndt, Michael Grimm, Murray Lebrandt, Andy McKay, and James Thurlow. The usual disclaimer applies.

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This study has been prepared within the UNU-WIDER 'Reconciling Africa's Growth, Poverty and Inequality Trends: Growth and Poverty Project' (GAPP), directed by Finn Tarp.

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ISSN 1798-7237 ISBN 978-92-9230-865-0

Typescript prepared by Jennifer Stanley Smith for UNU-WIDER.

UNU-WIDER gratefully acknowledges the financial contributions to the research programme from the governments of Denmark, Finland, Sweden, and the United Kingdom.

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1 Introduction

After having been praised as a model to follow, at the turn of the 21st century Côte d'Ivoire (Ivory Coast) began to stand as a counter-example for those eager to find auspicious signs of the 'emergence' of Africa. For now, the case of this country is perhaps a reminder to others that some golden ages may end in nightmares. In 2012, Côte d'Ivoire had just emerged from a contested presidential election that came close to turning into a civil war between the followers of the incumbent (Laurent Gbagbo) and the challenger (Alassane Ouattara). For five years between the end of 2002 and 2007, the country had also been partitioned between North and South, with UN-mandated forces interposing between legalists and rebels. And in 1999, a coup by General Robert Gueï had expelled the president Henri Konan Bédié from power. When did it all start? Even on that point, different readings of history already disagree; furthermore, it is certainly possible to find roots of such a great crisis in the distant past, dating back at least to the colonial period (Dozon 2011). However, opting for a narrative that is not too deterministic, it is safe to say that bad economic and political conditions started to combine between 1990 and 1993. Macroeconomic imbalances and growth failures appeared in the mid-1980s, the first structural adjustment programme (SAP) being launched as early as 1981; still, the halving of cocoa producer prices was delayed until 1990, and this delay can be seen as symptomatic of a kind of denial of macroeconomic issues by the government (Berthélemy and Bourguignon 1996; Cogneau and Mesplé-Somps 2002a, 2002b). In the same year, the first multi-party presidential election was conceded and won by the father of the nation Félix Houphouët-Boigny, who had ruled the country since independence (1960), and who died in December 1993. The death of the '*vieux*' (old man) raised the last obstacle to the CFA franc devaluation in January 1994, illustrating how economics could be determined by politics (Jones and Olken 2005). Reciprocally, it can be argued that neo-liberal economic reforms undermined the country's capacity to preserve a fragile political equilibrium, in particular between Northern and Southern elites (Boone 2007).

This paper proposes a retrospective analysis of the evolution of living standards in Côte d'Ivoire over two decades, from the end of the 1980s until the end of the 2000s. It focuses on income distribution and monetary poverty, but also looks at access to education and to health. This is made possible by the exploitation of the large sample household surveys that were implemented at various times during that period. Our analysis also makes use of available national accounts, as well as of regional and sectoral price data. To our knowledge, the most recent past decade has not yet been analysed in those terms, and no such historical perspective has yet been tried. This paper is organized as follows. The next section is a background section that reviews the main lines of Ivorian economic history from the colonial era until the 1980s. Section 3 then presents the data and the analytical methodology, further details being given in dedicated appendices. Section 4 reviews the first decade of uncertainties (1988-98), inaugurated by the great cocoa shock (1989-93) and followed by the devaluation bounce-back (1994-98). Section 5 then delves into the less studied decade of the civil war (1998-2008), which we divide again into two halves: The first half saw three presidents follow one another into power (Konan Bédié, Gueï, Gbagbo) until the partition of the country in 2002. The second half ended in 2007 after the signature of the Ouagadougou agreements between Northern rebels and legalist forces. We then briefly discuss recent developments between 2008 and 2013, and set out a few prospects for the ten years to come. Section 6 concludes.

2 The rise of the elephant until the end of the 1980s

The present day territory of Côte d'Ivoire was first constituted as a colony of France in 1899. Côte d'Ivoire became independent in 1960, like all the French colonies of West and Equatorial Africa.

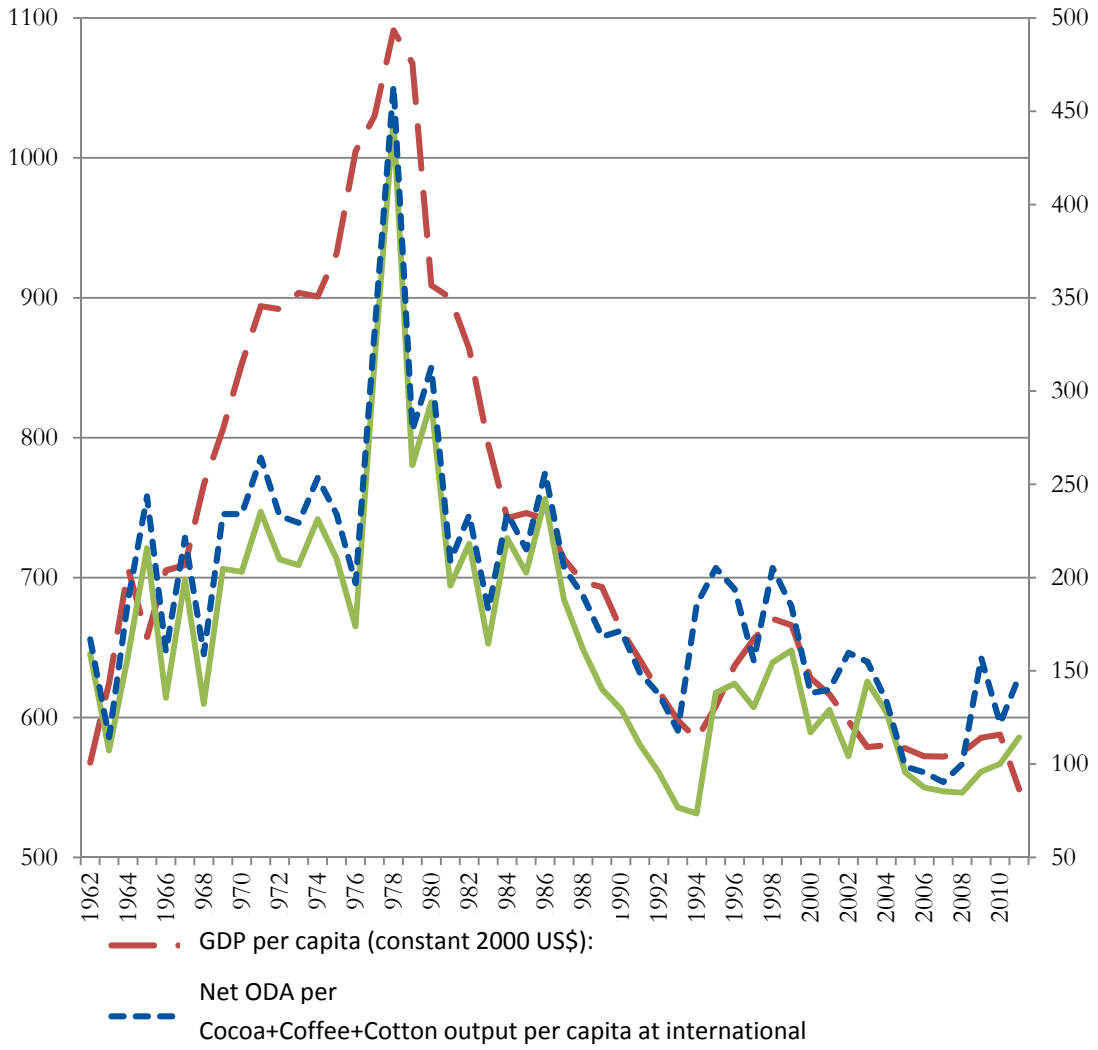
Before 1899, the French already had established trade posts on the coast of the Gulf of Guinea, in particular on the (Ébrié) lagoon in the south west (Grand-Bassam), close to the future capital of Abidjan, and not too far from the Gold Coast (Ghana) border where the British were settled. They also arrived in the north, coming from the coasts of Senegal; at the present day northern borders of the country with Guinea, Mali, Burkina Faso and Ghana, they fought a series of wars against the *Diula* leader Almami Samori Ture, that ended with his capture in 1898. Before the arrival of the French, the most structured pre-colonial polities were the kingdoms located in the north; from west to east: the Senufo kingdom of Kenedugu, whose capital city was Sikasso (in today's Mali), the Kong and Buna kingdoms (with eponymous capital towns in today's Côte d'Ivoire), and the Gyaman kingdom (around Bonduku). Other small polities (Sefwi, Indenie, Sanwi) along the border with Ghana were under the dominion of the Ashanti Empire, whose capital Kumasi lay in central Ghana. Economically speaking, the northern kingdoms were mostly based on trade with trans-Saharan caravans, which exchanged salt, cattle and a few manufactured goods for the gold from the northern mines and the kola nuts bought from the people of the southern forests. The slave trade was also present in the North East and along the border with Ghana (the Ashanti Empire was based on gold and slave trades), but this affected the populations of Côte d'Ivoire to a relatively small degree.

During the colonial era, Côte d'Ivoire did not receive more investment than other comparable areas like Guinea or Dahomey (today's Benin), but much less than Senegal, which was the central seat of the government of former French West Africa (Huillery 2009). Cocoa production only took off after the Second World War, in the 1950s, and this drove urbanization (Jedwab 2011). It started at the border of Ghana, which was the world's first producer of cocoa at that time, as *Akan planteurs* (cocoa growers) imitated their co-ethnic neighbours. A *Baule* physician and cocoa grower, Felix Houphouët-Boigny, was elected by the French National Assembly in 1945, and occupied a series of ministerial positions in the governments of the French 4th Republic. After having turned into an independentist leader, he became the first president of Côte d'Ivoire in 1960 and, as 'father of the nation', stayed in power until his death in December 1993. Houphouët-Boigny consolidated his rule by making a political alliance with northern leaders (a Centre-East/North axis), allowing him to counter-balance the influence of non-*Baule Akan* kings and chiefs (South East) and to downplay the opposition of *Kru* leaders (Centre West).[1]

At the same time, he preserved very strong links with the French, becoming one of the main actors of what would later be called the '*Françafrique*'. He was rewarded by high levels of French foreign aid, as well as by the allocation of French engineers and administrators to key technical positions within the Ivorian administration.

[1] This political equilibrium fell apart after his death in 1993, because of the individual competition between the northern prime minister Ouattara and the *Baule* Konan Bedie, president of the National Assembly.

Figure 1: GDP per capita and cash crop income 1960-2010

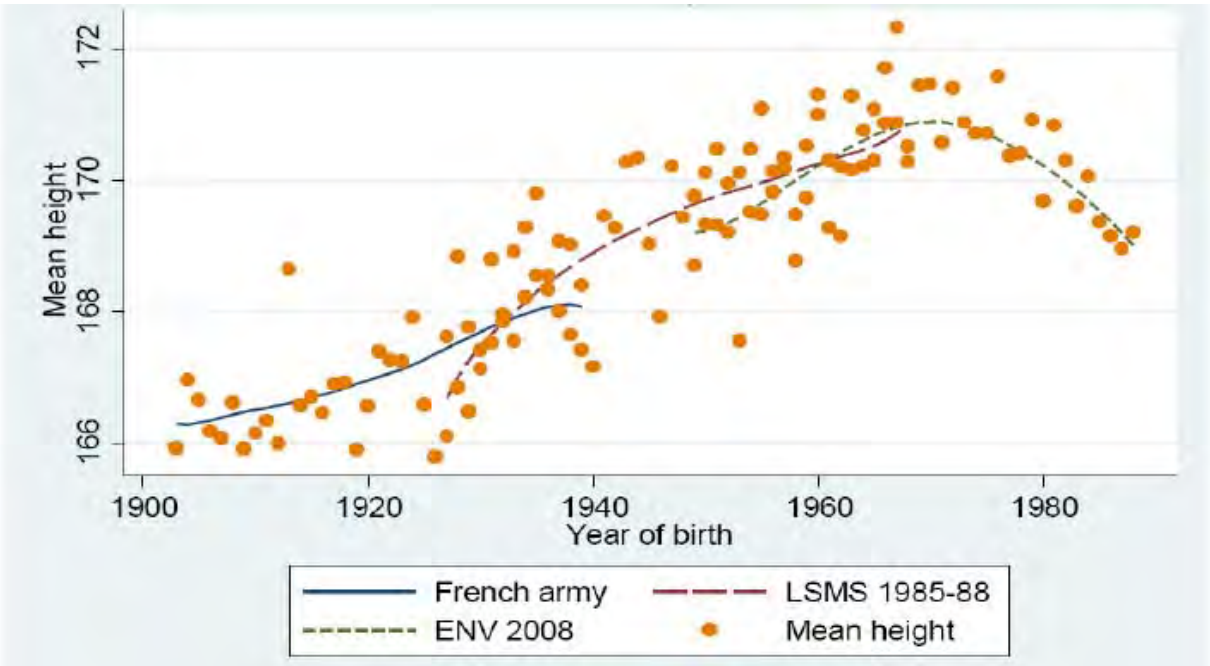


Source: Authors' elaboration based on data from World Bank (2012) and FAOSTAT (2012).

In the 1960s and 1970s, the 'Ivorian miracle' was built upon the two pillars of cocoa and French aid. The *Baule planteurs* colonized forested areas to plant cocoa and coffee trees, moving the cocoa frontier progressively from the east (Ghana border) to the west (Guinea border), where it had arrived by the end of the 1990s. Part of the shareholder labour force for cocoa was provided by very large migration flows from Northern neighbours, first Burkina Faso and then Mali. According to the 1998 census, 26 per cent of residents were 'foreigners', even if half of them were actually born in the country (Tapinos et al. 2002). Cotton production was developed in the North, and kept increasing until the end of the 1990s as well. Administered producer prices were managed by parastatals as an implicit taxation on farmers, so that cocoa and coffee income became central in the government revenue. With growing fiscal resources and generous amounts of aid, the Ivorian State could invest in roads and transportation infrastructures and in the construction of schools, and could also pay high wages to its civil servants, including teachers. Growing cocoa income spurred urbanization (Jedwab 2011). Great emphasis was placed on education, and Côte d'Ivoire succeeded in catching up with neighbouring Ghana in terms of literacy, where it was very much lagging behind at the end of the colonial era. Houphouët nicknamed Côte d'Ivoire the '*République des bons élèves*' (Republic of the good pupils), paraphrasing the name '*République des professeurs*' (Republic of the teachers) that was used to refer to the French 3rd Republic.

Figure 1 illustrates how growth was determined by income from cash crops, in particular cocoa. Between 1960 and the beginning of the 1970s, real GDP per capita rose by around 50 per cent, from 600 to 900 dollars (in constant 2000 US$). In 1974-75, the international prices of cocoa, coffee and cotton followed the boom in oil prices and other raw materials, and internal producer prices were dramatically increased as well, bringing GDP per capita to the heights of US$1,100. Côte d'Ivoire overtook Ghana as the world's largest cocoa producer in 1977 (Eberhardt and Teal 2010). However, this price boom did not last very long, and with the first adjustment programme in 1981 also came disillusion with growth. The short-lived bounce of international prices in 1985-86 allowed macroeconomic stabilization to be postponed for a while; in 1987, Côte d'Ivoire failed to influence cocoa international prices by accumulating stocks. At the end of the 1980s, the growing deficits of the state budget and of the cocoa and coffee marketing board could no longer be sustained, and a large cut of producer prices was finally implemented in 1989.

Figure 2: Height stature 1900-90 in males aged 20-59 years old



Notes: 'French army': Data from a 10,000 sample of conscripts (around 20 years old) and volunteers in the French army (1923-1960). 'LSMS 1985-88': Males aged 20-59 years from CILSS 1-4 household surveys (1985-88). 'ENV 2008': Males aged 20-59 years from ENV1 (2008) household survey.

Source: Authors' elaboration based on data from CILSS household surveys 1-4 (1985-88) and ENV1 (2008).

Figure 2 provides a kind of summary of the Ivorian miracle and reversal of fortune, using height data covering 85 years (1903-88). For the early period (1903-40), we use recently collected military data on conscripts in the French army; data on conscripts' height gains connects nicely with data from the 1985-88 and 2008 surveys in which the heights of males aged 20 years and over were measured.[2]

The graph reveals the impressive height gain of four centimetres that was obtained in the three first quarters of the 20th century. This gain compares well with Fogel's (1994) figures for 20th century France or United Kingdom (6 cm over the 1875-1975 period). For cohorts born after

[2] In retrospective survey data, the heights of the oldest cohorts are affected by old-age shrinkage. See Cogneau and Rouanet (2011) for an analysis of 1925-85 height evolutions, and a comparison with Ghana.

1975, i.e. when GDP per capita began its great decline, we observe a significant fall in stature, of around 1.5 cm.

3 Data description and methodology

This section presents the main choices that were made in terms of measurement of living standards and poverty. The appendix provides more detail both on the construction of variables from micro data (consumption, durable goods ownership, school enrolment), and on macroeconomic indicators drawn from national accounts.

This study is mainly based on data from five nationally representative household surveys conducted by the Institut National de la Statistique de Côte d'Ivoire in 1988, 1993, 1998, 2002 and 2008. Table 1 in the Appendix lists the names, precise dates and sample sizes of the surveys.

3.1 Population across space and occupations

The survey figures for the spatial distribution of the population are not too disturbing (see Table 1), with the exception of those for foreigners (see below). The regional distribution of the 1998 survey fits with population census data from the same year (Badou 2000). The westward shift of the cocoa frontier over time may explain why the share of the West Forest increases while the share of East Forest decreases. The evolution of urbanization seems a bit more distorted: The 1998 survey urbanization rate is above the population census figure by three percentage points (45 versus 42 per cent, see Badou 2000); then, as the sample designs of 2002 and 2008 are based on the most recent population censuses, urbanization declines to 43 and 41 per cent, respectively.

The 1988 survey very much underreports the foreign population and more generally the population of male migrants; this also means that gender ratios are severely distorted when compared with the population census for the same year. Being based on the 1975 population census, the survey probably misses migration inflows which followed the 1975 cocoa boom. The sample designs of the 1993 and 1998 surveys used the 1988 population census. The share of Burkinabe and Malian household heads jumps from 10 per cent in 1988 to 18 per cent in 1993. It then falls back to 15 per cent in 1998. In the 2002 and 2008 surveys, this share carries on decreasing to 13 per cent then 10 per cent. Part of this decrease could reflect return migrations generated by the increase in xenophobic violence against northern immigrants since the end of 1990s. Yet, we acknowledge that those evolutions deserve more scrutiny, if only to disentangle survey bias from real demographic flows. Apart from sample design bias, the recording of nationality is not straightforward in settings where nation states are young and weak. As Burkinabe and Malian households are poorer than the average Ivorian household, survey errors could bias the nationwide poverty figures; in particular, we could deem that the 1988 survey underestimates nationwide poverty for this reason.

Table 1: Population across regions

	1988	1993	1998	2002	2008
North	0.25	0.24	0.23	0.21	0.22
Rural	0.18	0.17	0.15	0.13	0.16
Urban	0.07	0.07	0.08	0.08	0.06
East Forest	0.28	0.23	0.22	0.24	0.21
Rural	0.20	0.16	0.15	0.15	0.15
Urban	0.08	0.07	0.07	0.09	0.06
West Forest	0.30	0.34	0.33	0.35	0.36
Rural	0.23	0.24	0.24	0.28	0.28
Urban	0.07	0.10	0.09	0.07	0.08
Abidjan	0.18	0.20	0.21	0.19	0.21

Urban (Total)	0.40	0.44	0.45	0.43	0.41
Observations	1,599	9,502	4,188	10,718	12,457

Source: Authors' elaboration based on data from CILSS 4 and ENV1-4 household surveys.

Table 2: Socioeconomic status of household heads over time

	1988	1993	1998	2002	2008
Farmer	0.55	0.54	0.45	0.46	0.46
Cocoa & Coffee	0.33	0.30	0.23	0.24	0.21
Cotton	0.08	0.05	0.04	0.03	0.01
Others	0.14	0.19	0.17	0.19	0.23
Self-employed	0.14	0.16	0.19	0.16	0.26
Wage-earner	0.24	0.22	0.27	0.26	0.26
Public servant	0.12	0.06	0.06	0.05	0.04
Private sector	0.12	0.17	0.22	0.21	0.22
Inactive	0.07	0.08	0.08	0.11	0.02
No. households	1,596	9,502	4,188	10,706	11,301

Source: Authors' elaboration based on data from CILSS 4 and ENV1-4 household surveys.

Table 2 shows the distribution of household heads by socioeconomic status in each survey (see Appendix for definitions). Unsurprisingly, the share of farmers decreases from 55 per cent in 1988 to 46 per cent 20 years later. Among farmers, the share of cash crop producers declines strikingly: By 10 percentage points (pp) for cocoa and coffee and 7 pp for cotton. A multiplicity of factors were involved. Real producer prices followed a downward trend (see Figure 5). The liberalization of these sectors at the end of the 1990s increased the spread of producer prices, with variations in price paid being linked to market power and/or quality, which most likely led to a greater concentration of market power, with the elimination of smaller, less efficient producers. Regarding cocoa, old trees in the east became less and less productive, and after 1998 cocoa production was no longer growing (Figure 8); the move to the west also meant some concentration of production in the hands of large *Baule* cocoa growers. Coffee prices and coffee production collapsed after 2002 (Figure 8). Cotton production also collapsed after 2002, possibly as a result of disruption caused by the North-South partition of the country, as in 2010 and 2011 some recovery was observed. Outside of agriculture, urban labour markets were marked by structural adjustment programs which drastically cut hirings in the civil service; the share of household heads who were civil servants fell from 12 to 4 per cent in two decades. While the share of private wage earners remained stable, informal self-employment and inactivity/unemployment increased.

3.2 Construction of the consumption variable

The consumption variable is the sum of consumption including own food production, food expenditures, and sufficiently frequent non-food expenditures like housing, education, clothing, transport and communication. The components of the consumption variable are presented in detail in the Appendix. We paid great attention to the comparability of all the components across surveys. For instance, we realized that imputed rent estimations could change significantly depending on how the number of rooms had been reported (e.g. whether toilet and bathroom were included or not).

Consumption of food products accounts for more than 50 per cent of total consumption. Food expenditures and consumption of own food production are recorded in two separate parts of survey questionnaires. Surveys do not use diaries, and instead ask about consumption over a product-specific recall period; not all surveys cover the whole year, and when they do, different households are surveyed in successive waves. We identified four features in survey questionnaires that could threaten comparability across time: (i) changes in the selection of goods for which expenditures were recorded; (ii) changes in recall periods for some goods; (iii) modifications in survey duration and controls for seasonality of consumption; (iv) differences in the detail of goods.

Figure 3 illustrates the kind of variation in consumption estimates that result from different choices regarding this last aspect. In their methodological experiment on the measurement of consumption in Tanzania, Beegle et al. (2012) identify the same strategic dimensions. Their results suggest that, when compared with the benchmark of individual diaries, a detailed list of products with short recall periods is preferable.[3] Anyhow, even if levels may differ very much, reassuringly enough, the time pattern of consumption is quite consistent across estimates. Dabalen and Paul (2013) propose a reweighting procedure in order to account for changes in questionnaire designs between the 1985-88 surveys and the 1993-2008 surveys. The assumptions implied by their methodology are questionable, as they themselves acknowledge, in particular that of stability in the distribution of socio-demographic variables over 20 years. Further, the correction they make appears relatively limited, and provides estimates that are rather consistent with ours.

3.3 Consumer prices

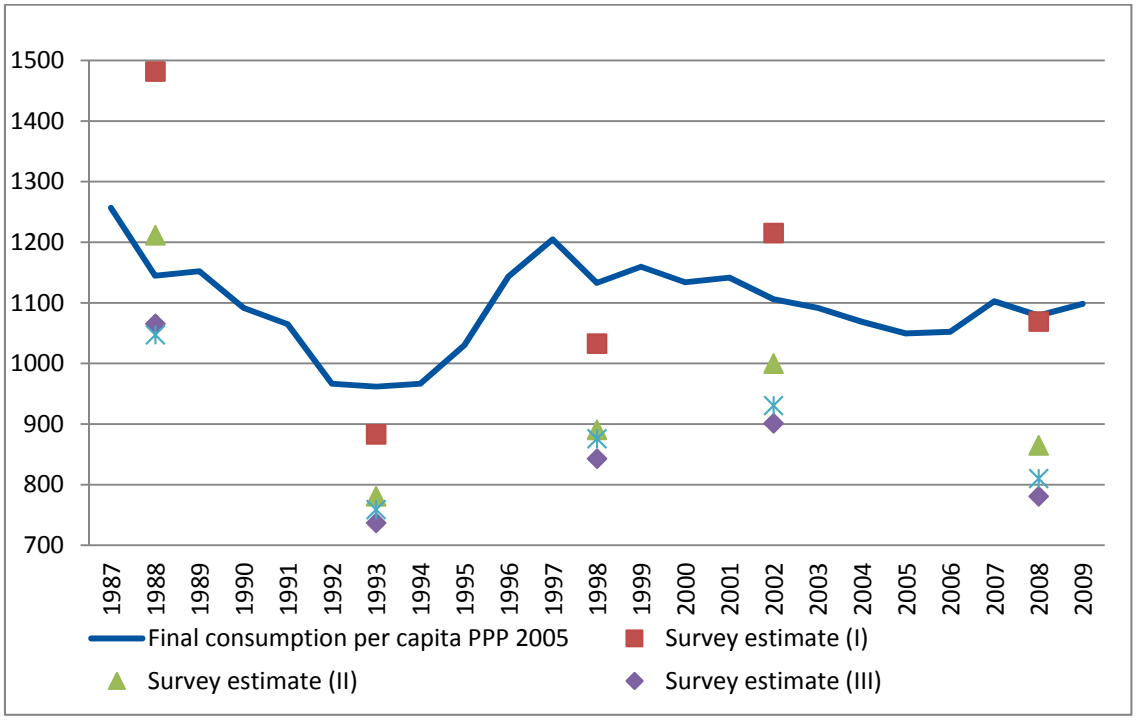
It has been revealed to be impossible to derive reliable/comparable unit prices from surveys. Quantities are declared in units that can be very heterogeneous across space, like bags or basins; furthermore, many times, units are not specified: 'other'. We then use external data on consumer prices. Household consumption is deflated by the national consumer price index (CPI) from the World Development Indicators, with 2005 as the base year, and translated into 2005 international dollars using World Development Indicators purchasing power parity exchange rates for the year 2005. The poverty line chosen to compute poverty indicators is US$1.25 (at the 2005 PPP level).

For both the 1988-96 and the 1996-2008 periods, disaggregated consumer price levels in Abidjan, along with budget coefficients, were communicated by the Ivorian National Institute of Statistics (INS). Unfortunately, the 1988-96 price data proved to be very inconsistent with the World Bank figures (World Bank 2008), as well as with the IMF figures (IMF 2013), in particular with respect to the high inflation following the CFA franc devaluation of 1994. The communicated price data showed very modest inflation in 1994 and 1995, in contrast with World Bank or IMF figures, which record a 26 per cent inflation rate for 1994, and 14 per cent for 1995. We could not elucidate the source of the problem.

In the rebasing year, 1996, the consumer basket was changed: two price collections were implemented, one with the old list, and another with the new and expanded list. Here again, the 1996-2008 price data proved inconsistent with the aggregate consumer price index given by other sources: the World Bank, IMF, and even Afristat, the regional statistical office. Once again, for cumulative inflation over 1998-2008, lower figures were obtained with the INS price data compared to the three other sources. We are still trying to understand the origin of such a discrepancy. In order not to run the risk of underestimating inflation, we resolved to stick with the consumer price index drawn up for the World Development Indicators.

[3] The Appendix explains in detail the way we compute non-food and food consumption aggregates and the potential bias induced by the changes to questionnaire designs since 1988.

Figure 3: Comparison of consumption per capita estimates



	Survey estimate (I) Short recall	Survey estimate (II) Month recall	Survey estimate (III) (II) + no. months	Survey estimate (IV)
Own food production	Daily x 365	Daily x days per month x 12	Daily x days per month x months per year	Idem (III)
Food expenditures	Last week x 52	Last month x 12	Last month x months per year	Idem (III) except week-month average
Non-food expenditures	Unique recall period (week, month, trimester, year)			

Note: The graph plots national accounts final consumption per capita figures, and four different consumption per capita estimates from household surveys. Estimates differ according to the use of recall periods and declared frequency of consumption within these periods (see table below graph). In the remainder of the paper, estimate (III) is used.

Source: Authors' elaboration based on data from World Bank (2012), CILSS 4 and ENV1-4 household surveys.

We only used the disaggregate price data to analyse the potential of a change in consumer baskets. For instance, we computed another consumer price index using the budget coefficients of the average household in the first quartile of consumption per capita as of 1998. This 'poverty-oriented' price index showed little difference from the consumer price index computed with average budget coefficients. We also varied the consumer baskets according to the region of residence (North, East Forest, West Forest, Abidjan) and found little difference in aggregate price evolutions (keeping in mind that only prices collected in Abidjan were available).

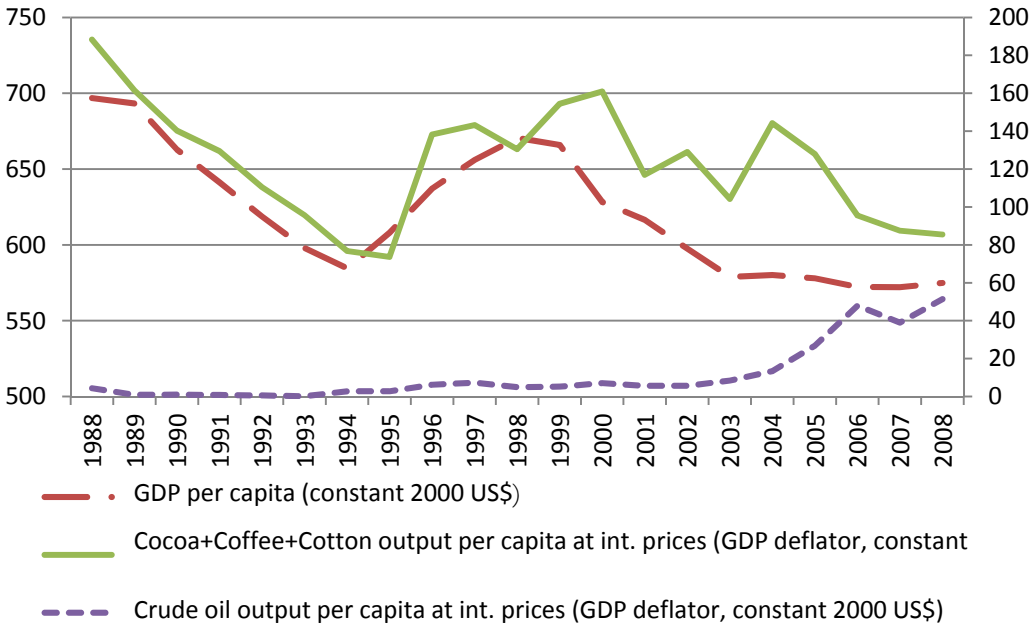
Last, sparse data on price levels were also obtained for some provincial capital cities other than Abidjan, and for two or three years lying between 1998 and 2008. Due to the disruptions of civil war, Northern provinces have no data at all.

4 The decade of uncertainties: 1988-98

4.1 The great cocoa shock: 1988-94

By all accounts, the 1988-94 period was the turning point when macroeconomic crisis spread all over the country, reaching the still relatively protected cocoa growers and formal wage earners. A fourth structural adjustment programme was signed with the International Monetary Fund, involving very large cuts to public wages and expenditures, and a halving of cocoa and coffee producer prices. Félix Houphouët-Boigny had already been struck by cancer, and Alassane Ouattara, the first prime minister since 1960, was in practice ruling the country. Social unrest and insecurity developed, with a series of street demonstrations, the occupation of Abidjan University, and a mutiny within the army. In the first multi-party election held in 1990, Houphouët still beat his younger opponent Laurent Gbagbo, with more than 80 per cent of votes.

Figure 4: GDP per capita, cash crop income and oil income 1988-2008



Source: Authors' elaboration based on data from World Bank (2012) and FAOSTAT (2012).

Between 1988 and 1993, according to national accounts, GDP per capita again fell by US$100 and final private consumption per capita was reduced by 16 per cent. Our survey data indicates an even more dramatic collapse of household consumption per capita, from US$2.92 to US$2.02 per capita and per day respectively (constant 2005 international dollars), i.e. a 30 per cent reduction. As a result the US$1.25 poverty headcount almost doubled, from 20 to 38 per cent (Table 3). All regions in the country were evenly affected; whereas poverty had formerly been absent from the capital city Abidjan, 13 per cent of its inhabitants could be counted as poor (Table 4). In 1988, welfare was unambiguously much higher on the eastern side of Côte d'Ivoire, at the border with Ghana; in 1993, the difference had become much smaller, even if, thanks to past investments, public utilities remained (Cogneau et al. 2013).

Table 3: Consumption per capita and poverty measures over time

	1988	1993	1998	2002	2008
Panel A: Rural area					
Consumption per capita[1]	2.12	1.48	1.76	1.74	1.46
	(0.09)	(0.02)	(0.05)	(0.03)	(0.02)
Poverty indicators					
-Headcount	0.30	0.51	0.46	0.48	0.56
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
-Gap	0.08	0.16	0.15	0.17	0.22
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
-Depth	0.03	0.07	0.06	0.08	0.11
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Panel B: Urban area					
Consumption per capita[1]	4.14	2.74	2.98	3.40	3.11
	(0.14)	(0.04)	(0.07)	(0.07)	(0.04)
Poverty indicators					
-Headcount	0.05	0.21	0.15	0.19	0.19
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
-Gap	0.01	0.05	0.04	0.05	0.06
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
-Depth	0.00	0.02	0.01	0.02	0.02
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Panel C: National level					
Consumption per capita[1]	2.92	2.02	2.31	2.47	2.14
	(0.08)	(0.02)	(0.04)	(0.04)	(0.02)
Poverty indicators					
-Headcount	0.20	0.38	0.32	0.35	0.41
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
-Gap	0.05	0.11	0.10	0.12	0.15
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
-Depth	0.02	0.05	0.04	0.05	0.08
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	1,599	9,502	4,188	10,718	12,457

Notes: The poverty line is set at constant 2005 US$1.25 PPP per day. [1]Expenditures are set at constant 2005 US$ PPP. Standard errors in parentheses.

Source: Authors' calculations based on data from CILSS 4 and ENV1-4 household surveys.

Table 4: Poverty measures across regions from 1988 to 2008

	1988	1993	1998	2002	2008
Panel A: North					
Consumption per capita	2.06	1.49	1.81	2.17	1.41
	(0.10)	(0.02)	(0.12)	(0.10)	(0.03)
Poverty headcount	0.33	0.52	0.47	0.40	0.62
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Observations	416	2,527	977	2,611	3622
Panel B: East Forest					
Consumption per capita	2.68	1.99	2.07	2.34	1.87
	(0.09)	(0.03)	(0.06)	(0.04)	(0.03)
Poverty headcount	0.10	0.34	0.33	0.31	0.39
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Observations	400	2,414	934	2,604	3003
Panel C: West Forest					
Consumption per capita	2.29	1.62	1.91	1.75	1.69
	(0.16)	(0.02)	(0.04)	(0.05)	(0.02)
Poverty headcount	0.29	0.46	0.38	0.50	0.47
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	479	2,885	1,417	3,533	3864
Panel D: Abidjan					
Consumption per capita	5.59	3.39	3.77	4.29	3.96
	(0.28)	(0.09)	(0.12)	(0.11)	(0.09)
Poverty headcount	0.00	0.13	0.05	0.09	0.09

	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	304	1676	860	1970	1968
Panel E: All regions					
Consumption per capita	2.92	2.02	2.31	2.47	2.14
	(0.08)	(0.02)	(0.04)	(0.04)	(0.02)
Poverty headcount	0.20	0.38	0.32	0.35	0.41
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Observations	1,599	9,502	4,188	10,718	12,457

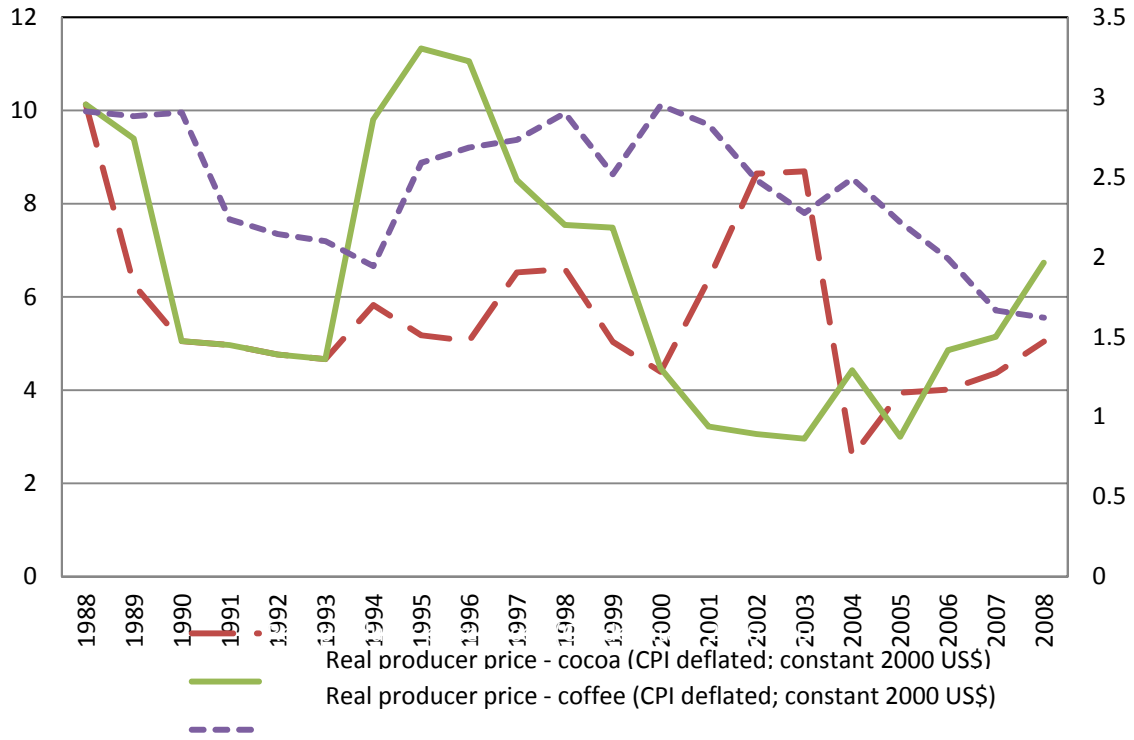
Notes: Expenditures are in constant 2005 US$ PPP and the poverty line used is US$1.25 PPP a day. Standard errors in parentheses.

Source: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

All social classes were affected: the consumption growth incidence curve is nearly flat, meaning that proportional decreases in consumption per capita were evenly spread across the income distribution (Figure 7). For the first time, net primary school enrolment fell from 56 to 47 per cent (see Appendix Table A3). Early-age children nutrition deteriorated, especially among small cocoa and coffee producers (Cogneau and Jedwab 2012). This is also when the AIDS epidemics began to spread (Cogneau and Grimm 2008).

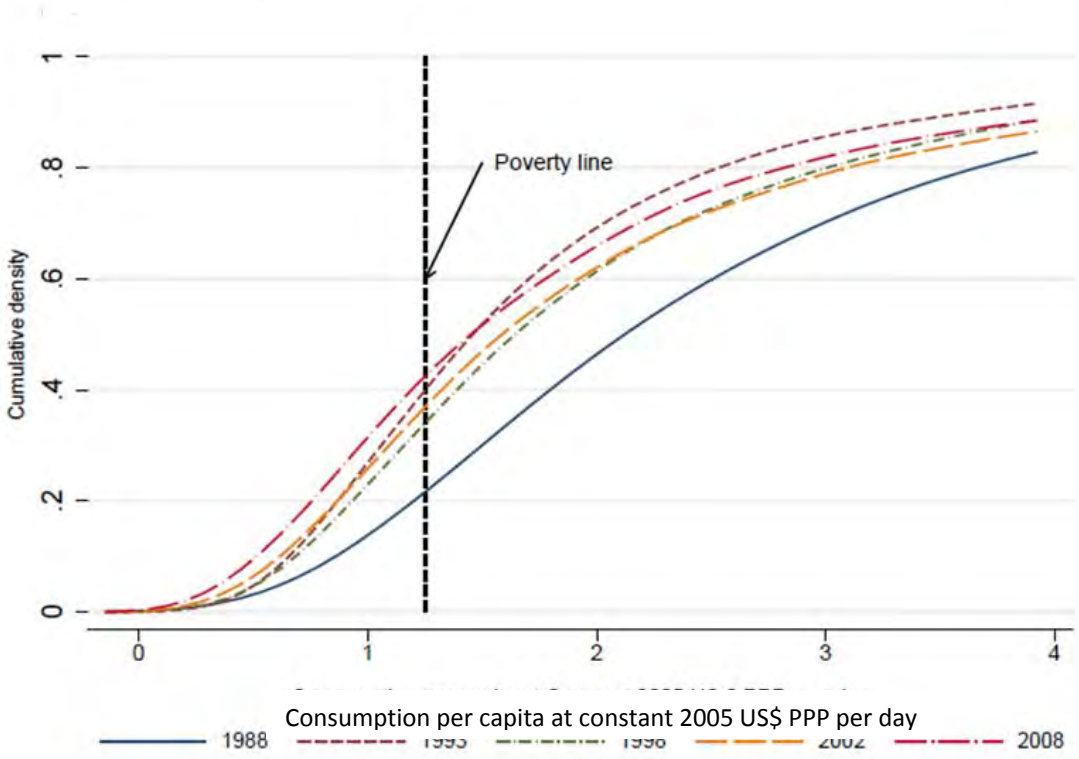
During the 15 years that followed, the country would never recover from this great shock, and poverty would mainly oscillate around the 1993 level, even reaching 41 per cent in 2008 (see also the cumulative distribution function curves in Figure 6). Figure 2 suggests that cohorts affected by early-age stunting and height losses had not entirely recovered from these effects when they reached adult age. The results of Demographic and Health Surveys for the years 1994, 1998 and 2012 suggest that early-age stunting stayed on the increase throughout the last two decades (Coulibaly and N'Dri 2012). However, aside from consumption or nutrition, after having fallen back, primary school enrolment both recovered in 1998, and carried on increasing in 2002. Secondary school enrolment exhibited continuous progresses (Appendix Table A3). Finally, on the side of durable goods, households benefitted from the price decreases in radio and TV sets, and, most impressively, in mobile phones (Appendix Table A11).

Figure 5: Real producer prices for cash crops



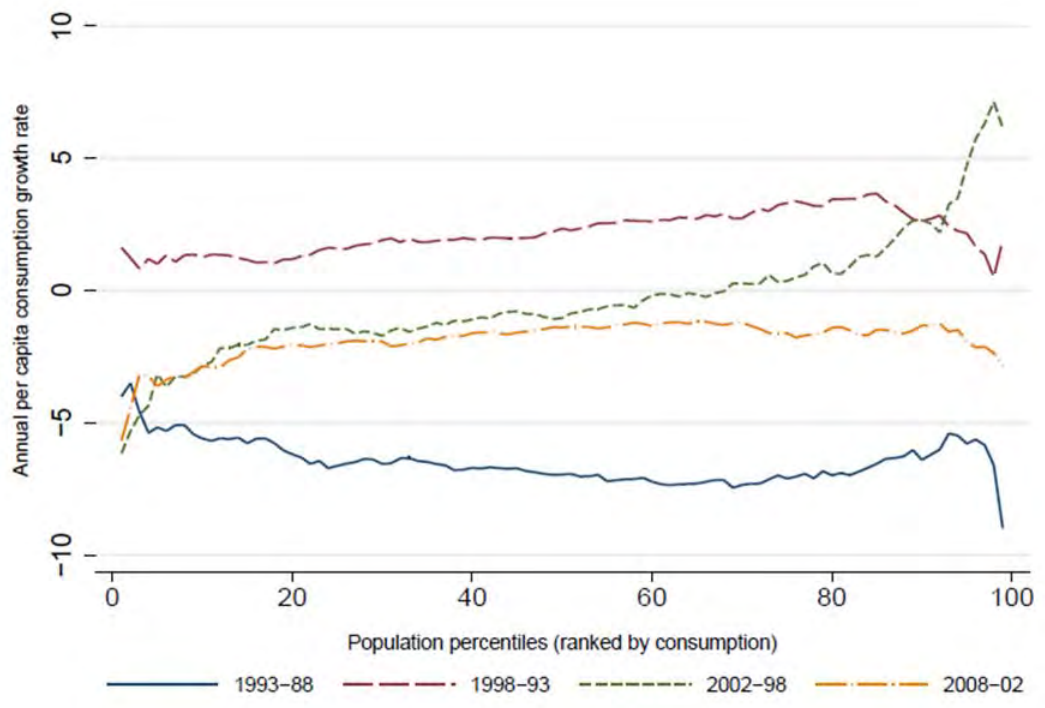
Source: Authors' elaboration based on data from World Bank (2012) and FAOSTAT (2012).

Figure 6: Cumulative distribution function of consumption per capita across time



Source: Authors' elaboration based on data from CILSS 4 and ENV1-4 household surveys.

Figure 7: Growth incidence curves



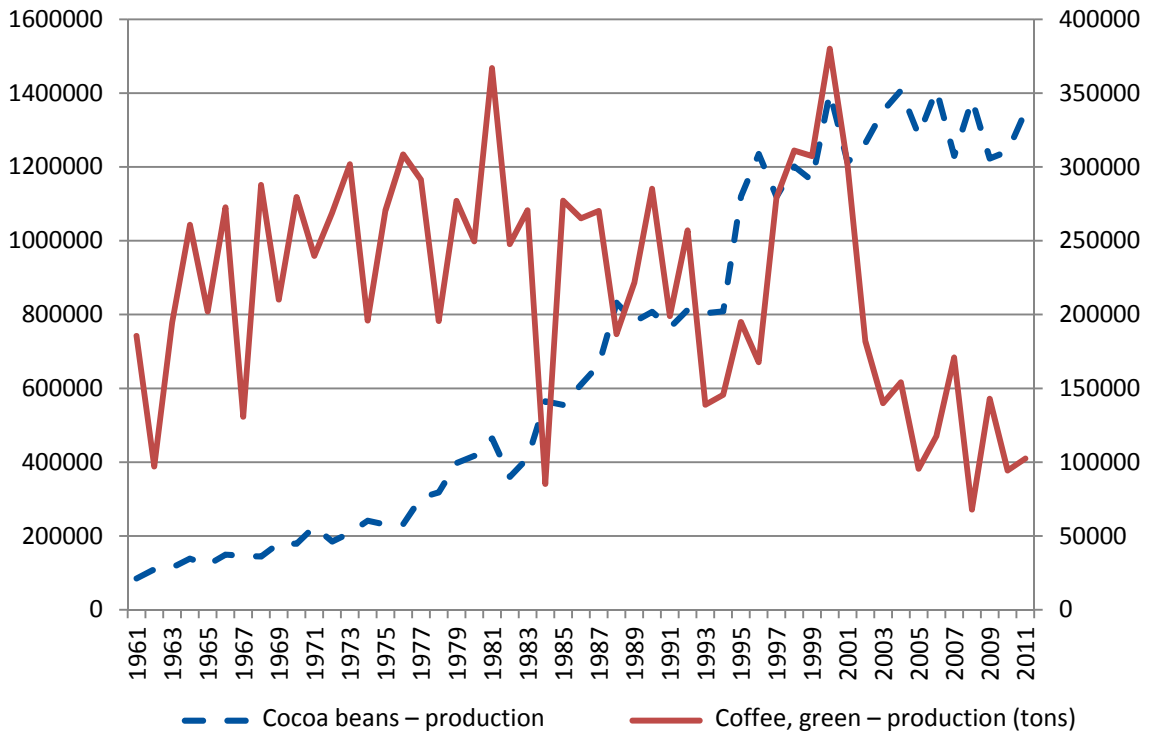
Source: Authors' elaboration based on data from CILSS 4 and ENV1-4 household surveys.

4.2 The CFA franc devaluation bounce-back: 1994-98

After the 1993 legislative elections in France, the new French Prime Minister Edouard Balladur aligned his position with those of the IMF and the World Bank regarding the need for a devaluation of the CFA franc. Côte d'Ivoire being the most important economy of the Franc Zone, the death of Houphouët-Boigny in December 1993 removed the last obstacle to its implementation, given the oath made by President Mitterrand to the old leader not to devalue the CFA franc. The CFA franc was immediately devalued by 50 per cent in January 1994 – meaning an ex ante doubling of import prices. The objective of this devaluation was the resorption of public deficits, through the reduction of the public wage bill in real terms, as well as increased fiscal revenue from import tariffs and duties on cocoa. Consumer price inflation stayed under control (around 30 per cent in 1994), so that a large real depreciation was achieved. In terms of macroeconomic stabilization, and according to the criteria set by the Bretton-Woods institutions, the CFA franc devaluation was to some extent a success (Cogneau and Collange 1998).

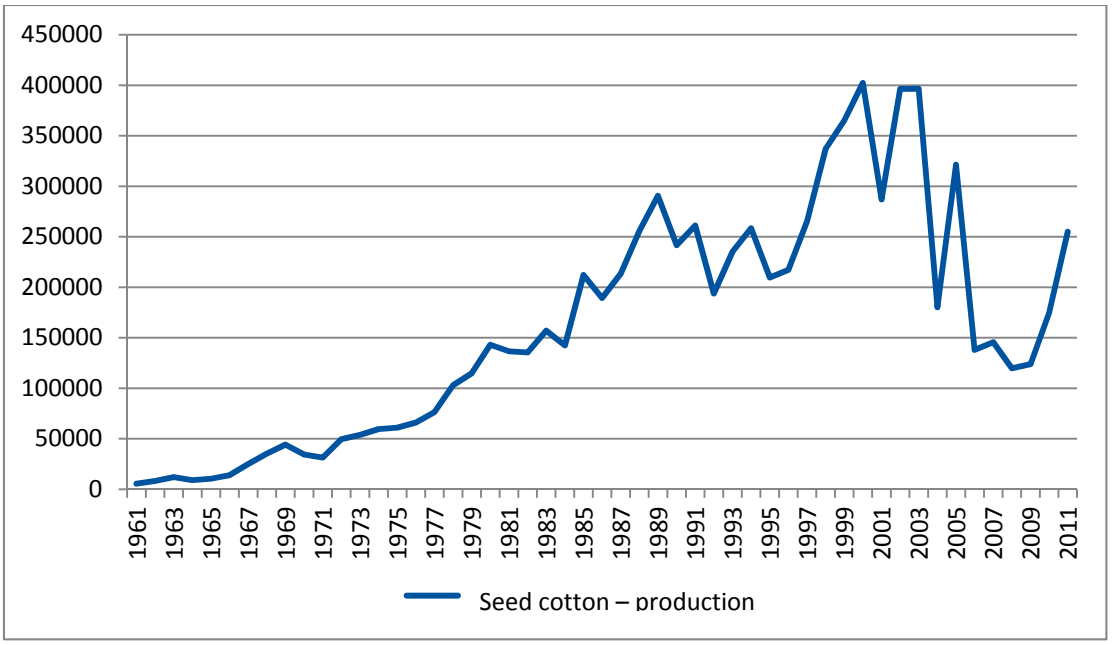
In terms of income growth and poverty, fortunately enough, international commodity prices bounced back concomitantly, allowing increases in real producer prices of coffee and cotton; however real cocoa prices were kept constant, so that the marketing board deficits could be cleared (see Figure 5). Fortunately again, national cocoa output reached a historical record (over 1.2 million tons), thanks in particular to trees reaching maturity in the West Forest, and perhaps also to increased collection effort. In the north, farmers planted more cotton (Figures 8 and 9). Further, the new structural adjustment programme was backed by large amounts of foreign aid, translating into a doubling of public investment in infrastructure (Appendix Table A15); private capital also flowed back to the country and the construction sector boomed.

Figure 8: Cocoa and coffee output



Sources: Authors' elaboration based on data from FAOSTAT (2012).

Figure 9: Cotton output



Sources: Authors' elaboration based on data from FAOSTAT (2012).

According to national accounts, in 1998 consumption per capita had returned to its pre-shock level of 1988. Survey data are much less optimistic: household consumption per capita reached US$2.31 per capita per day, i.e. only 80 per cent of the 1988 value. Compared to 1993, the poverty headcount at the US$1.25 level was reduced by six percentage points. Consumption growth incidence was even slightly distorted towards upper-middle income levels (Figure 7), so that

poverty was reduced to a lesser extent than an evenly distributed consumption growth would have allowed. Indeed, in rural areas, cash crop evolutions benefited more the '*gros planteurs*' (large cash crop growers), as illustrated by the high consumption growth among farmers (17+ per cent) that contrasts with the modest poverty decrease of 4 percentage points (Table 5 Panel A). In cities, informal workers benefited from the boom in investment and from the recovery of household consumption (Table 5 Panel B). Civil servants, however, suffered as their wages were not indexed to inflation; this most likely explains why the consumption growth was very much mitigated in the top decile (Table 5 Panel C).

Table 5: Poverty measures by socioeconomic status of the household head

	1988	1993	1998	2002	2008
Panel A: Household head is a farmer					
Consumption per capita	1.99	1.45	1.69	1.67	1.39
	(0.05)	(0.02)	(0.06)	(0.05)	(0.02)
Poverty headcount	0.30	0.52	0.48	0.51	0.59
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	800	4,277	1,908	4,744	4,675
Panel B: Household head is self-employed					
Consumption per capita	3.38	2.37	2.49	2.78	2.44
	(0.16)	(0.06)	(0.07)	(0.08)	(0.04)
Poverty headcount	0.08	0.26	0.22	0.26	0.32
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	249	1,885	835	1950	3,388
Panel C: Household head is a civil servant					
Consumption per capita	4.28	3.49	3.46	4.09	3.92
	(0.23)	(0.15)	(0.21)	(0.27)	(0.18)
Poverty headcount	0.06	0.10	0.07	0.10	0.07
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Observations	208	627	216	543	447
Panel D: Household head is a private sector wage-earner					
Consumption per capita	4.85	2.94	3.04	3.40	3.12
	(0.37)	(0.07)	(0.10)	(0.09)	(0.07)
Poverty headcount	0.02	0.17	0.14	0.18	0.21
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	218	1,876	883	2,321	2,510
Panel E: Household head is not working					
Consumption per capita	3.51	2.07	2.85	3.09	2.39
	(0.56)	(0.06)	(0.24)	(0.10)	(0.06)
Poverty headcount	0.18	0.34	0.22	0.22	0.31
	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)
Observations	124	837	346	1,160	1,437

Notes: Expenditures are in constant 2005 US$ PPP and the poverty line used is US $1.25 PPP a day. Standard errors in parentheses.

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Table 6: Poverty measures in households headed by a farmer

	1988	1993	1998	2002	2008
Cocoa and coffee farmers					
Consumption per capita	2.14	1.51	1.66	1.60	1.46
	(0.06)	(0.02)	(0.05)	(0.03)	(0.03)
Poverty headcount	0.24	0.49	0.47	0.52	0.53
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Observations	476	2,147	953	2,206	2,015
Cotton farmers					
Consumption per capita	1.47	1.35	1.32	2.22	1.20

	(0.10)	(0.04)	(0.08)	(0.46)	(0.16)
Poverty headcount	0.56	0.54	0.64	0.50	0.76
	(0.05)	(0.02)	(0.03)	(0.03)	(0.04)
Observations	113	398	206	387	136
Other farmers					
Consumption per capita	1.98	1.38	1.91	1.65	1.33
	(0.15)	(0.03)	(0.14)	(0.03)	(0.03)
Poverty headcount	0.23	0.58	0.43	0.50	0.64
	(0.03)	(0.01)	(0.02)	(0.01)	(0.01)
Observations	211	1,732	749	2,151	2,524
All farmers					
Consumption per capita	1.99	1.45	1.69	1.67	1.39
	(0.05)	(0.02)	(0.06)	(0.05)	(0.02)
Poverty headcount	0.30	0.52	0.48	0.51	0.59
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	800	4,277	1,908	4,744	4,675

Notes: Expenditures are in constant 2005 US$ PPP and the poverty line used is US $1.25 PPP per day. Standard errors in parentheses.

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

On the political side, in accordance with the Constitution, the president of the National Assembly, Henri Konan Bédié, became the new president of the country in 1994; he was a *Baule*, like Houphouët-Boigny. This came to the disappointment of former Prime Minister Alassane Ouattara, a Northern *Diula* and Muslim. The political competition between the two heirs broke the Houphouëtian political equilibrium that relied on the alliance between Northern elites and Centre South *Baule* elites. To bar Ouattara's ambitions, Konan Bédié and his followers resurrected the theme of Ivorian national identity ('*Ivoirité*') that Houphouët's opponent Laurent Gbagbo, a *Kru* South West leader, had already promoted in the 1990 elections. Prior to the October 1995 presidential elections, the National Assembly passed an anti-Ouattara amendment in the Constitution, according to which presidential candidates ought to have two parents of 'Ivorian nationality' and should not have served as officials in another country, two criteria that Ouattara did not meet. The 1995 elections were also boycotted by Gbagbo, giving Konan Bédié an easy victory.

Strengthened by this victory and good economic conditions, Konan Bédié and Prime Minister Daniel Kablan Duncan launched a vast programme of public investment called the '12 works of the African elephant', meant to transform Côte d'Ivoire into an emerging 10 per cent growth country by the 2025 horizon. It was mostly based on colossal and costly infrastructures centred around the capital city Abidjan (new airport, highways, urban train, new thermal plant, etc.), relying on Build–Operate–Transfer agreements with private firms; in 1999, only four projects had effectively started. Capital-intensive industrial projects were also envisaged, in particular for the transformation of the cocoa industry. In the meantime, the liberalization of the economy accelerated. Non-tariff barriers as well as internal price controls (on e.g. rice, transport) were eliminated. More liberal regulations were adopted for private investment, mines, labour and telecommunications. The privatization of the cotton parastatal in 1997 was followed by the liberalization of the coffee (1998) and cocoa sectors (1999). Around 60 public firms were privatized, in diverse industries from sugar to telephones through railways.

5 The erratic civil war: 1998-2012

With the prospect of the presidential elections of 2000, political tensions carried on increasing. In 1998, a new law on land was passed that introduced not only unequal rights for nationals and

foreigners, but also a notion of autochthony; it was hardly applied in the years that followed, but contributed to violence around access to land and land rights. Electoral lists were also scrutinized in order to exclude voters whose Ivorian nationality could be contested. At the same time, growth slowed down, and Konan Bédié was accused of stratospheric corruption. A scandal around the embezzlement of European aid in the health sector erupted in 1998. On Christmas Eve, 1999, a military coup overthrew Konan Bédié and called to power Robert Gueï, the chief of the army under Houphouët, whom Konan Bédié had forced into retirement in 1997. This event inaugurated a period of erratic civil conflict, punctuated by intermittent episodes of hard political violence.

5.1 The elephant falling down: 1998-2002

General Robert Gueï committed to organizing elections, first declared he would not present himself, then changed his mind. Ouattara's candidature was again barred by the new 2000 Constitution and Konan Bédié was exiled to Ghana, so that only Laurent Gbagbo and Robert Gueï competed in the 2000 elections. Turnout was very low at 37 per cent. Yet Gueï was defeated and ousted from power by street demonstrations by Gbagbo partisans; he was later assassinated in Abidjan after the coup attempts of 2002. Political violence reached a peak as fights also arose between Ouattara and Gbagbo followers, in particular, a mass grave was found in the outskirts of Abidjan (Yopougon). The long-term opponent of Félix Houphouët-Boigny then became the third president of the Ivorian Republic. Gbagbo quickly endorsed the topic of '*Ivoirité*', trying to build an alliance of Southern 'autochthons' (*Krus* of the South West, non-*Baule Akans* of the South East), orthogonal to the Houphouëtian alliance, based on long-lasting resentments dating from the colonial and early post-colonial times (Dozon 2011).

Liberalization had not reduced corruption, nor increased fair competition in markets, as it was not accompanied by progress in the enforcement of the law (Cogneau and Mesplé-Somps 2002a, 2002b). No export diversification took place. Besides, following the liberalization of the marketing of coffee, producer prices collapsed. Foreign aid was cut following the military coup, resulting in public and private investment collapse. At the same time, public wages were increased by 15 per cent over the period, perhaps to buy loyalty from civil servants and the military in times when political legitimacy was undermined.

Over the period 1998-2002, national accounts data on final consumption stagnated in per capita terms (see Appendix Table 15), while our survey aggregate increased by a small 6 per cent, from 2.31 to 2.47 (2005 international dollars per capita per day). Despite this sluggish growth, the poverty headcount increased by three percentage points, from 32 to 35 per cent. The consumption growth incidence was indeed strongly anti-redistributive and urban-biased (Table 3, Table 7 and Figure 7). Coffee producers, food crop farmers and the poorest informal workers lost, while skilled civil servants gained (Tables 5 and 6). In the north, very good cotton yields (Figure 9 and Table 6 Panel C) also very much reduced poverty in this area. Could it be that this sudden inflow of income helped the rebels to arm themselves?

Table 7: Decomposition of changes in poverty headcount from 1988 to 2008

	1988-93	1993-98	1998-02	2002-08
Changes in P0	18.26	-6.06	3.38	5.64
Growth	20.81	-8.45	-3.72	6.72
Redistribution	-0.41	2.35	6.86	-2.36
Residual	-2.14	0.04	0.24	1.27

Note: The poverty line is set at 2005 US$ 1.25 PPP per day.

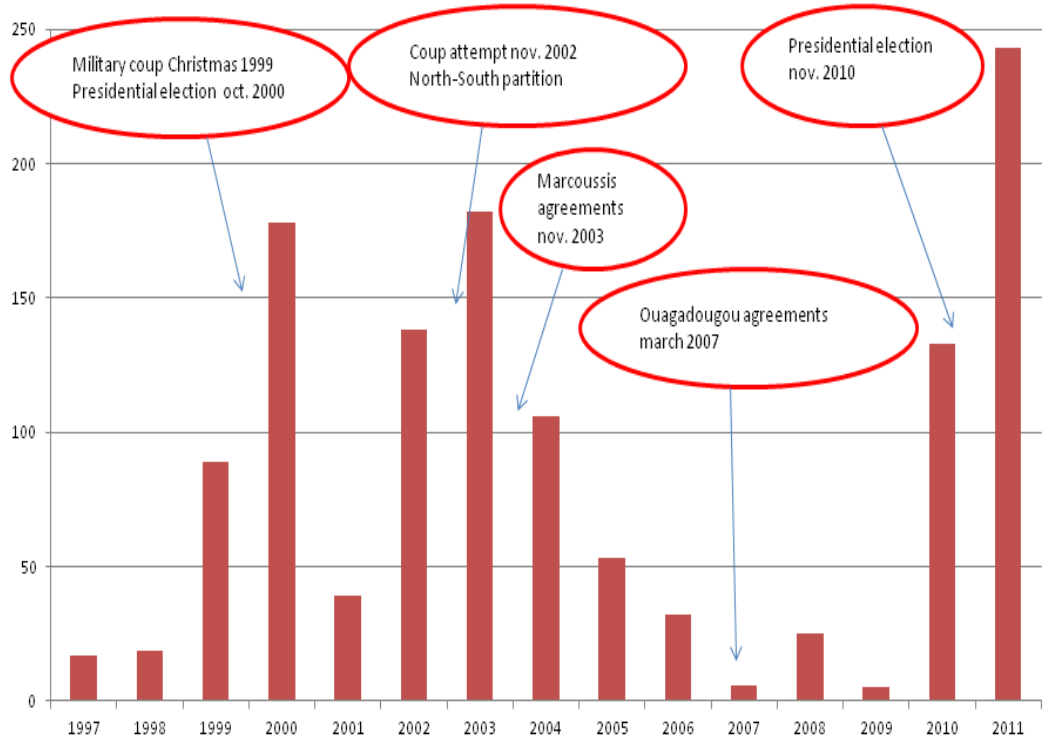
Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

5.2 A country split in two: 2002-08

In September 2002, military insurgents made coup attempts in the main cities of Abidjan, Bouake and Korhogo, and invaded the North of the country. They were rising up from within the country, and also coming from southern Burkina Faso and Mali where they had organized and trained; two other movements also crossed the border of Liberia and took control of the cities of Man and Odienne in the North West. The UN mandated French and Economic Community of West African States (ECOWAS) troops to interpose between rebels and loyalists. In January 2003, belligerents signed the Marcoussis agreement according to which a 'national union government' had to be formed, with the Ministries of Defence and of the Interior given to rebel representatives, and the participation of all political parties. The agreement failed, as members of the coalition withdrew or were dismissed. Another reconciliation meeting was organized in Accra in June 2003, according to which Laurent Gbagbo was expected to prepare new presidential elections while also changing the eligibility conditions that were barring the candidature of Ouattara. The country remained split in two, with French, ECOWAS and UN troops seated along an East West interposition line. In November 2004, loyalist planes bombed Bouake and French troops that had settled in the airport; French planes retaliated and destroyed Ivorian aircraft. Gbagbo's partisans then held large street demonstrations and began attacking French citizens, whom French forces tried to evacuate; the Ivorian and French governments blamed each other for murders committed during these days. Some French, Lebanese and other foreigners left the country towards the end of 2004. Thabo Mbeki, the president of South Africa, was then mandated by the African Union to act as a mediator. Under strong international pressure, a change in the constitution was finally adopted at the beginning of 2005, allowing the candidature of Alassane Ouattara in future presidential elections. A political '*détente*' process ensued, which resulted in the Ouagadougou agreements that were signed in March 2007, and the nomination of Guillaume Soro, head of the rebels, as prime minister. Presidential elections were, however, delayed every year until 2010.

Figure 10 presents the timeline of these events, along with the Armed Conflict Location and Event Data Project's (ACLED) count of political violence. It illustrates that the two household surveys we use, carried out in 2002 and 2008, lie at the two ends of this second phase of the civil war. The ENV3 2002 survey was implemented between May and July, hence just before the September rebellion, while the ENV4 2008 (June-August 2008) came after the Ouagadougou agreements had brought some peace in the country.

Figure 10: Civil conflict



Notes: Number of political violence events, 1997-2011. Political violence events reported are violence against civilians that occurs during civil and communal conflicts, battles, and riots or protests.

Source: Authors' elaboration based on data from ACLED (2013).

Between 2002 and 2008, national accounts of consumption per capita fell by 11 per cent, and rather consistently the household survey mean dropped by 13 per cent. According to our estimates, the national poverty headcount increased by six percentage points, from 35 to 41 per cent, i.e. the highest figure ever recorded over the past two decades, and most likely even before that: GDP per capita fell below the level of 600 dollars (constant 2000 US$), as it had done in 1993, falling back to the level of the early 1960s. Very strikingly, the northern areas that were cut from the 'legal country' suffered a lot economically: the poverty headcount increased by 22 percentage points, skyrocketing to 62 per cent. Cotton production collapsed; as of 2008, only 1 per cent of households were still growing this crop (Table 2); aggregate figures suggest that cotton production only started its recovery in 2010-11 (Figure 9). Other areas instead experienced stability, or in the case of East Forest, a limited increase, so that the bulk of poverty increase stemmed from the impact of the partition on the north.

5.3 The last episode of civil war (2008-11)

Presidential elections were finally organized at the end of 2010. The two former heirs of Houphouët-Boigny, who had been enemies throughout the 1990s, Konan Bédié and Ouattara, formed an alliance against Laurent Gbagbo, and hence reconstructed the Centre-North alliance of the past. Alassane Ouattara opposed Laurent Gbagbo in the second round, and both candidates claimed victory. A last episode of civil war erupted, causing the deaths of between 900 and 3000 and the displacement of one million people (IDMC 2012). With support from French troops, the incumbent Laurent Gbagbo was arrested in his palace in April 2011 and presented to the International Court of Justice in The Hague in December. Since 2012, progress toward national reconciliation has been limited. The Commission for Dialogue, Truth and Reconciliation, launched

in July 2011, has been criticized for its slowness and partiality: to date, only crimes by Gbagbo supporters have been judged, while Ouattara's partisans also committed reprehensible acts of violence. Whereas the most influential leaders of Gbagbo's political party (the Ivorian Popular Front (FPI)) went into exile in Ghana, the FPI refused participation in any official reconciliation committee and boycotted the municipal elections of April 2013. Security in the country depends on the reintegration into civil society of thousands of former members of armed militia. On the economic side, Ouattara's government benefits from the strong support of international donors: a substantial reduction in external debt stock was obtained, and budget support of around 7 per cent of GDP has been received each year since 2011. After limited growth in 2010 (2 per cent), and a fall of 5 per cent in 2011, growth in 2012 was estimated at around 8.6 per cent (IMF 2012). This quick recovery is the result of public reconstruction programmes and the revival of formal economic activities.

After around two decades of political and economic turmoil, from the mid-1960s to the mid-1980s, it took some time for neighbouring Ghana to finally reconstruct a stable democracy and a buoyant economy, at the turn of the 21st century (Eberhardt and Teal 2010). Getting back to (political and economic) 'business as usual' will probably not be sufficient. In the short run, new rents from natural resources like oil or minerals could enable the restoration of the old days' political and economic equilibrium, involving a cautious balance in the distribution of state resources: jobs and public investments. In the longer run, the burning issues that fuelled the conflict will have to be addressed, at the least, the acquisition of nationality and the regulation of land allocation. Further, in the context of the exhaustion of the 'rent' from the forest, the intensification of smallholder practices should become an urgent necessity, if only to enable preservation of the high level of cocoa output that still makes up the wealth of Côte d'Ivoire (Gockowski and Sonwa 2011). Dark predictions regarding the impact of climate change on the conditions for cocoa growing even suggest that shifting away from cocoa could become an obligation (Läderach 2011).

6 Conclusion

At the end of the 1980s, Côte d'Ivoire entered a deep macroeconomic crisis that put an end to the often-praised 'Ivorian miracle'. After the death of the founding father Houphouët-Boigny, unrestrained political competition was combined with bad economic conditions and led to the nightmare of civil war. Drawing from a series of five household surveys covering two decades (1988-2008), we tell the story of this descent into hell from the standpoint of poverty and living standards. Despite the bounce-back allowed by the CFA devaluation in 1994, the country could never recover from the initial shock created by the halving of cocoa producer prices and huge budget cuts. In 2008, after five years of civil war and with another episode yet to come (2010-11), the extreme US$1.25 poverty headcount had reached a historical record for poverty, with northern areas deeply impoverished by the partition.

Appendix

A1 Micro-data

A1.1 Demographic and socioeconomic characteristics of the samples

Survey description

This study is mainly based on data from five household surveys conducted by the National Institute of Statistics of Côte d'Ivoire in 1988, 1993, 1998, 2002 and 2008. We do not include the 1985, 1986 and 1987 Living Standard Measurement Surveys (CILSS). Jones and Ye (1997) have pointed out that these surveys' samples could be biased towards relatively rich primary sample units, while displaying differences in wealth between the East Forest and the West Forest areas that are inconsistent with cash crop production figures. As a consequence, the increase in poverty between 1985 and 1988 shown by the CILSS surveys could be biased upward. We do not use the 1995 household survey either, here because of the small sample size (1,000 households) and its proximity to the CFA franc devaluation.

Appendix Table A1 lists the name of the surveys used in this paper, their sample size and their date. In all cases, the sample designs are regionally stratified and two-stage. In 2002, data were collected just before the partition of the country between the North and the South (in September). Hence all samples cover the whole of Côte d'Ivoire. To homogenize the regional breakdown, we distinguish four regions: West Forest, East Forest, North and Abidjan, as well as urban and rural areas within each region.[4]

Appendix Table A1: Surveys, sample size and period

Survey	Period	Sample size (no. households)
CILSS 4	May 88-April 89	1,599
ENV1	April 92-October 93	9,502
ENV2	September 98-December 98	4,188
ENV3	May 02-July 02	10,718
ENV4	June 08-August 08	12,457

Source: Authors' elaboration based on data from CILSS 4 and ENV1-4 household surveys.

Appendix Table A2 shows that average household size decreased from 6.6 in 1988 to 4.9 in 2008. There was a fall in the proportion of married household heads, and in the average age of household heads which fell by four years, as well as an increase in the share of female-headed households from 12 per cent to 18 per cent; the share of divorced and widowed heads was stable.[5] As acknowledged in the main text, the share of foreigners is certainly underestimated; for instance the 1998 census estimates the share of households headed by an Ivorian national to be 70 per cent (Badou 2000), compared to 78 per cent in the 1998 ENV2 survey.

[4] The West Forest region includes Haut Sassandra, Montagnes, Bas Sassandra, Marahoué, Sud Bandama, Fromager and Moyen Cavally regions; the eastern region is composed of Lagunes (excluding Abidjan), Moyen Comoé, Lacs, N'zi Comoé, Sud Comoé and Agnéby regions; finally, North is the aggregation of Savanes, Vallée du Bandama, Zanzan, Denguélé,Woradougou and Bafing. In Section 3, the distribution of the Ivorian population across regions is presented and discussed.

[5] The ACLED dataset on civil war counts less than 3,000 fatalities between 1997 and 2008, which means that widow rates could not have been impacted significantly by the civil war.

Appendix Table A2: Households' characteristics across surveys

	1988	1993	1998	2002	2008
Household head characteristics (household level)					
Household size	6.59	6.06	5.90	5.42	4.89
	(0.10)	(0.04)	(0.06)	(0.04)	(0.03)
Avg. age of HH head (yrs)	46.59	45.55	42.98	42.93	42.54
	(0.36)	(0.14)	(0.22)	(0.14)	(0.13)
Female headed	0.12	0.14	0.15	0.16	0.18
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Head can read	0.33	0.33	0.45	0.47	0.54
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Household head nationality (household level)					
Ivorian	0.84	0.75	0.78	0.80	0.79
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Burkinabe	0.06	0.11	0.11	0.10	0.08
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Malian	0.04	0.07	0.04	0.03	0.02
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ghanaian	0.01	0.01	0.02	0.01	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Others	0.05	0.05	0.06	0.06	0.10
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Marital status of the household head (household level)					
Married	0.82	0.79	0.75	0.72	0.72
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Divorced	0.06	0.06	0.07	0.05	0.07
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Widow/er	0.07	0.08	0.08	0.07	0.08
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Never married	0.05	0.07	0.11	0.16	0.13
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Housing and utilities (individual level)					
Landlord	0.68	0.60	0.59	0.61	0.58
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Electric box	0.31	0.27	0.37	0.36	0.29
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Water tap	0.12	0.17	0.25	0.25	0.20
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Water closet	0.19	0.15	0.17	0.17	0.12
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
No. households	1,599	9,502	4,188	10,718	12,457

Source: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Regarding education, the proportion of household heads declaring themselves able to read rose continuously from 33 per cent to 54 per cent between 1988 and 2008 (see Table 2). School net attendance trends are more chaotic but rather coherent with economic trends (see Table 3). Primary school net attendance decreased during the huge economic crisis between 1988 and 1993 (see e.g. Cogneau and Jedwab 2012), then recovered between 1993 and 2002, and stagnated between 2002 and 2008. Unlike in the case of primary school, secondary enrolment rates did not

fall in 1993 and seem to have carried on increasing until 2008.

Appendix Table A3: School net attendance rates over time

	1988	1993	1998	2002	2008
Panel A: Primary school.[1]					
Girls	0.48	0.42	0.51	0.55	0.56
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Boys	0.64	0.51	0.58	0.63	0.62
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Net rate	0.56	0.47	0.54	0.59	0.59
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)
Sample size	1,985	11,439	4,504	9,980	9,479
Panel B: Secondary school.[2]					
Girls	0.10	0.12	0.16	0.16	0.21
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Boys	0.17	0.22	0.26	0.22	0.29
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Net Rate	0.14	0.17	0.21	0.19	0.25
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Sample size	1,550	10,399	4,443	9,892	9,231

Notes: Attendance rate is estimated using the highest grade completed at the time of the survey.[1]The sample is restricted to children aged 6 to 11 years old at the time of the survey. [2]The sample is restricted to children aged 12 to 18 years old at the time of the survey.

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Socioeconomic characteristics

To construct the socioeconomic status of individuals, we use the declared main occupation during the last 12 months preceding the interview. We distinguish four occupational groupings: farmer, self-employed, wage earner, unemployed or inactive (over the last 12 months, in the latter case). We break down the farmer occupation according to crops grown. Farmers who declare they harvested at least one kilogram of cocoa, coffee, or cotton in the last 12 months, are considered as cash crop producers; as many cocoa producers also grow coffee and vice versa, we make only one category. The 'other farmers' category is then composed of farmers who do not produce any of these three cash crops. Wage earners are employees of either public or private firms, plus civil servants. We do not make any distinction between formal and informal activities. Self-employed also includes independent workers with employees. The distribution of household heads across occupations is presented in Section 3.

1.2 Measurement of consumption

Changes in survey questionnaires occurred that could impact the estimation of trends in welfare indicators. This issue of computing welfare indicators from imperfectly comparable multiple cross-sections is quite well documented.[6] There is no miraculous solution for eliminating this kind of bias, but existing studies inform on the potential magnitude of these biases, and allow us to be quite confident in the choices we made.

[6] See Deaton and Grosh (2000) for a detailed discussion of the main expected and observed bias, as well as the experiment undertaken in Tanzania by Beegle et al. (2012).

Consumption aggregate composition

The consumption variable is the sum of non-food expenditures, food expenditures and consumption of own food production. Non-food expenditure includes several components listed below:

- Non-food expenditures
    - Housing expenditures: rents paid and imputed rents; home cleaning; water, electricity and other fuels
    - Other current expenditures: education, clothing, health, hygiene, leisure, information and communication, transportation and maid expenses
    - Transfers to other households
- Food consumption
    - Consumption of own food production
    - Food expenditures including meals outside the household

Consumption of own household non-food production is disregarded, as it is not collected in all surveys (and, fortunately, not very large). Tax payments are not very well recorded and also disregarded. Expenditures for ceremonies are also not included, due to being too infrequent. Finally, as the date of acquisition of durable goods is not recorded, it is impossible to value the use of these goods; reparation of durable goods (furniture, domestic appliances, radio and TV sets and vehicles) is not included either.

Non-food expenditures

We selected the consumption items that derived from questions that were framed identically, as far as possible, across the surveys. Appendix Table A4 presents the list of questions used to create non-food consumption aggregates. In particular, a maximal set of housing expenditures had to be gathered from several parts in the questionnaires. In each survey, each individual non-food expenditure is recorded for a unique recall period, which may be a week, month, trimester or year. One exception is the 1988 CILSS survey. Some expenditures like clothing, leisure, transport, and communication were requested for two different recall periods: during the last 14 days and during the last year. We choose to compute expenditure level using exclusively the 'last year' recall period.

Appendix Table A4: Items used to construct non-food consumption expenditures

	1988	1993	1998	2002	2008
Schooling	3A2: Q18A-Q18G	8A: Q03 -Q06	5A: Q04-Q07	1B5: Q63 - Q74	Ha: Q01 - Q11
Rents	2B1: Q04, Q06	2A: Q03	2: Q03	7: Q03	N: Q03
Water	2B1: Q14, Q15	2A: Q10	2: Q13	7: Q13	N: Q14
Electricity	2B2: Q26, Q27	2A: Q13	2: Q16	7: Q16	N: Q15
Hygiene	11A: 103-105	8D: Q01	5D: Q01	8C: Q02	Hg: Q01
Combustibles / fuel	11B: 106-108	2A: Q15	2: Q19	7: Q18	N: Q18
Clothing	11B: 115-121, 136	8C: Q01 - Q07	5C: Q02-Q08	8B: Q02 - Q08	Hc: Q02 - Q08
Repairs	11B: 123	8G: Q04	5G: Q05	8F: Q05	Hf: Q03
Transportation	11B: 124	8G: Q02, Q03	5G: Q03-Q04	8F: Q03, Q04	Hf: Q01, Q02
Health	11B: 128, 129	8B: Q01 - Q08	5B: Q02-Q10	8A: Q02 - Q10	Hb: Q03 - Q09
Information	11B: 133, 134	8G: Q05	5G: Q06	8F: Q06	He: Q01 - Q06, Q08
Maids	11B: 135	8D: Q04	5D: Q04	8C: Q05	Hg: Q03
Leisure	11B: 137	8D: Q03	5D: Q03	8C: Q04	Hg: Q02
Transfers	11B: 141 142 145 11D: Q06	8E: Q01 - Q07	5E: Q02 -Q09	8D: Q02 - Q09	Hd: Q01 - Q08

Source: Authors' elaboration based on data from CILSS 4 and ENV1-4 household surveys.

An important change in questionnaire design occurred in 2002 for schooling expenditures. Education-related expenditures were recorded for each individual child who attended school in the 12 months preceding the survey, whereas in all other surveys, expenditures are recorded at the household level and not individually. The increase in schooling expenditure in 2002 observed in Appendix Table A7 is probably due to this change. As schooling expenditure makes up only around 5 per cent of total consumption, this difference in the 2002 questionnaire does not have a dramatic incidence on the estimation of poverty trends.

In Appendix Table A7, the main observed changes in non-food expenditure shares are first the continuous decrease in the share of water expenditures, and second the large increase in communication expenditures between 2002 and 2008. While the latter increase certainly corresponds to a real phenomenon, specifically, the accelerated use of mobile phones, it is also the case that the 2008 questionnaire was much more detailed in that dimension.

For house owners or households enjoying free accommodation, the imputed rent is the predicted value derived from a regression estimated on tenants. The regression relates the rent paid to the characteristics of the house only (as well as to region of residence); one such regression is estimated for each survey, and no correction for selection bias is made. We paid great attention to the comparability of imputed rents over surveys. For instance, the number of rooms declared can change, depending on whether toilet and bathroom are included or not; in order to fix this issue, we chose a polynomial for the room variable. The model that is estimated is the following:

$$\ln(y_i) = \alpha + \sum_k \beta_k . x_{ik} + \sum_{kj} \delta_j . 1_{(region_i = j)} + \varepsilon_i \quad (1)$$

$\{x_{ik}\}_{1 \le k \le K}$ is a set of variables that includes the number of rooms of the housing unit, connection to utilities (water) and electricity supply, private water closet, type of energy used for cooking, type of housing unit and the location. Appendix Table A8 shows the estimates of the coefficients of the model (1.1), and Appendix Table A9 shows descriptive statistics for the variables included in the $\{x_{ik}\}_{1 \le k \le K}$ vector.

The rent of homeowners is estimated based on the characteristics of their housing using the coefficients estimated in Appendix Table A8:

$$\widehat{y_i} = \exp\left(\hat{\alpha} + \sum_k \widehat{\beta_k} . x_{ik} + \sum_{kj} \widehat{\delta_j} . 1_{(region_i = j)}\right) \quad (2)$$

Food expenditure and own-produced food consumption

We paid a lot of attention to the calculation of food expenditure and own-produced food consumption, which represent more than half of total consumption. The total value of food products consumed by the household includes food purchases, meals purchased outside of the home, own-produced food, food received from employers as in-kind payment, and food items received as gifts. Diaries are not used, and declarations of food expenditures and consumption of own food production are collected separately, based on household respondents' (usually the household head or their spouse) declarations.

We tried to control as much as possible for differences in survey design, which can significantly impact the estimation of consumption levels. We identified four main variations in the questionnaires.

(i) Changes in the selection of goods for which expenditures were recorded

In CILSS 4 (1988/89), the food expenditure section first establishes a list of consumed food products by asking the following question: 'During the last 12 months, did household members buy...?' In ENV1 (1993), the same question is formulated differently: 'Do you often consume...?' In ENV2 (1998) and ENV3 (2002), it becomes 'Do you consume...?' Finally in ENV4 (1998): 'In the last three months, did you consume...?'. Unfortunately, there is no way we can cancel out the potential bias induced by these changes. It is in particular to be feared that the ENV1 formulation could lead to the level of consumption in 1993 being slightly underestimated.

(ii) Changes in recall periods for some goods

In addition, recall periods vary between surveys. It is well known that recall periods impact recorded consumption. One of the most famous example comes from India, and is discussed in Deaton (2001) and Tarozzi (2007): shifting from a long recall period (a month) to a short recall period (a week) leads to understating the increase in poverty. The measurement experiment of Beegle et al. (2012) in Tanzania also confirms that a shorter recall period increases consumption estimates. In our case, all surveys asked for food expenditures over a week, except CILSS 4 (1988/89) which had a 14-day recall period. However, all surveys asked for food expenditures over the last month. The comparison of estimates (I) and (II) in Appendix Table A8 indeed confirms the finding of Beegle et al. (2012): estimate (I) with a shorter recall period is always higher than estimate (II). To avoid underestimating the poverty increase between 1988 and 1993, we gave our preference to estimates using only the one-month recall period for food expenditures, i.e. we selected out the top panel estimate (I) of Appendix Table A8.

(iii) Changes in survey duration and seasonality

The CILSS 4 survey extended over one full year, ENV1 over six months, and the following surveys over three months at different seasons (see Appendix Table A1). It is not easy at all to deal with the potential seasonality of both income and consumption. We might think that multiplying all monthly expenditures by twelve is the best option. This assumes that households sufficiently smooth their food consumption over the year. Then, when the availability of some goods is seasonal, they find substitutes to be consumed at other seasons. However, Jones and Ye (1997) showed that households producing cash crops, when surveyed just after harvests between December and March, displayed significantly higher expenditures than others. In that case, taking into account the declared number of months for the consumption of each individual good could be deemed preferable. Yet, we would then run the risk of underestimating the yearly consumption of goods that were hardly available or not available at all at the time of the survey. We finally gave our preference to the estimate that takes into account the declared number of months for the consumption of goods: the third panel estimates in Appendix Table A10. The chosen estimate is by construction lower than those that do not take duration into account (as duration is necessarily lower than 12 months); however, as can be seen in Appendix Table A10 by comparing the second panel estimate (II) with the third (III), the difference in level is not very large and the time profile is very similar.

(iv) Changes in the detail of goods

Finally, there is also variation in the lists of food items. Detail increases over time as some food items were disaggregated into several sub-items in the 2002 and 2008 surveys. For instance, the number of items dedicated to vegetables rose from one in 1988, to 20 in 2002, then 26 in 2008. The same is true for fruits but also for rice, maize, millet and sorghum, taro and potato, nuts, fish, etc. (see Appendix Table A13). We observe that consumption of fruits and vegetables increased

significantly in 2002 and in 2008, along with the changes in the questionnaire. The randomized experiment undertaken by Beegle et al. (2012) in Tanzania confirms that this kind of variation can have a significant impact on consumption estimates: when shifting from a list of 58 items to a list of 11 items only, their estimate of food consumption fell by 24 per cent. Reassuringly for poverty estimation, there is little impact on poverty indicators, but a significant impact on inequality, suggesting that the detail of the list mainly affects the measurement of consumption among wealthy households. Further, the variation in the detail of food items across Ivorian surveys is much less pronounced than that used for the experiment in the Tanzania study. Hence we can hope that our estimates of the evolution of poverty across time are not overly biased.

Knowing all these disparities between surveys, Appendix Table A10 compares competing methods for estimating food consumption. As can be seen, different options for computing consumption induce quite big differences in the estimations. We chose the third option of the table: we compute food consumption by using information about food consumption over the last month and the number of months each food has been on average consumed over the last 12 months. Own-produced food consumption estimation is based on usual daily consumption, the number of days on which each product is consumed and the number of months in which the product is consumed over the last 12 months. The quantity of own-produced food products that are consumed is valued at the market price declared by each respondent.

In a recent paper, Dabalen and Paul (2013) try to control for the differences in food consumption baskets between surveys as well as for the difference in recall periods between CILSS surveys and later surveys. Following a methodology proposed by Tarozzi (2007), they recover a comparable poverty trend using a two-step estimator. In a first step, they estimate propensity scores for a dummy variable that takes the value of one if the observations are from 'target' surveys (surveys whose design has changed, 1993, 1985, 1998, 2002 and 2008) and zero if observations are from the base survey (1985), conditional on a set of observables. These propensity scores are used to generate inverse probability weights and recalculate poverty estimates for target years. The validity of the procedure requires the existence of a vector of auxiliary variables whose distribution (assumption 1) and correlation with total consumption (assumption 2) are both stable across time. In Dabalen and Paul's application, the vector of auxiliary variables is composed of socio-demographic and household characteristics on the one hand, and of the total expenditure on the miscellaneous consumption items that are reported with identical recall periods across different surveys. As acknowledged by the authors, assumption 1 is highly questionable for socio-demographic variables over two decades; assumption 2 is not much more grounded. Furthermore, the correction they make appears relatively limited, and provides estimates that are quite consistent with ours.

Anomalous observations

We corrected for anomalous/extreme observations. The food consumption aggregate is trimmed separately by dropping observations for which the logarithm is under or above the mean by five standard deviations or more. Households declaring no food consumption are directly withdrawn. This 'clean' food consumption amount is then summed with other expenditures and the total consumption amount is trimmed again according to the same ± 5 standard deviations rule. In the end, across all surveys, less than 1 per cent of households are withdrawn from the sample by this trimming procedure.

Price inflation and differences in regional price levels

As in the main text, inconsistencies in the disaggregate price data obtained from the National Statistical Institute (INS) of Côte d'Ivoire led us to resort to the World Development Indicators

(WDI) consumer price index. We are still trying to elucidate the source of the problems that we mentioned. Monthly data on the national consumer price index (CPI) was used to express all components in terms of a common base year (2005), taking into account their specific recall periods and the month and year of recording. Although very much imperfect, as the CPI is not broken down by products and uses a specific 'middle-class' consumption basket, this correction is better than nothing. Household consumption levels were then translated into constant 2005 US PPP dollars using WDI 2005 PPP exchange rates.

Appendix Table A5: Availability of price series data across cities over time

	1998	2002	2008
Abengourou	Not available	Available	Available
Abidjan	Available	Available	Available
Bondoukou	Not available	Interpolated from price in 2003 and 2004	Not available
Daloa	Not available	Not available	Interpolated from price in 2006 and 2007
Man	Not available	Not available	Available
Odienne	Available	Not available	Not available
San Pédro	Not available	Not available	Available
Yamoussoukro	Not available	Available	Available

Source: Authors' elaboration.

We analysed sparse price data for some provincial cities of Côte d'Ivoire between 1998 and 2011. Unlike the series from Abidjan, those collected in other cities are not available each year and cover a limited set of products. The price of food products has however been consistently collected in each city. At the cost of extrapolating price series in Bondoukou in 2002 and Daloa in 2008, we can obtain relative prices for food products across cities in 1998, 2002 and 2008 (see Appendix Table A6). Since the weights associated with each product within each city do not exist, we use the weights of households living in Abidjan. In Appendix Table A6 we compare price levels between each city and Abidjan.

Appendix Table A6: Price of food products across cities

Cities	1998	2002	2008
Abengourou	.	0.984	0.77
Bondoukou	.	1.078	.
Daloa	.	.	1.023
Man	.	.	0.822
Odienne	0.765	.	.
San-Pédro	.	.	1.029
Yamoussoukro	.	0.859	1.142
Abidjan	1	1	1

Source: Authors' elaboration based on data from INS (2012) and World Bank (2012).

Overall the results show little price variation across cities. This could be explained by the fact that the prices are mostly collected for a list of products less demanded outside Abidjan. However the prices of food products were around 20 per cent cheaper in Abengourou and Man in 2008, Odienne in 1998 and Yamoussoukro in 2002. Nevertheless, there is little to be gained from extrapolating those figures at the regional level and using them to account for variations in cost of living and purchasing power parity.

In the end, we made no correction for differences in regional price levels.

A1.3 Durable goods

As with consumption measurement, we pay a lot of attention to the comparability of durable good indicators, and select only those which are stable across survey questionnaires. As shown in Tables A11 and A12, we selected seven durable goods: cooker, fridge, radio, TV, bike or motorbike, car and phone. Despite the economic and political crisis, we observe that ownership rates either increased or remained stable over the two decades. The durable goods which experienced the highest relative price decreases were those whose ownership increased: radio or TV sets, and mobile phones. The ownership of cookers, fridges and vehicles stagnated.

Appendix Table A7: Daily non-food and food expenditures per capita across items

	1988	1993	1998	2002	2008
Schooling	0.12	0.09	0.10	0.13	0.10
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Clothing	0.26	0.18	0.23	0.23	0.20
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Water	0.11	0.05	0.03	0.03	0.03
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Electricity/light	0.06	0.07	0.05	0.07	0.05
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Combustibles	0.08	0.06	0.06	0.07	0.05
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Leisure	0.04	0.03	0.04	0.03	0.03
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Information/comm.	0.01	0.01	0.02	0.05	0.20
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Rents	0.35	0.28	0.23	0.28	0.20
	(0.01)	(0.00)	(0.01)	(0.02)	(0.00)
Hygiene	0.08	0.06	0.07	0.09	0.08
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Maids	0.02	0.06	0.02	0.03	0.01
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Transportation	0.16	0.13	0.17	0.17	0.18
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Food expenditures[1]	1.63	1.01	1.30	1.30	1.00
	(0.05)	(0.01)	(0.03)	(0.02)	(0.01)
Own food production	0.57	0.39	0.41	0.44	0.28
	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Cash expenditures	1.06	0.62	0.88	0.86	0.72
	(0.05)	(0.01)	(0.02)	(0.01)	(0.01)
Total expenditures	2.92	2.02	2.31	2.47	2.14
	(0.08)	(0.02)	(0.04)	(0.04)	(0.02)
Observations	1,599	9,502	4,188	10,718	12,457

Notes: Food expenditures are expressed in 2005 US$ PPP. Standard errors in parentheses.[1]Daily food expenditure is estimated by taking the average of daily cash expenditures over the last week and the last year. Own food production is estimated taking the average daily own food production over the last 12 months.

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Appendix Table A8: Hedonic regression of rents paid by tenants

	1988	1993	1998	2002	2008
Number of rooms	0.479***	0.584***	0.552***	0.456***	0.415***
	(0.127)	(0.037)	(0.097)	(0.021)	(0.057)
Number of rooms^2	0.005	-0.045***	-0.047	-0.033***	-0.006
	(0.034)	(0.007)	(0.030)	(0.002)	(0.016)
Number of rooms^3	-0.004	0.001***	0.002	0.001***	-0.003**
	(0.003)	(0.000)	(0.003)	(0.000)	(0.001)
Electric box	0.219***	0.301***	0.197***	0.342***	0.250***
	(0.053)	(0.026)	(0.039)	(0.034)	(0.029)
Water tap	0.193**	0.282***	0.208***	0.209***	0.265***
	(0.075)	(0.033)	(0.046)	(0.040)	(0.033)
Water closet	0.281***	0.318***	0.475***	0.634***	0.530***
	(0.064)	(0.029)	(0.044)	(0.037)	(0.033)
Uses firewood	-0.162***	-0.118***	-0.122***	-0.129***	-0.111***
	(0.056)	(0.023)	(0.031)	(0.027)	(0.023)
Flat	0.016	0.118***	0.094***	-0.002	0.054**
	(0.070)	(0.023)	(0.030)	(0.026)	(0.022)
Urban area	0.753***	0.395***	0.611***	0.503***	0.533***
	(0.092)	(0.042)	(0.050)	(0.039)	(0.029)
Regions					
-North (ref.)	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
-East Forest	-0.140**	0.061*	0.091*	0.108***	0.184***
	(0.071)	(0.031)	(0.051)	(0.039)	(0.031)
-West Forest	-0.074	0.088***	-0.015	0.156***	0.177***
	(0.076)	(0.033)	(0.045)	(0.040)	(0.030)
-Abidjan	0.234***	0.609***	0.632***	0.815***	0.933***
	(0.070)	(0.030)	(0.041)	(0.036)	(0.031)
Constant	7.194***	6.984***	6.997***	7.207***	7.230***
	(0.158)	(0.062)	(0.104)	(0.057)	(0.063)
N	469	2,828	1,240	3,558	4,938
Adjusted R2	0.73	0.66	0.72	0.60	0.58

Notes: Standard errors in parentheses. †Indicates dummy variables. *p<0.10, **p<0.05, ***p<0.01.

Source: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Appendix Table A9: Housing characteristics over time

	1988	1993	1998	2002	2008
Lives in villa/house	0.41	0.09	0.13	0.14	0.09
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Lives in a flat	0.36	0.39	0.39	0.35	0.40
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Urban area	0.39	0.42	0.46	0.45	0.43
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Number of rooms	3.74	3.20	3.10	3.15	2.83
	(0.06)	(0.02)	(0.03)	(0.03)	(0.02)
Electric box	0.24	0.21	0.29	0.28	0.24
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Has a private water tap	0.10	0.12	0.19	0.20	0.17
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Water closet	0.17	0.12	0.15	0.15	0.12
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Uses firewood	0.92	0.87	0.80	0.77	0.71
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Observations	1,598	9,501	4,166	10,631	11,921

Source: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Appendix Table A10: Daily food expenditures across methods

	1988	1993	1998	2002	2008
Food expenditure (I) [1]	2.77	1.40	1.82	2.16	1.78
	(0.08)	(0.01)	(0.05)	(0.04)	(0.02)
Own food production (a.1)	1.86	0.77	0.81	1.18	0.81
	(0.08)	(0.01)	(0.03)	(0.03)	(0.02)
Cash expenditures (a.2)	0.91	0.63	1.01	0.98	0.97
	(0.03)	(0.01)	(0.04)	(0.01)	(0.01)
Expenditures per capita	4.06	2.42	2.83	3.33	2.93
	(0.09)	(0.02)	(0.06)	(0.05)	(0.03)
Food expenditure (II) [2]	2.04	1.12	1.43	1.57	1.22
	(0.06)	(0.01)	(0.03)	(0.03)	(0.01)
Own food production (b.1)	0.82	0.49	0.49	0.59	0.37
	(0.03)	(0.01)	(0.02)	(0.02)	(0.01)
Cash expenditures (b.2)	1.21	0.63	0.94	0.98	0.85
	(0.06)	(0.01)	(0.02)	(0.03)	(0.01)
Expenditures per capita	3.32	2.14	2.44	2.74	2.37
	(0.09)	(0.02)	(0.05)	(0.05)	(0.02)
Food expenditure (III) [3]	1.63	1.01	1.30	1.30	1.00
	(0.05)	(0.01)	(0.03)	(0.02)	(0.01)
Own food production (c.1)	0.57	0.39	0.41	0.44	0.28
	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Cash expenditures (c.2)	1.06	0.62	0.88	0.86	0.72
	(0.05)	(0.01)	(0.02)	(0.01)	(0.01)
Expenditures per capita	2.92	2.02	2.31	2.47	2.14
	(0.08)	(0.02)	(0.04)	(0.04)	(0.02)
Food expenditure (IV) [4]	1.58	1.06	1.39	1.38	1.07
	(0.04)	(0.01)	(0.03)	(0.02)	(0.01)
Own food production (c.1)	0.57	0.39	0.41	0.44	0.28
	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Cash expenditures (d.2)	1.02	0.67	0.98	0.95	0.79
	(0.04)	(0.01)	(0.02)	(0.01)	(0.01)
Expenditures per capita	2.87	2.08	2.40	2.55	2.22
	(0.08)	(0.02)	(0.05)	(0.04)	(0.02)
Observations	1,599	9,502	4,188	10,718	12,457

Notes: Food expenditures are expressed in 2005 US$ PPP. Standard errors in parentheses.[1]The recall period for cash expenditures was 'the last 14 days' in 1988 and 'the last week' from 1993 onwards. Own food production is the market value of the quantity produced that is consumed each day. [2]Cash expenditures is estimated for the last month and own food production takes into account the number of days each good is consumed in a month. [3]The estimates take into account the number of months in which each product has been consumed over the last 12 months. [4]Cash expenditures is estimated based on the number of months each product has been consumed during the last 12 months and taking the average of expenditures over the last week or 14 days and the last month.

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Appendix Table A11: Durable goods ownership

	1988	1993	1998	2002	2008
National level					
Cooker	10.7	10.0	11.8	13.9	14.4
Fridge	20.7	18.1	18.4	17.0	15.6
Radio	57.8	60.0	64.6	67.4	74.7
TV	26.7	29.2	31.1	34.9	45.3
Bike or motorbike	35.6	33.7	33.5	35.6	53.2
Car	4.6	5.2	4.7	5.8	3.4
Phone			6.5	20.0	65.5
Wealth score[1]					
Mean	1.6	1.6	1.6	1.7	2.1
Std. Dev.	1.4	1.4	1.4	1.4	1.1
Obs.	1 600	9 599	4 200	10 800	10 958
Urban areas					
Cooker	25.1	21.2	22.0	30.4	30.8
Fridge	45.1	37.6	32.7	34.3	29.8
Radio	71.3	76.8	69.9	75.0	74.9
TV	57.2	57.2	52.9	61.3	73.9
Bike or motorbike	17.8	20.1	18.7	20.1	26.0
Car	10.6	10.4	8.5	11.9	6.7
Phone			13.0	41.8	89.4
Wealth score[1]					
Mean	2.3	2.2	2.0	2.3	2.4
Std. Dev.	1.6	1.5	1.6	1.5	1.3
Obs.	736	5 360	1 919	4 980	6 119
Rural areas					
Cooker	1.6	1.4	3.6	1.4	1.6
Fridge	5.2	3.3	6.8	3.9	4.5
Radio	49.3	47.2	60.3	61.6	74.5
TV	7.5	8.1	13.3	14.9	23.0
Bike or motorbike	46.9	43.9	45.5	47.4	74.4
Car	0.8	1.3	1.6	1.1	0.8
Phone			1.1	3.4	46.8
Wealth score[1]					
Mean	1.1	1.1	1.3	1.3	1.8
Std. Dev.	1.0	1.0	1.1	1.0	0.9
Obs.	864	4 239	2 280	5 820	4 839

Notes: Share of individuals living in a household with at least one of the durable goods listed.[1]Wealth score: sum of cooker, fridge, radio, TV, bike, motorbike and car per capita.

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Appendix Table A12: Durable goods ownership (2)

	1988	1993	1998	2002	2008
North					
Cooker	3.1	4.4	4.2	6.7	3.3
Fridge	11.3	11.4	9.5	11.3	9.5
Radio	48.8	47.9	52.7	62.6	73.3
TV	15.9	20.0	14.1	28.7	30.2
Bike or motorbike	64.8	53.5	59.4	59.7	74.9
Car	3.2	4.4	2.9	4.2	1.6
Phone			3.1	13.9	47.4
Wealth score[1]					
Mean	1.5	1.4	1.4	1.7	1.9
Std. Dev.	1.2	1.3	1.3	1.3	1.0
Obs.	416	2 540	980	2 620	3 118
East forest					
Cooker	6.7	6.2	11.2	15.0	8.8
Fridge	15.3	13.7	20.4	18.1	12.4
Radio	59.6	57.1	69.2	70.1	75.6
TV	20.8	23.6	33.2	35.1	39.6
Bike or motorbike	39.9	33.8	33.5	30.9	57.3
Car	3.2	3.3	4.2	6.8	2.2
Phone			6.0	19.9	66.5
Wealth score[1]					
Mean	1.5	1.4	1.7	1.8	2.0
Std. Dev.	1.3	1.3	1.4	1.4	1.1
Obs.	400	2 420	940	2 620	2 641
West forest					
Cooker	5.1	3.3	5.0	2.8	3.9
Fridge	12.0	9.5	12.4	5.9	7.5
Radio	55.0	57.9	64.9	63.0	75.8
TV	16.7	18.7	23.7	19.7	34.9
Bike or motorbike	24.8	36.4	32.6	40.2	65.9
Car	2.2	3.5	3.9	1.5	1.7
Phone			2.5	7.3	58.1
Wealth score[1]					
Mean	1.2	1.3	1.4	1.3	1.9
Std. Dev.	1.2	1.2	1.3	1.1	1.0
Obs.	479	2 959	1 420	3 580	3 271
Abidjan					
Cooker	38.1	32.4	32.5	41.7	46.1
Fridge	58.3	46.0	36.6	43.1	36.7
Radio	73.7	81.4	72.9	77.6	73.2
TV	69.7	65.2	60.3	70.6	81.1
Bike or motorbike	2.7	4.9	5.1	5.6	9.1
Car	12.9	11.3	8.6	14.4	8.9
Phone			17.3	51.0	93.5
Wealth score[1]					
Mean	2.6	2.4	2.2	2.5	2.6
Std. Dev.	1.5	1.5	1.5	1.5	1.4
Obs.	304	1 680	859	1 980	1 928

Notes: Share of individuals living in a household with at least one of the durable goods listed.[1]Wealth score: sum of cooker, fridge, radio, TV, bike, motorbike and car per capita.

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

Appendix Table A13: Detail in food across surveys

	1988	1993	1998	2002	2008
Rice	1	1	2	3	4
Maize	1	1	1	3	3
Mil sorghum etc.	1	1	1	5	5
Bread	1	1	1	1	1
Attieke	1	1	1	1	1
Cassava	1	4	4	4	3
Pasta	1	1	1	1	1
Biscuits	1	1	1	1	1
Yam	1	1	1	1	2
Banana	1	1	1	1	2
Taro potato	1	1	2	3	3
Palm kernel	1	1	1	1	1
Peanut	1	1	1	2	2
Other nuts	1	1	1	2	7
Fish and crustaceans	1	1	1	4	5
Bushmeat	1	1	1	1	1
Poultry	1	1	1	1	1
Cattle meat	1	1	1	3	3
Eggs	1	1	1	1	1
Palm oil	1	1	1	2	2
Refined oil	1	1	1	1	1
Butter	1	1	1	1	2
Fruits	1	1	1	10	10
Candies and sugar	1	1	1	6	5
Salt	1	1	1	1	1
Alcohol	1	1	1	2	2
Soft drink	1	1	1	2	2
Broth (Bouillon cube)	1	1	1	1	1
Tomato paste	1	1	1	1	2
Vegetables	1	1	1	20	26
Street food	1	2	2	2	2
Dairy products	1	1	1	4	6
Other foods	1	1	2	7	8

Sources: Authors' calculation based on data from CILSS 4 and ENV1-4 household surveys.

A2 Macroeconomic data

The national accounts data used in this paper are extracted from the World Development Indicators (WDI) database for the 1960 to 1997 period, and come from the Ivorian National Institute for Statistics (INS) for the 1998 to 2008 period. We found an error in the WDI figures for 1998-2002 that is not present in the INS figures: real export growth (12 per cent) is obviously wrong, and translates to a collapse of real private consumption (-10 per cent) that is calculated as a residual in the balance of accounts (implying a deflator of private consumption at odds with the consumer price index).

Appendix Table A14 presents macroeconomic growth trends since 1988, and decomposes GDP growth for each of the inter-survey sub-periods. GDP per capita decreased across the whole period, except during 1993-98. In 2008, GDP per capita is lower than in 1988 by 17 percentage points. Since 1988, the agricultural sector's share of GDP has increased; this reveals that Côte d'Ivoire did not succeed in diversifying its sources of growth, and that agriculture and cash crop exports remained very important income sources for a large fraction of the Ivorian population. The slight increase in the secondary (industrial) sector share of GDP is due to petroleum and gas extraction and petroleum refining, rather than manufacturing activities, whose added value decreased a lot. From the beginning of the political crisis until the eve of the civil conflict (1998-2002), public and private investments fell dramatically (by 7.7 per cent on average per year). Investments during the 'neither peace nor war' period (2002-08) were not sufficient to recover the level of investment reached in 1998, after the bounce-back from the devaluation.

According to national accounts, private consumption per capita only decreased by 6 per cent between 1988 and 2008, which is less than the 25 per cent fall estimated by the household surveys (see Table 3 of main text). This discrepancy is not so surprising given the differences in the definition and units of observations, as well as methodology, between these two data sets. The data on public consumption are more puzzling: its share of GDP seems to have increased since 1988 whereas according to IMF data, this fell dramatically, from 35.8 per cent of GDP in 1988 to 14.6 in 1998 and 17.9 in 2008 (see Appendix Table A15). The latter public finance figures are consistent with household surveys that show a large reduction in civil service employment (see Table 2).

Appendix Table A14: Economic growth decomposition, 1988-2008

	1988		88-93	1993		93-98	1998		98-02	2002		02-08	2008	
		GDP comp.	Avg. ann. growth		GDP comp.	Avg. ann. growth		GDP comp.	Avg. ann. growth		GDP comp.	Avg. ann. growth		GDP comp.
GDP at market prices[1]	5,263	100%	0.3%	5,338	100%	6.5%	6,889	100%	-0.5%	6,749	100%	1.2%	7,262	100%
Expenses														
Total consumption	4,014	76%	-0.5%	3,905	73%	9.7%	5,433	79%	1.8%	5,833	86%	1.6%	6,421	88%
Private consumption	3,238	62%	0.4%	3,298	62%	11.0%	4,418	64%	1.4%	4,664	69%	1.3%	5,054	70%
Public consumption	775	15%	-4.8%	607	11%	1.5%	1,015	15%	3.6%	1,170	17%	2.6%	1,367	19%
Gross capital formation	523	10%	-1.5%	485	9%	11.3%	nd			nd			nd	
Gross fixed capital formation	763	14%	-5.3%	581	11%	18.7%	959	14%	-7.7%	695	10%	3.9%	876	12%
Private investment	356	7%	nd	nd		nd	598	9%	-4.4%	499	7%	2.8%	588	8%
Public investment	nd		nd	nd		nd	361		-14.1%			6.6%		
		0%						5%		196	3%		289	4%
Changes in inventories	-240	-5%	-16.8%	-96	-2%	43.9%	22	0%		-530	-8%	-19.9%	-273	-4%
Exportations	2,104	40%	1.1%	2,220	42%	5.8%	2,858	41%	0.8%	2,948	44%	-0.7%	2,826	39%
Importations	1,377	26%	-1.6%	1,273	24%	15.9%	2,383	35%	-2.0%	2,197	33%	2.8%	2,588	36%
Balance of trade	727	14%	5.4%	948	18%	-15.6%	475	7%	12.1%	751	11%	-17.4%	238	3%
Revenues														
Primary sector V. A.	1,139	22%	2.8%	1,309	25%	5.8%	1,669	24%	0.1%	1,678	25%	0.4%	1,721	24%
Secondary sector V. A.	1,028	20%	-0.4%	1,008	19%	11.3%	1,469	21%	-2.1%	1,347	20%	2.7%	1,577	22%
Tertiary sector V. A.	3,096	59%	-0.5%	3,021	57%	5.1%	3,073	45%	-0.1%	3,060	45%	1.3%	3,298	45%
Indirect taxes	660	13%	-7.3%	452	8%	14.3%	677	10%	-0.5%	665	10%	0.0%	667	9%
GDP at factor prices	4,603		1.2%	4,886		5.7%	6,211		-0.5%	6,084		1.4%	6,596	
GDP per capita, thous. XOF	450		-3.0%	386		2.9%	434		-2.5%	393		-0.4%	382	
GNI per capita, thous. XOF	413		-3.5%	345		4.2%	nd			nd			nd	
GDP per capita, 2005 US$ PPP	2,008		-3.0%	1,724		2.9%	1,933		-2.8%	1,722		-0.6%	1,657	
Cons. per capita, 2005 US$ PPP	1,145		-3.4%	962		3.3%	1,133		-2.1%	1,106		-0.0%	1,079	
As percentage of 1988	100%			84%			99%			97%			94%	

Notes: [1]At constant 1996 million CFA franc (XOF).

Source: Authors' calculation based on data from the 1988-93 WDI (World Bank 2012) and consumer price data for 1998-2008 (INS 2012).

Appendix Table A15: Public finance

Percentage of GDP	1988[1]	1993[2]	1998[2]	2002[3]	2008[4]
Total revenue	25.9	16.6	18.4	17.8	18.9
Tax revenue	20.4	13.9	15.1	15.7	15.6
Non-tax revenue	5.5	2.6	3.3	2.1	3.2
Petroleum and gas	0	0.0	0.0	0.2	1.3
Grants	0	0.5	0.7	0.5	1.7
Total expenditure	39.6	28.3	21.2	19.9	21.1
Current expenditure	35.8	25.4	14.6	15.8	17.9
Wages and salaries	11.6	10.1	5.5	6.5	6.8
Interest due on public debt	8.6	8.2	3.8	3.3	1.8
Investment expenditure	3.7	2.9	6.0	3.2	3.0
Domestically financed	nd	nd	nd	1.8	2.2
Foreign-financed	nd	nd	nd	1.4	0.7
Net lending		0.0	0.0	0.2	0.2
Crisis-related expenditure		0.0	0.6	0.7	0.0
Overall balance, including grants	-13.7	-11.2	-2.1	-1.5	-0.6
ODA: Total net by the DAC countries[5]	3.8	6.4	3.8	7.2	0.9

Source: Authors' elaboration based on data from: [1] BNEDT (1997),[2] IMF (2000), [3] IMF (2004), [4] IMF (2010), [5]OECD (2013).

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