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Burkina Faso

Shipping around the Malthusian trap

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Abstract: Burkina Faso has experienced quite significant aggregate growth over the past two decades, but that growth has not been transformed into poverty reduction. The key obstacles preventing large-scale escape from poverty are very high population growth combined with the absence of major technological change in agriculture and any significant structural transformation of the urban economy. Continuously rising food prices and droughts maintain child malnutrition and mortality at high levels, threatening the political and social stability of the country. Dealing with Malthusian forces is the main challenge for Burkina Faso in the decade to come.

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1   Introduction

More and more people seem to think that the time has come for Sub-Saharan Africa (SSA) to take off. This optimism is based on high rates of economic growth indicated by National Accounts data (see for example Pinkovsky and Sala-i-Martin 2010) and by a rather positive development in asset ownership revealed by household surveys (Young 2012). Burkina Faso, a resource-poor, landlocked country in West Africa with a very low level of human development,[1] is no exception in this regard. According to its National Accounts this country has experienced remarkable, if not exceptional, rates of growth in gross domestic product (GDP) over the past 20 years. However, according to official poverty estimates and people's perceptions, the level of poverty has not changed much over this period. Indeed the growth-elasticity of poverty, that is the rate by which poverty declines for each percent of GDP per capita growth, is, at -0.54, very low, both in absolute terms and in comparison with countries that have recently shifted large parts of their population out of poverty.[2]

We show that in Burkina Faso growth had basically two sources: first, a massive migration of people from the rural agricultural sector to the urban informal sector and, second, agricultural production of food crops and cotton both fuelled by a massive expansion of cultivable land. Both sources are unsustainable. Structural changes that would allow moving urban workers from low- to high-productivity jobs and increases in land productivity are virtually absent. Given the stagnation of agricultural productivity, the limits to further land expansion and the massive population growth—in fact population size has doubled since 1985—the country is experiencing a steady rise in food prices, which erodes the purchasing power of the population and hence prevents significant reductions in poverty from materializing. Food price inflation is so substantial that child malnutrition and mortality rates are still very high and temporarily even on the rise. Taming these Malthusian forces will be the major challenge for Burkina Faso in the decade to come. We believe the findings from this case study are also relevant to many other parts of SSA.

The remainder of this paper is organized as follows. Section 2 briefly describes the relevant context. Section°3 provides a detailed assessment of growth, inequality and poverty dynamics since the early 1990s. Section 4 investigates the underlying forces with a focus on changes in population size, migration and productivity development. Section 5 concludes.

2   Country context and background

In Burkina Faso almost 80 per cent of the population live in rural areas. As a mainly agricultural and cotton exporting country, its economic performance depends heavily on climatic conditions and the world market price for cotton; even though more recently gold (the most important export product since 2009) and a few other metals have also became important export products. In urban areas the majority of the workforce operate in the informal sector. Public revenue is for a large part financed through external aid. The head of

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[1] The country ranks 181st out of 187 countries in the United Nations Human Development Index ranking (see http://hdr.undp.org/en/data/trends/).

[2] This elasticity is calculated by dividing the percentage change in the poverty headcount over the entire period 1994 to 2009 by the change in GDP per capita over this same period. This can for instance be compared to growth-elasticities of poverty reported in Besley and Cord (2007) for a larger set of countries. The sample average is well beyond 1.

state is Blaise Campaoré who took power in 1987. From then on the country started to make reforms in accordance with the International Monetary Fund (IMF) and the World Bank. The first Structural Adjustment Program (SAP) was signed in 1991.[3] Given that Burkina Faso, due to its participation in the CFA Franc zone,[4] already showed relatively modest public expenditure and monetary stability, the most important element of the SAP was the liberalization and privatization of the economy. However, despite the SAP (*or because of it*), real GDP per capita declined between 1991 and 1993 by approximately 3.8 per cent per year. Finally, the failure of the internal adjustment strategy, not only in Burkina Faso but also in several other countries of the CFA Franc zone and especially in Côte d'Ivoire, led to a 50 per cent devaluation of the CFA Franc parity in relation to the French Franc in January 1994. After the devaluation, real GDP per capita growth began to rise and averaged at approximately 6.1 per cent per year between 1994 and 1998 (see Figure°1). This growth was furthermore encouraged by a favourable development of the world market price for cotton and a multiplication of the amount of land used for cotton production.

Figure 1: GDP per capita constant prices (1994 = 100)

On average 2.95% growth per year
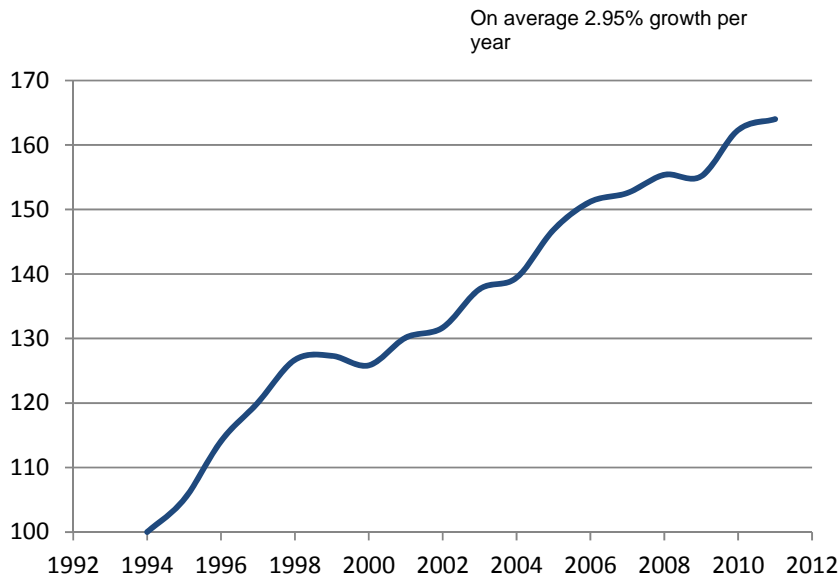
Source: INSD (National Accounts various years; see www.insd.bf).

In the following years, Burkina Faso pursued its efforts for structural reforms, in particular concerning price and trade liberalization. Burkina Faso established its first Poverty Reduction Strategy Paper (PRSP) in May 2000 (Ministry of Finance and Economic Affairs 2000) and the country reached its completion point in the Heavily Indebted Poor Country (HIPC) II Initiative in April 2002. In the 2000s, GDP per capita growth was rather moderate and adversely affected by the Ivorian crisis and the resulting, albeit temporary, return migration of many Burkinabè, adverse rainfall conditions and a volatile international price for cotton.

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[3] The government had already undertaken 'auto-adjustment programs' to stabilize the economy at the end of the 1960s and in 1983.

[4] Franc de la Communauté Financière d'Afrique is the name of the local currency. The currency union is called the CFA Franc zone.

Between 2003 and 2010, real GDP per capita grew on average by 2.3 per cent annually. The entire period was marked by a general rise in the prices of basic food items, in particular domestically produced cereals and imported rice, and a high volatility of these prices, with important peaks in 2005 and 2008. During the 2008 food crisis, prices for the main food crops rose by 40 to 70 per cent. Urban dwellers additionally suffered from high prices for cooking energy and fuel. Wodon et al. (2008) estimate that the price increase for rice, bread, oil, sugar and milk alone increased poverty by about 1-2 percentage points. The actual increase must have been much higher as the study ignored the price hikes for the most important food crops of millet, sorghum and maize.[5] In response to the food crisis, the government suspended taxes on a number of consumer products between March and September 2008, with a view to protecting the welfare of the most vulnerable groups. Energy prices were also contained, and some petroleum products subsidized. However, an IMF report that looked at these interventions more closely, concluded that these measures were not well targeted as 80 per cent of the benefits accrued to the top 60 per cent in terms of income distribution (Arze del Granado and Adenauer 2011). Regarding fuel subsidies alone, the authors show that less than 16 per cent of the benefits reached the poorest 40 per cent of households. Not surprisingly, these measures were phased out in late 2008. In 2008, but in particular in spring 2011, people took to the streets of Ouagadougou to protest against the soaring prices of basic foods. Other spontaneous and largely unexpected civilian protests and military looting followed. Students torched government buildings in several cities to protest against a young man's death in custody and soldiers protested against unpaid housing allowances. President Compaoré intensified the dialogue with representatives of student and military groups. He replaced the prime minister, chief of defense, and security service chiefs and appointed new governors in all 13 regions. The political climate has remained relatively calm since then. However, many seem to share the view that their standard of living has not changed much over the past two decades.[6]

Official estimates indeed suggest that poverty has not reduced much since the implementation of structural reforms. The first survey that measures poverty in a representative way dates back to the mid-1990s. It has been repeated since then every four to six years. The fourth survey was undertaken in 2009. According to the official poverty figures provided by National Statistics (INSD),[7] the poverty rate—that is, the percentage of the population below the poverty line—has fluctuated since 1994 at around 45 per cent: 44.5 per cent in 1994, 45.3 per cent in 1998, 46.4 per cent in 2003 and 43.9 per cent in 2009 (IMF 2012; INSD 1997, 2000a, 2003). These numbers have been challenged by several authors (Grimm and Günther 2004, 2007a; World Bank 2004). Grimm and Günther (2004, 2007a) show that if one accounts for differences in the survey design over time, ensures a computation of a time-coherent expenditure aggregate and allows the poverty line to reflect changes in prices acceding to the consumption habits of poor people, then poverty actually increased between 1994 and 1998, in particular as a result of a severe drought in 1997, and declined between 1998 and 2003 with a national poverty rate in 2003 even somewhat lower than it had been in 1994. The 2009 poverty rate was published first in 2010, but then withdrawn as there was a fear that it would lead to social unrest. It is only in 2012 that the figure was issued again—in a report published by the IMF (2012).

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[5] The second order effects of such price hikes on children's school enrolment have been analysed by Grimm (2011).

[6] In the QUIBB surveys for instance, 86 per cent of all respondents in 2005 and 71 per cent in 2007, respectively reported that they thought that the economic situation in their community had not changed or had even worsened over the previous 12 months.

[7] Institut National de la Statistique et de la Démographie.

3 Growth, inequality and poverty dynamics

For Burkina Faso, representative cross-sectional household living standard measurement surveys (so-called *Enquêtes Prioritaires*) are publicly available for the years 1994, 1998 and 2003. These surveys were undertaken by the INSD with financial support by the World Bank, among others. The sample size in each is around 8,500 households. A fourth round of data was collected in 2009, but these data are not yet publicly available. Hence, we first analyse the period 1994 to 2003 for which we have detailed data and then the period 2003 to 2009 for which the information is more scattered.

3.1 Growth, inequality and poverty dynamics over the period 1994 to 2003

Figure 1 above shows that in terms of GDP Burkina Faso experienced sustained economic growth even in per capita terms over the entire period 1994 to 2003, only interrupted by a severe drought at the end of the 1990s. Given this performance, one would have expected poverty to also have substantially declined. Indeed, as shown in Table 1, the growth rate of household expenditure per capita (here deflated by the general consumer price index [CPI]) had a similar order of magnitude over the entire period.[8] If the Gini coefficient is computed for this expenditure aggregate, one finds an almost constant coefficient; 0.47 in 1994 and 0.45 in 1998 and 2003. This in turn implies that expenditures by the poor must have more or less followed the average growth rate. However, as shown in Grimm and Günther (2007a), this is not necessarily the case, if, for instance, the relevant price index of the poor evolved differently than the general CPI and the deflator of GDP.

As can be seen in Table 1, the nominal poverty line[9] increased between 1994 and 1998 much more than the CPI suggesting that the poor lost in purchasing power relative to the representative household underlying the CPI. Indeed, if deflated using the implicit price index of the poverty line, household expenditure per capita declined between 1994 and 1998, but increased between 1998 and 2003, in the end even to a level higher than in 1994. The increase in the poverty line was mainly driven by a drought-induced rise in the prices of the three main cereals: sorghum, millet and maize. This drought reduced cereal production by more than 20 per cent in relation to 1996/97 levels.[10] Applying the poverty line shown in Table 1 thus implies the following development of poverty over time: the national headcount index (P0) increased between 1994 and

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[8] There are of course differences in levels between GDP per capita and household expenditure per capita (used as a proxy for income) due to conceptual differences between National Accounts (NA) and household surveys and there is also measurement error on both levels.

[9] We deviate from the official poverty line used by INSD, since the official poverty line only accounts for the price increase of the food component (based on the price of the 2,283 per kilo calories (kcal) per day provided by millet, sorghum, maize and rice, which are the main components of the nutritional intake of the poor) but not for the non-food component. In the official poverty line, the non-food component is simply calculated as a share of the nominal food component. Because this component has been altered over time: it slightly decreased between 1994 and 1998 (from approximately 35 per cent to 30 per cent) and strongly increased between 1998 and 2003 (from approximately 30 per cent to 50 per cent), the price index implicit in the official poverty line does not correspond to a true Laspeyres-Index. Therefore, Grimm and Günther (2004, 2007a) decided to calculate a new poverty line using constant real weights of food and non-food items over the period 1994 to 2003. More precisely, they took the nominal value of the official poverty line for 2003 (to have a common reference point with the official statistics), and the cereal food, other-food and non-food budget shares as they were observed in the 2003 household survey in the first two quintiles of the expenditure distribution. The cereal food component, which accounts for roughly 37 per cent of per capita household expenditure, was then deflated to 1998 and to 1994 using the observed price changes for the corresponding cereals. The remaining food and non-food components were deflated using the corresponding CPI components.

[10] Based on data of the *Enquête Permanente Agricole* (1995-2002).

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1998 from 55.5 per cent to 61.8 per cent and then decreased quite substantively between 1998 and 2003 to 47.2 per cent—that is, to a level lower than in 1994. It is safe to say that probably any year would look better than 1998 if the comparison could be done—that is, if household survey data were available.

In rural areas we find the same dynamic, but at a higher level (63.4 per cent to 68.7 per cent to 53.3 per cent). In urban areas throughout all three survey years poverty remained significantly lower than in rural areas: the respective numbers are 14.7 per cent (1994), 27.3 per cent (1998) and 20.3 per cent (2003). Hence, urban poverty also increased between 1994 and 1998 and decreased between 1998 and 2003. However, and in contrast to rural areas, urban poverty in 2003 was still substantially higher than in 1994. The poverty gap— that is, the average distance to the poverty line (where this distance is set to zero for the non-poor)—relative to the poverty line broadly follows the movement of the poverty rate.[11] The computed confidence intervals indicate that the estimates are also robust to random sampling error.

Two main messages emanate from this analysis. First, poverty in Burkina Faso is highly responsive to food prices and therefore very volatile across time. Second, over the entire period 1994 to 2003 poverty declined by about 9 percentage points—that is, one point per year. As the results in Table 1 show, this decline was even more pronounced in rural areas. Again, these estimates are different from the official estimates, because of different assumptions about the poverty line and because of a different concept used to construct the expenditure aggregate.[12] These changes also affect the assessment of inequality. As can be seen at the bottom of Table 1, accounting for differential inflation shows that inequality did in fact increase between 1994 and 1998 (by 3 percentage points) and decline afterwards, but not below the 1994 level. This is quite different from the assessment that is obtained by simply using nominal expenditures, since scale invariance does not apply if inflation rates differ across the income distribution.

Since the change in relative prices, or in other words the phenomenon of differential inflation—that is, loss of purchasing power that varies systematically across the income distribution—is so crucial to understanding Burkina Faso's growth, inequality and poverty nexus, we illustrate this issue further by decomposing the changes in poverty into a growth and distributional component. We use Datt and Ravallion's (1992) method, but extend it by a third component as suggested by Günther and Grimm (2007) that will measure the contribution of differential inflation.

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[11] Computation as in Foster et al. (1984).

[12] For details, the interested reader can refer to Grimm and Günther (2004, 2007a).

Table 1: Income, income inequality and income poverty 1994-2003

	Change p.a. (%)			
	1994	1998	2003	1994-2003
Income and income inequality				
Real GDP per capita[a]				
(in 1,000 CFA Francs, 1994 prices)	120,821	135,434	148,195	2.30
Real household expenditure per capita, survey-based				
(CPI deflated, 1994 prices)[b]	78,772	85,540	99,153	2.59
Inequality (Gini coefficient)	0.47	0.45	0.45	-0.01
Poverty line (nominal)[c]	53,219	82,885	82,672	
(1994 = 100)	100	155.74	155.34	5.02
For comparison: CPI (1994 = 100)	100	123.57	133.07	3.23
Real household expenditure per capita, survey-based				
(poverty line deflated, 1994 prices)	78,772	67,871	84,938	0.84
Poverty national				
FGT Poverty headcount index (P0)[d]	0.555	0.618	0.472	
	[0.54;	[0.61;	[0.46;	
	0.57]	0.61]	0.49]	-1.78
FGT Poverty gap index (P1)[d]	0.209	0.229	0.160	
	[0.20;	[0.22;	[0.15;	
	0.22]	0.24]	0.17]	-2.92
Poverty urban				
FGT Poverty headcount index (P0)[d]	0.147	0.273	0.203	
	[0.13;	[0.26;	[0.18;	
	0.17]	0.30]	0.22]	3.65
FGT Poverty gap index (P1)[d]	0.039	0.083	0.057	
	[0.03;	[0.07;	[0.05;	
	0.05]	0.09]	0.06]	4.31
Poverty rural				
FGT Poverty headcount index (P0)[d]	0.634	0.687	0.533	
	[0.61;	[0.67;	[0.52;	
	0.65]	0.70]	0.55]	-1.91
FGT Poverty gap index (P1)[d]	0.241	0.258	0.183	
	[0.23;	[0.25;	[0.18;	
	0.25]	0.27]	0.19]	-3.01
Inequality				
Gini coefficient, price-adjusted[e]	0.47	0.50	0.47	

Notes: [a]Deflated by GDP deflator (INSD, National Accounts); [b]In prices of Ouagadougou; [c]The poverty lines are taken from Grimm and Günther (2007a); [d]95 per cent confidence intervals in brackets; [e]To adjust for the effect of change in relative prices, the Gini coefficient is computed over expenditure distributions, where the deflation to 1994 is done using urban/rural and decile-specific price deflators.

Source: Grimm and Günther (2007a) and own computations based on National Accounts and EP (1994, 1998, 2003).

Datt and Ravallion's decomposition (Datt and Ravallion 1992) can be written as follows

$$\Delta P_t = [P(\mu_t, L_{t-1}, z) - P(\mu_{t-1}, L_{t-1}, z)] + [P(\mu_{t-1}, L_t, z) - P(\mu_{t-1}, L_{t-1}, z)] + R, \qquad (1)$$

where $P(\mu_t, L_t, z)$ is the poverty measured with a mean income of μ_t, a Lorenz curve L_t and a poverty line z which is constant in real terms. The first component corresponds to the change in poverty explained by the growth effect. The second component corresponds to the change in poverty explained by the distribution effect. R is the calculated residual, representing the interaction effect of changes in the mean income and

changes in inequality.[13] To ensure that such a decomposition is consistent, the implicit price deflator of the poverty line and the one applied to deflate household expenditures have to be the same: typically the CPI is used for that purpose. However, in our case, as we have just shown, the development of the CPI and the inflation experienced by the poor are very different, hence we use the implicit price deflator of the poverty line. Moreover, to illustrate the poverty impact of that 'differential' inflation, it is possible, as shown by Günther and Grimm (2007), to add a 'relative price shift' or 'poverty line' component to Datt and Ravallion's (1992) decomposition and to derive the following 'triple' poverty decomposition:

$$\Delta P_t = [P(\mu_t L_{t-1}, z_{t-1}) - P(\mu_{t-1}, L_{t-1}, z_{t-1})] + [P(\mu_{t-1}, L_t, z_{t-1}) - P(\mu_{t-1}, L_{t-1}, z_{t-1})]$$
$$+ [P(\mu_{t-1}, L_{t-1}, z_t) - P(\mu_{t-1}, L_{t-1}, z_{t-1})] + R,$$

(2)

where the third component corresponds to the change in poverty explained by the inflation difference between the poverty line and the national CPI, in a growth- and distributional-neutral case. The poverty line z_{t+1} is calculated by inflating z_t with the inflation rate of the consumption basket underlying the poverty line relative to the inflation rate of the CPI between t and $t+1$. In this 'triple' decomposition, the growth component has to be interpreted a bit differently than in a 'dual' decomposition. It represents the change in poverty that would have occurred with the observed growth rate given that the poor had experienced the same increase in cost of living as the CPI. The 'poverty line' component represents the change in poverty that can be explained by relative price shifts between the goods consumed by the poor and the goods consumed by the non-poor.

Table 2 shows the results of that decomposition. It can be noted that the impact of the 'poverty line' component on changes in poverty can be significantly negative (as between 1994 and 1998 and between 1994 and 2003) as well as positive (as between 1998 and 2003) and might in some cases even outweigh the impact of the growth as well as the redistribution component. This implies that relative price changes heavily contributed to the poverty increase that could be observed between 1994 and 1998. Poverty would have decreased by almost 18 percentage points between 1994 and 2003 if the prices of the goods of the poor had experienced the same inflation rates as the prices of the goods of the non-poor. However, the high relative price shifts offset the positive effects of general growth rates and redistribution by over 9 percentage points. Obviously, the 'true' relative price shift effect might in reality have been somewhat lower if households had been able to substitute the items that became relatively more expensive. Our data do not allow for the examination of such a substitution in detail as the survey only reports values and not unit prices and quantities. However, we have good reasons to believe, as we will explain in more detail below, that the relevant substitution effects are very limited. The main reason is that the price increase concerns not only the main food items of the poor but also the items with by far the lowest price per kcal, even after accounting for the price increase of these goods.

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[13] The magnitude of both components and the residual depend on the decomposition path—that is, it depends on whether the initial or the final year is taken as the reference period. In our case the decomposition results are averaged over the two possible decomposition paths—first the initial year is taken as the reference year for the computation of the components, and then the final year is taken as the reference year and in a last step for each component the average over the two decomposition paths is calculated.

Table 2: Decomposition of the change in the national headcount index, ΔP0, Burkina Faso, 1994-2003

Year	1994-1998	1998-2003	1994-2003
ΔP0	0.063	-0.146	-0.083
Growth effect	-0.044	-0.091	-0.131
Redistribution effect	-0.023	-0.013	-0.048
Poverty line effect	0.129	-0.045	0.091
Residual	0.001	0.002	0.005

Source: EP 1994, 1998, 2003; Günther and Grimm (2007).

3.2   Growth, inequality and poverty dynamics over the period 2003 to 2009

Given that the *Enquête Prioritaire 2009* is not yet publicly accessible, it is not possible to simply extend the analysis presented above up to 2009. We rely instead on the recently published official poverty estimates based on that same survey and check the credibility of these estimates against other evidence.

The official poverty line and the estimated poverty headcount index for 2009 are shown in Table 3. Recall we had used the official 2003 poverty line as a reference point to recompute the poverty lines for 1994 and 1998, therefore the 2003 poverty line in Table 3 is identical with the one in Table 1. This poverty line was increased by the INSD by 31 per cent to reach a nominal value of 108,374 CFA Francs per person per year in 2009 or about 454 $PPP (or 1.24 $PPP per day).[14] Based on this poverty line and the distribution of household per capita consumption expenditure drawn from the 2009 survey, INSD estimates that the poverty headcount index declined to 43.9 per cent, which corresponds to a reduction of 2.4 percentage points or 0.4 points per year since 2003. If this estimate could be confirmed it would mean that the positive trend over the entire period 1994 to 2003 continued, but that the pace of poverty reduction slowed down further. As will be seen below, there is indeed a lot of evidence supporting this conclusion. Before we discuss this further, we will first take a closer look at the implied growth rate in household consumption per capita and the implied inflation rate experienced by the poor.

INSD increased the poverty line by 31 per cent over the six years between 2003 and 2009. The general CPI during that period increased by 23 per cent, the GDP deflator by 18 per cent and the deflator of private consumption in the National Accounts by 28 per cent (see Table 3). The prices of the three main food staples consumed by the poor showed the following price dynamics: sorghum +29 per cent, millet +15 per cent and maize +40 per cent. The price of rice, which, because of its high cost per kcal, is not consumed as much by the poor, increased by 68 per cent. If we extrapolate the Grimm/Günther poverty line used above to 2009, we get 102,667 CFA Francs which implies an increase relative to 2003 of 24 per cent. This is slightly less than the INSD estimate. But it is sufficiently close to conclude that the increase inherent in the method used by INSD is in line with the facts.

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[14] 2009 Purchasing Power Parity from Penn World Tables 7.0 (https://pwt.sas.upenn.edu).

Table 3: Income, income inequality and income poverty, 2003-2009

	2003	2009
INSD official estimates		
Poverty line (nominal)	82,672	108,374
Poverty headcount index (P0)	0.463	0.439
INSD (National Accounts)		
Inflation rate CPI	0.23	
Inflation rate GDP deflator	0.18	
Inflation rate Private Consumption deflator	0.28	
Inflation rate CPI sorghum	0.29	
Inflation rate CPI millet	0.15	
Inflation rate CPI maize	0.40	
Inflation rate CPI rice	0.68	
Growth rate of real GDP per capita	0.13	
Growth rate of real private consumption per capita	-0.002	
Own computations		
Implied inflation rate of INSD poverty line	0.31	
Implied real household expend growth rate of the poor[a]	0.06	
CPI-inflated poverty line		101,773
P0 using CPI-inflated poverty line and INSD income level[a]		0.426
Poverty line extrapolating Grimm/Günther 2004 line		102,667
Implied inflation rate		0.24
P0 using Grimm/Günther line and INSD income level[a]		0.431
Poverty line inflated with inflation of private consumption		105,820
P0 using priv. consumption inflated pov. line and INSD income level[a)]		0.453

Note: [a] Assuming no distributional change in nominal incomes between 2003 and 2009.

Source: EP (2003), INSD, National Accounts (various years); IMF (2012); own computations.

Based on this poverty line and assuming (for the moment) that the distribution of relative incomes did not change between 2003 and 2009, we can compute the implicit mean growth rate of household consumption expenditures per capita. It is simply the growth rate with which we have to multiply all household consumption expenditures in the 2003 distribution to get a poverty headcount index of 43.9 per cent given the new poverty line. This procedure yields a rate of 6 per cent. Depending on the true distributional change, the true mean growth rate might be a bit higher or lower than 6 per cent. Six per cent is about half of the growth rate in GDP per capita, but significantly more than the per capita adjusted growth rate in real private

consumption in the National Accounts. Below, we further investigate the discrepancy between growth in GDP and growth in household expenditure per capita.

To further check the robustness of the official poverty estimate, we recomputed the poverty headcount applying the growth rate of real household expenditure per capita implied by the INSD estimates to the 2003 distribution for alternative poverty lines—again assuming the absence of any distributional shift between 2003 and 2009. The results are shown in Table 3. If we use a CPI-inflated poverty line, we find a poverty headcount index of 42.6 per cent, if we use the extrapolated Grimm/Günther line we find 43.1 per cent and if we use the inflation rate implied by the private consumption deflator (National Accounts) we find 45.3 per cent.

We conclude that the official estimate is relatively robust to alternative poverty lines and it seems safe to state that the relative number of poor people decreased between 2003 and 2009, but very modestly and at a slower pace than between 1994 and 2003.
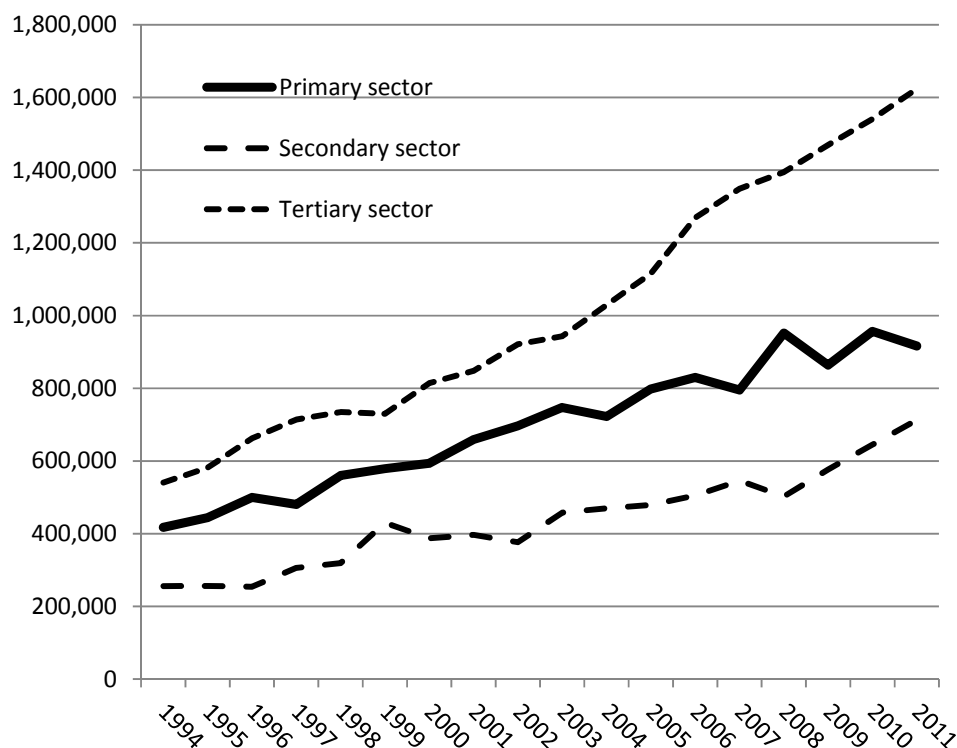
4   An analysis of the underlying driving forces

In what follows we investigate in more detail the driving forces of the growth, inequality and poverty trends discussed above. We start by unpacking aggregate growth into sectoral growth and analyse how it affected households' disposable income and employment in urban and rural areas. We then focus on the agricultural sector, which accommodates almost 90 per cent of the poor, and link the supply and demand side of food. Throughout, special attention is given to the role of population growth and the urban-rural divide of that growth.

4.1   Sectoral analysis

In this section we disaggregate growth of real GDP per capita by sector in order to investigate the sources of aggregate growth. Figure 2 shows GDP growth according to three broad sectors: agriculture (primary sector), industry (secondary sector) and trade and services (tertiary sector). It can be seen that the level of total GDP is highest in the tertiary sector, followed by the primary sector and then the secondary sector. In terms of growth, the figure suggests that real growth in total GDP was also highest in the tertiary sector; it even gained pace over the observation period. In the primary and secondary sectors, growth of GDP was a bit less impressive, but still positive and relatively steady over the entire period.

Figure 2: Sectoral GDP (constant prices 1999, in million CFA Francs)

Yet, regarding the implied leverage on poverty, what matters is obviously growth of GDP per capita. As has already been shown above, given the continuing high population growth in Burkina Faso, aggregate real growth rates differed substantially from per capita growth rates. Regarding the sectoral analysis, it would be a mistake to simply discount the aggregate population growth rate, since the primary sector is mainly related to the rural population, whereas the secondary and tertiary sectors are mainly related to the urban population and population growth rates are very different in rural and urban areas. Although natural population growth was higher in rural areas compared to urban areas,[15] growth in urban areas was in fact much higher than in rural areas due to the intensive rural-urban migration. This can be seen in Table 4, which shows population estimates for the census years and the implied growth rates over the periods in between. For instance, over the period 1996 to 2006, the urban population grew at a rate of more than 7 per cent per year, whereas the rural population 'only' grew at a rate of 2.2 per cent per year. Some of the urban growth was due to villages that surpassed the threshold of 5,000 inhabitants and hence got the status of a city, but the bulk related to population growth in already existing cities, in particular Ouagadougou and Bobo-Dioulasso, the two major cities in the country.

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[15] According to the last Demographic and Health Survey undertaken in 2010, the estimated total fertility rate—that is, the number of children a woman would have over her fertile years if she was exposed to the currently observed age-specific fertility rates—was 3.9 in urban areas and 6.7 in rural areas (INSD 2012a). According to the same data, the crude birth rate—the number of births relative to the total population—was 33.9 per 1,000 in urban areas and 43.3 per 1,000 in rural areas (INSD 2012a).

Table 4: Rural and urban population growth

	1985	1996	2006	2011 (proj.)
Rural (count)	6,912,367	8,711,441	10,835,295	12,084,150
Mean annual growth rate over period		0.021	0.022	0.022
Urban (count)	1,052,338	1,601,168	3,181,967	4,485,647
Mean annual growth rate over period		0.039	0.071	0.071
of which				
Ouagadougou (count)	465,969	750,398	1,475,223	1,475,223
Mean annual growth rate over period		0,044	0,070	0,070
Bobo-Dioulasso (count)	228,668	309,771	489,967	489,967
Mean annual growth rate over period		0,*028*	0,047	0,047
Other cities (count)	357,701	540,999	1,216,777	1,216,777
Mean annual growth rate over period		0,038	0,084	0,084
Total (count)	7,964,705	10,312,609	14,017,262	16,571,808
Mean annual growth rate over period		0.024	0.031	0.034

Note: Settlements with a population of 5,000 and above are considered urban.

Source: INSD (www.insd.bf).

Hence, Figure 3 shows sectoral GDP per capita, where GDP in the primary sector has been related to the rural population and GDP in the secondary and tertiary sectors to the urban population.[16] The message that we get now is completely different. The sectoral differences in GDP per capita widened. Moreover, and more importantly, these figures show that aggregate growth was, to a large extent, the result of urbanization or the migration of rural dwellers from low-paid activities to better-paid activities in urban areas. Whereas GDP per capita in the primary sector was between 50 and 100 thousand CFA Francs (in 1999 prices), it was between 200,000 and 250,000 CFA Francs in the secondary sector and 350,000 to 400,000 CFA Francs in the tertiary sector. Hence, at least on average, migrants increased their income quite substantially. However, as Figure 4 clearly shows, in terms of growth, the performance in the secondary and tertiary sector was, as a consequence of that massive influx, very weak. The secondary sector only saw positive growth rates in the second half of the 1990s, but thereafter growth was negative in most years and real GDP per capita in 2011 was lower by about 30 per cent than in 1999. The negative growth performance in the tertiary sector started in the mid-1990s and was only interrupted by a short boom in the early 2000s. By 2011, GDP per capita was more or less at the same level as it had been in 1994. Thus the only sector that experienced growth in per capita terms over the entire period was the agricultural sector. In the agricultural sector, real GDP per capita in 2011 was about 50 per cent higher than in 1994. Cash crops, in particular cotton, played an important role in that growth, but the bulk is related to food crops (see also Table 6 below). So, relative to the other two sectors, the primary sector showed the best performance in per capita terms. In this sector the massive outflow of people prevented GDP per capita from declining. However, even there growth was volatile and in the end was also relatively weak: 50 per cent over 17 years is equivalent to a yearly growth rate of roughly

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[16] Obviously, to the extent that households in urban areas still engage in agriculture, the procedure applied here exaggerates demographic growth in the secondary and tertiary sectors and underestimates it in the primary sector. However, the 2003 household survey shows that only 8.3 per cent of the urban work force (population aged 15 to 64 years) had agriculture as their primary activity, hence the simplification we are making here seems acceptable.

2.5 per cent. This dynamic also perfectly fits our own poverty estimates for the period 1994 to 2003 (Table°1), which suggest that poverty declined in rural areas but increased in urban areas.
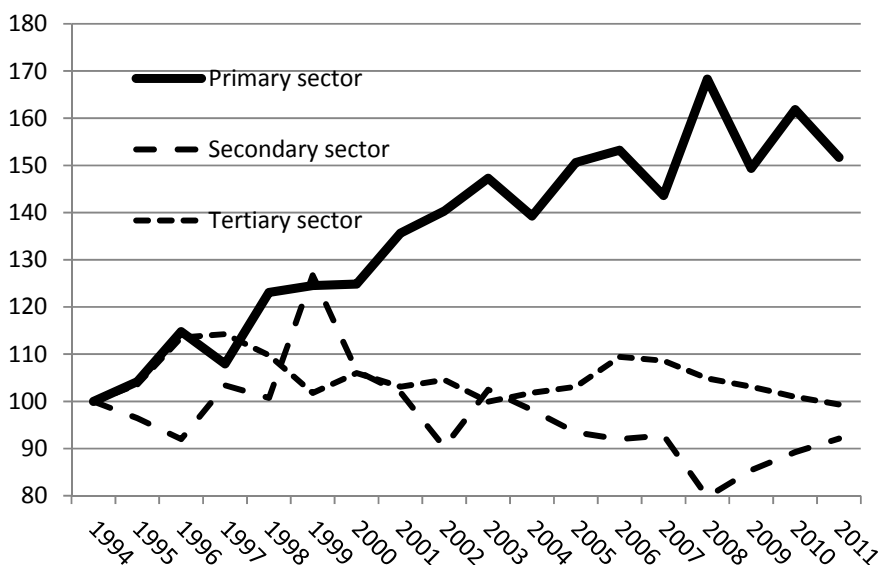
Figure 3: Sectoral GDP per capita (constant prices 1999)
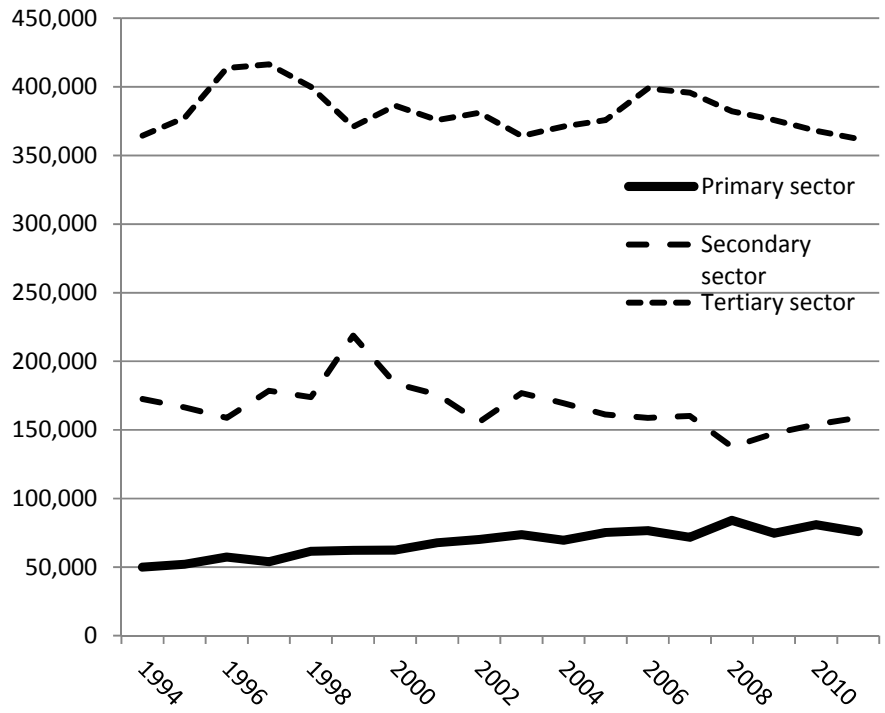
Note: In 1,000 CFA Francs

Source: INSD (www.insd.bf); own computations.

Figure 4: Sectoral GDP per capita growth (constant prices 1999, 1994 = 100)

A look at employment patterns in rural and urban areas confirms that the massive urbanization was not accompanied by any significant structural change within the urban economy. Table 5 shows the distribution of the active population over five different socioeconomic groups. The data are drawn from the same household surveys as above. In addition, for 2005 we used the so-called QUIBB survey (*Questionnaire des Indicateurs de Base du Bien-être*), which is an extremely shortened version of the *Enquête Prioritaire*. QUIBB does not collect any information on household expenditure or household income, but has information about occupations. This survey is also available for the year 2007, but the information on occupations is not reliable, hence for that year we only use the information related to whether a household was involved in cotton production. The data on occupational patterns from the 2009 survey are not yet available. Table 4 shows two striking results. There was no substantial change in the employment structure with respect to the allocation of workers between the private formal and informal sectors. Still, in 2005 in urban areas fewer than 10 per cent of the population between 15 and 64 years declared having a job in a private formal firm. There was also no increase in public sector employment over time. Given that earnings in the informal sector are significantly lower than in the private formal and public sectors (Grimm and Günther 2004, 2007b), there is nothing that would suggest substantial income gains in urban areas over the entire period. In rural areas, employment in subsistence agriculture declined significantly over the period 1994 to 2005, while the share of the workforce involved in cotton farming doubled. As mentioned above, the expansion of cotton farming and the, over most of the period, favourable development of the international cotton price was certainly one of the most important drivers of rural poverty reduction. However, the producer price paid to farmers declined between 2004 and 2008 and even in 2009 it did not reach its 2004 level, thus explaining why the share of households involved in cotton production declined again after 2005. This is then also consistent with the slower pace of poverty reduction between 2003 and 2009 compared to the period between 1994 and 2003. In the following section we further unpack the sources of agricultural growth by examining the development of land, production and productivity.

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Table 5: Employment patterns of population aged 15 to 64 (shares), 1994 to 2007

	1994	1998	2003	2005	2007
Rural					
Public sector worker	0.007	0.006	0.006	0.005	.
Private (formal) sector worker	0.002	0.002	0.006	0.006	.
Informal sector (independent/dependent)	0.042	0.025	0.038	0.049	.
Subsistence agriculture	0.727	0.702	0.621	0.599	.
Cotton agriculture	0.114	0.195	0.208	0.252	.
Inactive	0.107	0.070	0.121	0.089	.
Urban					
Public sector worker	0.068	0.072	0.076	0.068	
Private (formal) sector worker	0.074	0.099	0.109	0.085	
Informal sector (independent/dependent)	0.222	0.208	0.231	0.232	
Subsistence agriculture	0.172	0.206	0.169	0.160	
Cotton agriculture	0.001	0.003	0.006	0.010	
Inactive	0.463	0.411	0.408	0.445	
Households involved in cotton production	0.103	0.167	0.182	0.188	0.154

Source: EP (1994, 1998, 2003); QUIBB 2004 and 2007 in INSD (2007); own computations.

4.2 The development of land use, production and productivity in food and cotton production

The data used in this section have been drawn from the *Enquête Agricole Permanente* (or 'EAP'), an annual agricultural survey that has been undertaken by the Ministry of Agriculture since the mid-1990s. In principle it interviews the same sample of households every year and collects basic sociodemographic information and information about agricultural production and income from farming. However, the survey does not collect information about livestock and non-farm income (see Wetta et al. 2011). We use these data to answer the following question: To what extent was agricultural growth, albeit moderate, in particular in per capita terms, the result of land expansion, a rise in land productivity and price movements? We undertake this analysis separately for food crops and cotton, the main cash crop in Burkina Faso. Table 6 shows that the land used for food crop production increased on average by 2.1 per cent per year and the land used for cotton production by 7.6 per cent per year (the growth rate for the period 1995 to 2002 was substantially higher, for both food crops and cotton) (see also Figure 5). However, comparing both, the absolute area used for cotton is relatively small compared to that used for food crops. In 1995 only 5 per cent of agricultural land was used for cotton production. This share increased to 10 per cent in 2003. The substantial expansion of land used for cotton can be explained by the favourable development of the cotton producer price over the period 1995 to 2002. During that period, the producer price could be kept high due to the favourable international price dynamic and the devaluation of the CFA Franc relative to the French Franc in 1994, which temporarily increased the competitiveness of Burkinabè products on international markets. Figure 6 shows both the development of the producer price (farm gate) and the international price.

In terms of output, food crop production increased by about 3.3 per cent annually, cotton production by about 8.7 per cent annually—more or less one to one with the expansion of land—implying that land productivity did not change much during the observation period. Indeed, over the entire period output per hectare increased annually by 1.2 per cent in the food crop sector and 1.0 per cent in the cotton sector. Hence the agricultural growth documented in the previous sub-section was to a very large extent driven by land

expansion and an increase in prices, and not by an increase in land productivity. Agricultural growth was also over-proportionally driven by cotton production, in particular in terms of the value of output.

Table 6: Cereal and cotton production 1995-2010

|	Food crops			Cotton		
	ha	ton	kg/ha	ha	ton	kg/ha
1995/96	2,694,493	2,296,382	852	145,418	150,451	1,035
1996/97	2,692,899	2,470,971	918	200,768	202,630	1,009
1997/98	2,838,530	2,002,800	706	276,911	343,106	1,239
1998/99	2,969,359	2,642,334	890	334,770	324,557	969
1999/00	2,940,876	2,686,548	914	211,931	257,121	1,213
2000/01	2,645,351	2,268,474	858	209,113	212,545	1,016
2001/02	3,194,448	3,096,769	969	345,578	395,031	1,143
2002/03	3,296,616	3,110,176	943	412,138	439,247	1,066
2003/04	3,566,360	3,555,542	997	443,739	471,945	1,064
2004/05	3,073,117	2,892,905	941	521,466	535,367	1,027
2005/06	3,227,040	3,641,728	1,129	621,748	712,707	1,146
2006/07	3,043,932	3,671,174	1,206	569,858	759,858	1,333
2007/08	3,302,871	3,095,966	937	378,536	377,364	997
2008/09	4,167,474	4,338,972	1,041	535,325	720,675	1,346
2009/10	3,585,683	3,600,539	1,004	406,278	483,865	1,191
Mean annual growth rate	0.021	0.033	0.012	0.076	0.087	0.010

Source: Economic accounts for the agricultural sector, based on the EPA (1995–2010).

Figure 5: Land use, production and land productivity in the food crop and cotton sector

(a) food crop sector
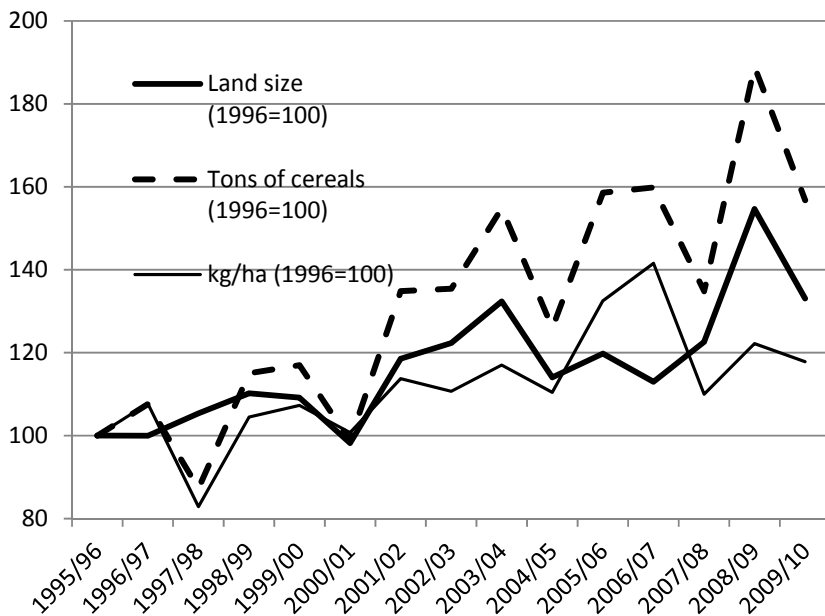
(b) cotton sector
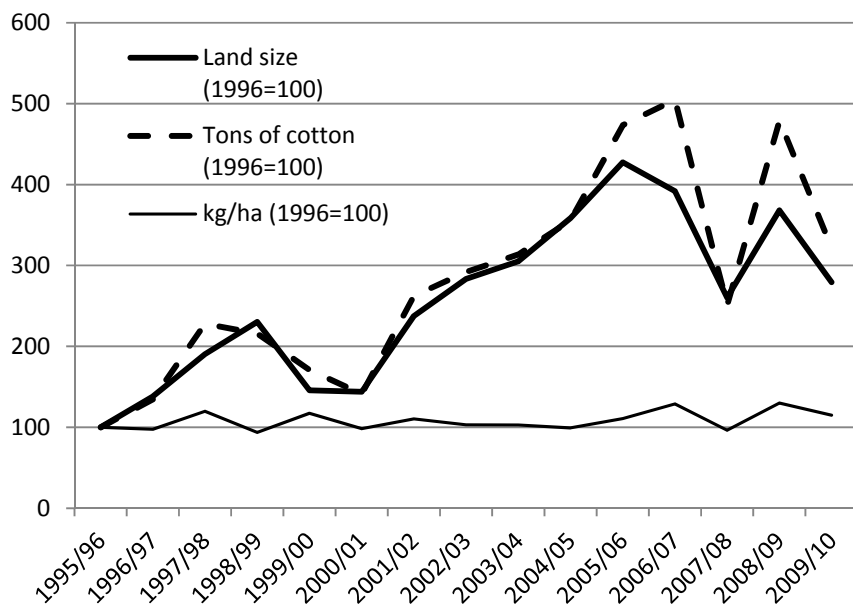
Source: Own presentation; EPA (various years).

Figure 6: Farm gate and world price indexes of seed cotton

Note: The Liverpool cotton price index is the index of world cotton prices. All series were calculated from averages of monthly data covering the period February to January, the production year for Burkina Faso's cotton sector.

Source: Kaminski (2011), based on monthly data on international prices and exchange rates from data construction from IMF and Burkina Faso national sources.

The data also shows that among food crop farmers the usage rate of fertilizer was only 20 per cent of all households, at least in 1994 and 1998, and therefore not very widespread (data not presented in the table). It is only in 2003 that the usage rate increased to 57 per cent. Hence, newer data need to be examined to see whether the positive trend could be maintained. Among cotton farmers the usage rate was much higher, 80 to 90 per cent. This is due to the fact that cotton farmers had access to credits and fertilizer through a cotton marketing board.[17] They typically also used their fertilizer for their food crops. Less than 5 per cent of all food crop farmers made use of credits. The absence of any systematic and large-scale support through seeds (at least till 2000), fertilizer and other extension services can explain why there was more or less no increase in productivity in the food crop sector. The agricultural sector still operates in a very traditional fashion. Although some promising technologies exist, adoption and diffusion rates are low (see also Kaminski 2011). This is further discussed below where we look at market access by food crop farmers.

Due to the lack of space we do not discuss here in detail the development of livestock production and forestry. Livestock production is relatively important in terms of its share of GDP in the primary sector (about 30 per cent), but is regionally more concentrated (mainly in the Sahelian North). According to National Accounts, this sub-sector grew more or less one to one with the primary sector as a whole. The forestry sector in turn increased its share in total primary output and is today responsible for almost 25 per

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[17] The institutional set-up of the cotton sector, and in particular the organization of the marketing board, was subject to substantial reform in the 2000s. In particular the state-owned marketing board SOFITEX was split into several parts and partly privatized. For details, see Kaminski et al. (2010).

cent of total agricultural GDP. However, the forestry sector is dominated by a few larger companies and is therefore less important in terms of poverty reduction.

4.3   Food price dynamics

As has been shown above, in the period under consideration productivity growth in the food crop sector was very low, land expansion hit its limits and population growth was intense. Moreover, these dynamics have to be seen in a context of a rather weakly integrated cereal market, both nationally and regionally, and in a context of internationally rising food prices. Hence, it is not surprising that the relative price of cereals—by far the most important single consumption item for the Burkinabè population—increased steadily. This is shown in Figure 7. Although the development was very volatile given the boosts and busts in agriculture induced by variations in rainfall, the trend was clearly that prices were increasing. This steady inflation of food had a sizeable impact on the purchasing power of the population, in particular poor households who spent a very high share of their income on food. Table 7 shows that in rural areas in the lowest quintile of the expenditure per capita distribution, a third of the budget was spent on millet, sorghum and maize. In line with the relative price movement of these items, this share increased over time. It was particularly high in 1998, just after the massive drought, when cereals were particularly expensive. Although it is not possible to separate quantities and unit prices, the surge in the share of income spent on cereals despite the significant increase in prices almost suggests that cereals are a sort of Giffen good for households.[18] Table 7 further shows that in the richest quintile, again in rural areas, the share of income spent on these items was still at 20 per cent and also significantly higher than in 1998. Remarkably, the CPI has a cereal component of only 10 per cent (Table 8). The total food component of the CPI stands at 34 per cent. However, on average, rural households spend 50 to 60 per cent of their budget on food.

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[18] A Giffen good is a good that consumers paradoxically consume more of as the price rises, violating the law of demand. In normal situations, as the price of a good rises, the substitution effect causes consumers to purchase less of it and more of substitute goods. In the Giffen good situation, the income effect dominates: people are so poor that they are obliged to buy more of the good for which the price is rising but which, in absolute terms, is still the cheapest way to satisfy basic needs.

Figure 7: Inflation of food crops compared to the CPI in the long run
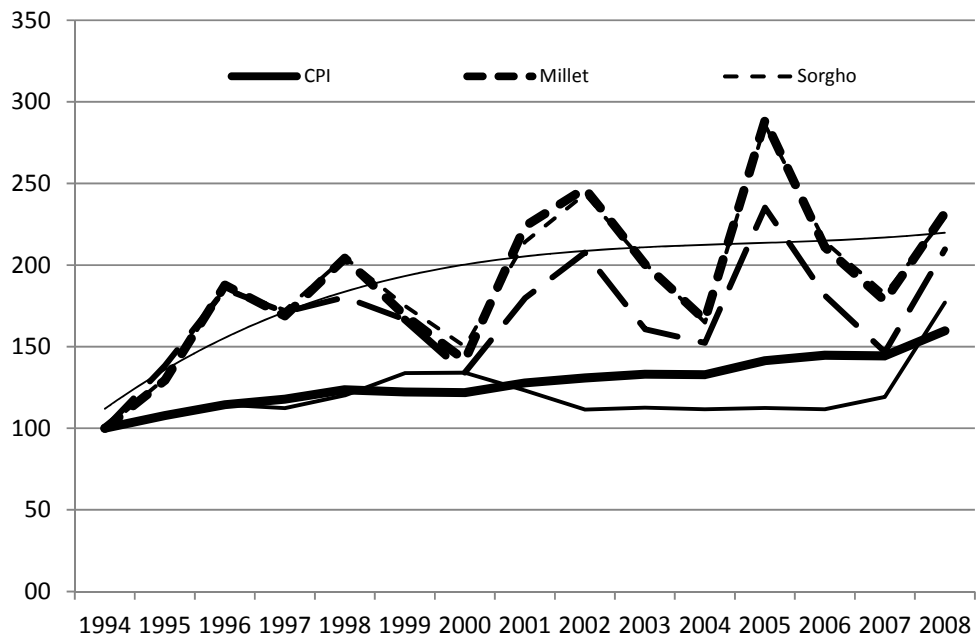
Source: INSD (www.insd.bf); own compuations.

Table 7: Budget shares and farmers' market integration

Rural	1994			1998			2003		
	All	Q1	Q5	All	Q1	Q5	All	Q1	Q5
Food crops	0.23	0.27	0.18	0.43	0.48	0.31	0.30	0.38	0.22
Millet/sorghum	0.16	0.24	0.09	0.33	0.40	0.21	0.22	0.30	0.15
Maize	0.04	0.03	0.04	0.06	0.06	0.06	0.04	0.05	0.03
Rice	0.03	0.01	0.05	0.03	0.02	0.04	0.04	0.03	0.04
Other food items	0.28	0.33	0.25	0.20	0.20	0.19	0.26	0.29	0.23
Rent and utilities	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Education	0.07	0.03	0.10	0.03	0.02	0.05	0.04	0.01	0.06
Health	0.08	0.13	0.05	0.06	0.11	0.04	0.06	0.10	0.05
Transfers made	0.04	0.01	0.06	0.04	0.01	0.08	0.03	0.00	0.05
Other	0.29	0.22	0.35	0.24	0.17	0.32	0.30	0.20	0.39
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Households producing food crops (share)	0.90			0.94			0.90		
Households selling food crops (share)	0.16			0.15			0.30		
Share of purchased food crops	0.15			0.49			0.33		
Urban	1994			1998			2003		
	All	Q1	Q5	All	Q1	Q5	All	Q1	Q5
Food crops	0.10	0.18	0.06	0.15	0.35	0.06	0.13	0.25	0.06
Millet/sorghum	0.03	0.11	0.01	0.05	0.21	0.01	0.03	0.10	0.01
Maize	0.02	0.03	0.01	0.05	0.10	0.02	0.04	0.08	0.02
Rice	0.05	0.04	0.04	0.05	0.04	0.04	0.06	0.07	0.03
Other food items	0.24	0.27	0.20	0.20	0.21	0.16	0.22	0.28	0.19
Rent and utilities	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04
Education	0.09	0.06	0.10	0.06	0.03	0.07	0.06	0.02	0.07
Health	0.12	0.18	0.10	0.11	0.15	0.10	0.15	0.14	0.15
Transfers made	0.04	0.01	0.07	0.07	0.01	0.13	0.03	0.00	0.05

Other	0.38	0.27	0.44	0.36	0.22	0.44	0.37	0.27	0.44
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Households producing food crops (share)	0.26			0.25			0.24		
Households selling food crops (share)	0.02			0.01			0.04		
Share of purchased food crops	0.83			0.91			0.86		

Source: EP (1994, 1998, 2003); own computations.

Table 8: Budget shares of general CPI

	Share
Food crops	0.10
Other food items	0.24
Rent and utilities	0.11
Education	0.03
Health	0.04
Transport	0.16
Others	0.33
Total	1

Source: INSD (www.insd.bf).

In urban areas the share of cereal and food components in total consumption were obviously lower than in rural areas, but they were still substantial and also rose over time. In the lowest quintile the share spent on cereals (sorghum, millet and maize) stands at 18 per cent, 35 per cent and 25 per cent, respectively. The total food component amounted to 45 and 55 per cent of total expenditure. This shows again that the CPI is an inadequate price deflator for the poor population, also in urban areas. It is important to note that the possibilities to substitute were very limited for these households, since the relative price shift concerns all three cereals: sorghum, millet and maize. Rice in turn was hardly an alternative for the rural population, although the price of rice increased less, it remained substantially more expensive per kcal than the other three cereals.[19]

From a theoretical point of view, one could argue that the rural population should benefit from rising cereal prices as this improves their terms of trade. However, as was shown to be the case in many poor countries during the 2008 world food crisis, the market integration of Burkinabè food crop farmers is surprisingly low. Table 7 shows that although 90 per cent of all rural households produced cereals, only 15 to 30 per cent of these households sold cereals on the market, all the others just produced for their own consumption.[20] But more importantly, almost all households had to purchase additional cereals from the market. The share of purchased cereals relative to the total value of cereals consumed was 15 per cent in 1993, 49 per cent in 1998 and 33 per cent in 2003. This low market integration had to do with a lack of market access due to bad infrastructure, lack of information and a lack of adequate storage facilities (see Gräb and Grimm, 2011; Grimm and Günther 2004, 2007b; Kaminski 2011). Even those farmers who were often obliged to sell their cereals right after the harvest when prices were low and to purchase later during the lean season when prices were high. The need for cash after a long, lean season is a further factor that often pushed households to sell quite early.

To conclude, the absolute and relative increase of cereal prices substantially eroded the purchasing power of the Burkinabè population and in particular of the poor population. This again fits in with the Malthusian framework. Productivity improvements and better market integration could in principle turn the price dynamic into rising living standards in rural areas, but so far production has not been able to keep up with the rising demand. Figure 8 provides another illustration of this phenomenon: food imports increase almost one to one with the growth rate of the urban population.

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[19] For instance in 2010, the price of a kilogram of rice was almost 400 CFA Francs whereas the price of millet, sorghum and maize was between 150 and 200 CFA Francs per kilo. This difference does not make up the difference in kcal per kilo (rice: 3,680; maize: 3,680; sorghum 2,990; and millet: 2,650) (see Wetta et al. 2011).

[20] It needs to be seen whether the rising trend of households selling cereals that was observed between 1998 and 2003 is confirmed in 2009 data.

Figure 8: Food imports and population growth (1996 = 100)
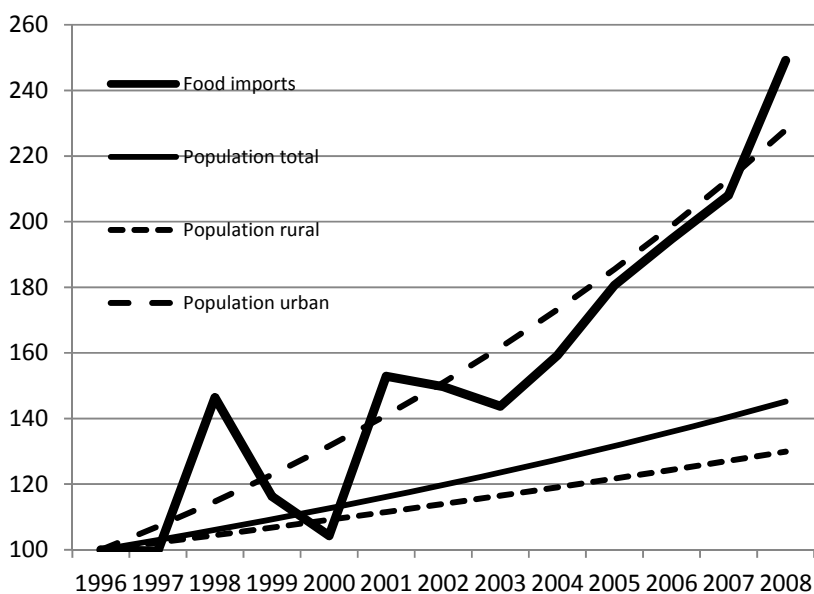
Note: Food includes all vegetarian products, food oil and fat products, processed food (vegatarian and animal-based) and all drinks. Unprocessed animal products are not included.

Source: INSD (www.insd.bf).

Obviously, food price inflation will not only erode the purchasing power of the population, it can potentially also have direct health effects as it may increase malnutrition and mortality, in particular in children. This is what we investigate next.

4.4   Undernutrition and child mortality

To investigate the dynamics of malnutrition and child mortality we make use of the Demographic and Health Surveys (DHS) which are available for the years 1993, 1998/99, 2003 and 2010.[21] The data are also nationally representative and have also been collected by the INSD. The sample size in each round is about 9,000 households. Regarding children's malnutrition we consider wasting and stunting. Wasting refers to a low weight-for-height ratio and is a sign of short-term undernutrition. Stunting refers to a low height-for-age ratio and is a sign of a continuous shortage of food; children end up shorter when they are adults (WHO 2009). We use the standard WHO (World Health Organization) concept—that is, compute the share of children for whom weight-for-height and height-for-age respectively is inferior by two standard deviations of the median in the reference population. We have computed these indicators throughout all years using the new WHO standard (WHO 2009).

Table 9 shows that between 1993 and 1998 wasting was almost stable in both rural and urban areas and even increased after 1998, in particular in rural areas. Only after 2003 did malnutrition decline a bit. In rural areas malnutrition was in 2010 almost identical to the level observed in 1998; in urban areas it was slightly higher.

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[21] See www.measuredhs.com/.

We find more or less the same evolution if we use the old WHO standard (results not shown in the table) instead of the new WHO standard. Hence, in 2010 14 per cent of all Burkinabè children under five were wasting. Stunting in urban areas is more or less constant throughout the entire observation period with 25 per cent of all children under five concerned. In rural areas the share increases between 1994 and 1998, followed by a modest decline in 2003 and a more significant decline in 2010, reaching in that year a level 5 percentage points below the 1993 level. To summarize, despite the improvements in consumption and poverty over the entire period 1993 to 2009, there is almost no change in malnutrition rates between 1993 and 2003; malnutrition even increased.

Table 9: Indicators of children's malnutrition and mortality, 1993-2010

	1993	1998	2003	2010
Share of children under 5, weight-for-height (wasting) <2StDev				
All	0.130	0.140	0.194	0.139
Urban	0.094	0.101	0.133	0.122
Rural	0.148	0.147	0.207	0.144
Share of children under 5, height-for-age (stunting) <2StDev				
All	0.366	0.436	0.427	0.343
Urban	0.253	0.259	0.257	0.242
Rural	0.424	0.471	0.461	0.372
Infant mortality per 1,000 live births				
All	108	109	n.a.	n.a.
Urban	76	67	70	61
Rural	113	113	95	81
Under five mortality per 1,000 live births				
All	205	224	n.a.	n.a.
Urban	148	129	136	104
Rural	214	235	202	156

Notes: Stunting and wasting have been computed using the raw data that can be downloaded from the DHS webpage. The new 2006 standard has been used for all years, such that the indicators are fully comparable over time. Mortality rates are taken from the published survey reports.

Source: Own computations based on DHS (1993, 1998, 2003, 2010) and officially published survey reports (INSD 1994, 2000b, 2004, 2012b).

Infant and child mortality decreased also only modestly over the observation period 1993 to 2010. Child mortality even increased between 1994 and 1998. This is thus in line with the trends in child malnutrition. If one compares the 2003 levels with the levels in neighbouring countries (not shown in the table) one can state that Burkina Faso falls mid-range. Benin, Senegal and Togo show lower rates, Mali and Niger show higher rates.

To summarize, malnutrition and child mortality temporarily increased and are still at a relatively high level. This suggests a direct link between the performance in the food crop sector, food prices and nutrition. Thus, recurrent droughts and the rising long-term trend in food prices seem to have direct health effects through undernutrition and premature mortality.

5 Conclusion and policy perspectives

Although we find that over the past 20 years poverty has declined a bit faster than official estimates suggest, the overall reduction has been relatively modest and, due to the vulnerability of the country, also quite volatile. Over the entire 20-year period the country achieved a meagre growth-elasticity of poverty of less than -0.6 per cent. This is very low by international standards and means that Burkina Faso may still need a long time to eradicate poverty. In fact, a doubling of the population since 1985 in conjunction with rapid urbanization and the absence of any substantial structural change to the economy leaves the country today with about 6.5 million people below the poverty line; this is about 1 million more than in 1994. Agricultural growth was almost uniquely generated through land expansion and more labour, and not through modernization and the adoption of new technologies, such as irrigation, machinery and improved seeds. In urban areas, per capita growth was hindered by a massive population influx and rapid urbanization which, however, was not accompanied by any form of industrialization or significant creation of jobs in the formal sector. Although those who migrated improved their income position relative to those who stayed in the countryside, overall there has been hardly any increase in real wages and earnings in the urban informal economy.

Due to the limited growth in agricultural productivity, in conjunction with high population growth, food prices increased continuously. We show that food price inflation not only eroded the purchasing power of the poor, but seems to have also increased undernutrition and premature mortality. Child mortality declined only modestly, at least up to 2003, and even increased between 1994 and 1998. Wasting increased significantly between 1993 and 2003 and only declined modestly afterwards. Although stunting rose a bit less, it is also still at a high level. To some extent Burkina Faso fits what Galor and Weil (2000) call the post-Malthusian equilibrium, which is characterized by high demographic and low economic growth. In Galor and Weil's model, this equilibrium is unstable. If educational investments and technology adoption take off, a country can switch to a modern growth regime. If not, it risks falling back into the Malthusian low equilibrium. Since Burkina Faso can hardly expand the amount of its cultivable land further (on the contrary, land is becoming scarce and much land is becoming infertile due to the extensive use of fertilizers in cotton production), and given the decline of the cotton sector (partly due to a less favourable international environment and also to a degradation of soils) and the lack of any substantial industrialization, population growth can fully unfold its adverse effects. Without substantial change the country will not be in a position to absorb the 0.3 to 0.5 million men and women that enter the labour force each year. If the change can be made, the country has a chance to turn the demographic burden into a demographic gift.

More generally, this study hopes to contribute to the general debate on poverty trends in SSA. We identified (endogenous) food price inflation as a major driver of poverty. Obviously, its adverse effects on the poor would have remained largely unnoticed if we had, as in Pinkovsky and Sala-i-Martin (2010), used an approach that uniquely focuses on GDP, GDP deflators and nominal expenditure distributions. This is also true for all approaches that focus on asset ownership, as for instance in Young (2012), since these approaches ignore shifts in relative prices—the fact that in many regions food becomes more and more expensive relative to durables. This makes it unlikely that the income elasticity of asset demand stays constant over longer periods of time.

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