

Intergenerational mobility in five African countries

Thomas Bossuroy[♥]

Denis Cogneau[♠]

Victor Hiller[•]

March 2007

Preliminary Version for Comments

Abstract - This paper sets down the first comparative measurement of the extent and features of the intergenerational mobility of men in five countries of Sub-Saharan Africa. Two former British colonies, Ghana and Uganda, stand out with the highest level of intergenerational fluidity. Two former French Western colonies, Côte d'Ivoire and Guinea, come next, and then Madagascar, whose large and long-lasting inequalities of opportunity make it a singular case. Intragenerational mobility within the life-cycle, internal migration patterns and educational development features are examined. They provide stylized facts which are consistent with robust differences in dualism and intergenerational rigidity that originate in long-term history.

JEL Codes: J62, O15, D63

0/ Introduction

This paper proposes the first comparative measurement of the extent of intergenerational mobility in five countries of Sub-Saharan Africa: Côte d'Ivoire, Ghana, Guinea (Guinée-Conakry), Madagascar and Uganda. It also studies the evolution of intergenerational mobility across time, with some consideration for intragenerational occupational mobility. This is made possible by the availability of large-sample surveys built upon a common methodology and providing information on the social origins of the individuals interviewed: parents' education and occupation, and region of birth. We use a set of nine surveys that were implemented during a period ranging from the mid-1980s to the mid-1990s.

The analytical methods used here relate to that of quantitative sociological works dedicated to Western countries, in keeping with the groundbreaking Erickson and Goldthorpe (1992) comparative study. In the case of developing countries, the availability of relevant and reliable data makes the first explanation for the scarcity of similar studies. For this reason, comparisons in social mobility rarely go beyond the set of industrialized countries, most often to include some former-socialist European countries. Low-income, developing or sub-tropical

[♥] EHESS, PSE, DIAL

[♠] IRD, DIAL, Paris

[•] University of Paris-I

countries enter the comparative databases with unrepresentative surveys, which are often restricted to urban areas or specific regions (see, e.g., Tyree, Semyonov and Hodge, 1979; Grusky and Hauser, 1984; Ganzeboom, Liujkx and Treiman, 1989). Apart from representativeness, comparability of occupational variables is also an issue (Goldthorpe, 1985).

Even today, only few large sample nationally representative surveys ask about the parental background of adult respondents. For the purpose of comparison among Latin American countries, Behrman, Gaviria and Szekely (2001) could only find four countries where this kind of data had been collected on a comparable basis: Brazil, Colombia, Peru, and Mexico restricted to six big cities.¹ Asia does not seem much more documented either, with some exceptions for China (Cheng and Dai, 1995; Wu and Treiman, 2006) and India (Kumar, Heath and Heath, 2002a and 2002b). As for Africa, only South Africa has been until recently investigated in that dimension (Lam, 1999; Louw, Van der Berg and Yu, 2006).

We focus on differences in intergenerational mobility to and from the agricultural sector, what we call intergenerational dualism. Using some information on previous individual occupation, we also construct transition matrixes along the life cycle and analyze intragenerational dualism. Intergenerational dualism comes out as much lower in the two former British colonies, Ghana and Uganda, than in former French Côte d'Ivoire, Guinea and Madagascar. This conclusion is maintained when correcting for potential bias arising from intragenerational mobility.

In Uganda and Ghana, the 'social distance' between agricultural and non-agricultural occupations is indeed shown to be more limited: Migration is not a necessary condition for occupational mobility whereas in the other three countries 'stayers', whether in urban or rural areas, are much more likely to reproduce their father's position. People more often mix agricultural and non-agricultural occupations, as main and secondary jobs or vice-versa.

When looking at educational opportunities, intergenerational mobility is also strikingly more restricted in former French colonies. In Côte d'Ivoire, Guinea and Madagascar, a more unequal access to primary or secondary education combines with a much higher selection based on education for the entry into non-agricultural occupations, especially white collar jobs. Other comparative works indeed suggest that returns to education were much more contrasted between farm and non-farm occupations in the former French colonies at the end

¹ The case of Brazil has been particularly investigated by sociologists: Pastore, 1982; Pastore and Valle Silva, 2000; Picanço, 2003, and economists: Bourguignon, Ferreira and Menendez, 2005; Dunn, 2003; Cogneau and Gignoux, 2007.

of the 1980s and at the beginning of the 1990s (Schultz, 1999; Cogneau, 2003; Cogneau et al. 2006).

While already settled among cohorts born during the colonial era, intergenerational dualism seems to have increased for generations born after 1960 in Côte d'Ivoire and Guinea, while remaining respectively at a fairly high level in Madagascar and at a relatively low level in Ghana and Uganda. In those two countries, the economic crisis of the 1980s seems to have translated into an increased selection on the labour market.

The remainder of the paper is organized as follows. Section 1 presents the survey data and the main variables of analysis. Section 2 provides an overview of occupational structures in the five countries and across time or age groups. Section 3 analyses intergenerational entries into and exits from agriculture and compares the five countries across time in terms of “intergenerational dualism”. Section 4 delves into spatial and migration issues. Section 5 examines educational development and educational intergenerational mobility in the five countries over 40 years, and introduces education as an additional correlate of intergenerational dualism. Section 6 summarizes and concludes.

1/ Sample selection and variables construction

We use national household surveys that were carried out between 1985 and 1994 in the five countries we study, covering large representative samples on a national level. The countries and precise periods in question are Côte d'Ivoire from 1985 to 1988, Ghana in 1987 and 1992, Guinea in 1994, Madagascar in 1993 and Uganda in 1992. The Côte d'Ivoire, Ghana and Madagascar surveys are “integrated” Living Standard Measurement Surveys (LSMS) designed by the World Bank in the 1980s; the format of the two other for Guinea and Uganda is more or less inspired from them. In the more recent period and in many countries in Africa, surveys with smaller questionnaires have since been preferred for reasons of cost and feasibility, and unfortunately no longer include information on parental background. To our knowledge, the surveys that we selected are the only large sample nationally representative surveys in Africa that provide information on parental background for adult respondents. Appendix 1 provides further details on the surveys used.

They all provide a good deal of information about the main employment of the person interviewed. Homogenizing classifications however proves difficult. For this reason, we restrict the comparisons to very simple occupational distinctions. We focus on entries and exit from the agricultural sector. In the last section, we analyze access to “higher *salarial*” or “white collar” jobs: non-manual wage jobs in civil service, public or private enterprises. We

also introduce education in the analysis and distinguish three levels: no education / primary level / middle or secondary level.

As for father's occupation, the differences between the available items in each survey drove us to retain only the distinction between farmers and non-farmers. Education of the father was also available but is not perfectly comparable between Côte d'Ivoire and the other countries, as the Côte d'Ivoire survey informs about the highest diploma when other surveys give the highest level attained.

In a first step, we restrict our analysis to adult aged between 20 and 69 and cohorts born between 1920 and 1970. In some respect, the old age of these surveys constitutes an advantage as it makes it possible to go back to the colonial era by analyzing cohorts born before the 1960s. We also focus on men, the analysis of intergenerational mobility of women being left for further research.

2/ Occupational structures across age groups, time and countries

The five countries under review have certain characteristics in common: they are of average size, do not have large mining resources and make most of their income from agricultural exports. However, Ghana, Uganda and Madagascar share the fact that they are built on the foundations of the pre-colonial kingdoms (Asante, Buganda and Imerina). Population density is also since long much higher in Uganda and Ghana, whereas the Madagascar Island stands out as the least populated country. Besides, the main features of the five countries' colonial and post-colonial histories are quite different.² Three were colonised by the French and two by the British in the late 19th century. However, the three former French colonies took different roads following independence. Côte d'Ivoire remained in the bosom of the franc zone and established itself as the main partner of the former colonial power in Africa. Guinea, on the other hand, chose to break with the past and introduced a form of socialist government. Madagascar, also outside the franc zone and its macroeconomic constraints, displayed a combination of the two ways of doing things: with initially close ties with the former coloniser followed by a break and a socialist-based government from 1975 through to the early 1990s. Ghana and Uganda had turbulent histories with political conflicts and severe macroeconomic crises through to the mid-1980s. Côte d'Ivoire in 1988 was by far the wealthiest country with more than 1700 internal dollars per capita, followed by Ghana with around 1000, Madagascar (700), Uganda (600) and Guinea (500) (see Appendix 2).

² Appendix 2 provides a chronogram of political regimes, aside with some demographic and economic indicators for each country at the date of the survey.

Population density remains by far the highest in Uganda and Ghana with respectively 121 and 87 inhabitants per square kilometres in 2001. Côte d'Ivoire ranks third (51 per sq. km), due to large immigration flows from Northern neighbours Burkina-Faso and Mali, while the population remains sparse in Guinea (36) and Madagascar (27).

Table 1 presents some indicators of the occupational structure for each cohort of the adult male population of each country.

Table 1 – Occupational structures for each country and cohort

	Born in 1930-39	Born in 1940-49	Born in 1950-59	Born in 1960-69*
% not employed				
Côte d'Ivoire	8.5	6.5	11.8	24.3
Ghana	6.4	2.6	2.5	12.4
Guinea	9.9	2.8	3.7	14.5
Madagascar	4.8	2.0	0.9	4.8
Uganda	6.8	2.8	2.2	10.0
% in agriculture				
Côte d'Ivoire	68.5	53.4	40.7	41.5
Ghana	61.8	53.0	52.6	53.5
Guinea	70.8	63.4	53.5	47.8
Madagascar	82.3	73.0	72.2	77.3
Uganda	74.2	68.0	64.3	59.4
% in white collars jobs (among non-agricultural jobs)**				
Côte d'Ivoire	29.1	40.7	54.3	43.2
Ghana	42.4	39.8	37.9	31.6
Guinea	20.0	25.9	33.8	5.6
Madagascar	54.8	52.9	58.1	33.0
Uganda	31.2	45.0	35.5	37.1

Coverage: Men aged 20-69 born between 1930 and 1970.

*: This last cohort is restricted to men aged 25-28, for the samples to be strictly comparable between the surveys that were conducted at different dates. This leads us to only use the 1988 survey for Côte d'Ivoire, which appeared preferable than using the four Ivorian surveys and thus restricting our age group to the only 25 year-old men.

** : Non-manual wage jobs include all jobs paid with a wage in civil service, public and private enterprise, excepting blue collars and handcraft workers.

The first panel shows employment rates. Not surprisingly, they are all U-curved in age, due respectively to retirement of older cohorts and ongoing education or queuing for first jobs in

younger cohorts. Notice however the large variation across countries. Part of this variation may be attributed to participation behaviour on the one hand, and to unemployment on the other. Employment rates are the lowest in Côte d'Ivoire at every age, but especially in the youngest cohort, one fourth of it being still not employed at ages 25-28.

The second panel shows the weight of agriculture in employment. Not surprisingly again, it is in every case decreasing with the year of birth, due to the process of urbanization. Here again, there is some variation across countries. Côte d'Ivoire and to a least extent Guinea show the widest gaps between the five generations considered: the weight of farmers shrinks from 68 to 40% in Côte d'Ivoire, from 71 to 50% in Guinea. West-African countries appear to have experienced the most rapid expansion of non-agricultural jobs, whereas Uganda and Madagascar still have a largely predominant agricultural sector. When reaching the younger cohort, the trend of a decreasing weight of agriculture makes a pause, except in Uganda. This is of course explained by the higher rates of inactivity in this age group: Some urban young adults are still studying or queuing for non-agricultural jobs.

Last, the third panel shows the weight of "white collar" jobs among non-agricultural jobs. We defined this category as all jobs paid with a wage in civil service, public and private enterprise, excepting wage-paid blue collars and handcraft workers. Aside with the latter, the remainder is made of numerous independent and self-employed jobs. In all countries except Uganda, the youngest cohort born after 1960 benefits less from those white collars jobs, despite its higher educational attainment (see section 4). This reflects that access to these jobs is rationed: young applicants queue for these kind of jobs; in the meantime, they are either inactive when they can afford it or else are working as apprentices, family help or self-employed. Furthermore, hiring in civil service and large enterprises was especially restricted in the period of economic crisis that opened in each country during the 1980s, the period at which the youngest cohort entered the labor market. Numbers suggest that this rationing of 'good jobs' drastically intensified in the three former French colonies, especially in Guinea.

3/ Intergenerational dualism between agriculture and other occupations

3.1. A first measurement

This section deals with intergenerational entries into, and exit from, the agricultural sector. In order to measure what we call intergenerational dualism, we construct 2x2 mobility tables crossing occupational origin (father being a farmer or not) and destination (son being a farmer or not). One odds-ratio can be derived from each 2x2 mobility table. It reflects the "pure"

association between origin and destination, by expressing the relative probability for two individuals of different origins to reach a specific destination rather than another one. Odds-ratios allow comparing the strength of association between origin and destination across time and space, regardless of the fact that the weight of agriculture varies between countries or periods (see section 2 above). Let 0 and 1 index the two origins and the two destinations of the 2x2 mobility table, and let n_{ij} be the number of individuals of origin i and destination j . The odds-ratio of this table is defined as:

$$OR = \frac{n_{11}/n_{10}}{n_{01}/n_{00}} = \frac{n_{11} \times n_{00}}{n_{01} \times n_{10}}$$

So as to observe the evolution of intergenerational dualism across time, we split our sample into a set of five cohorts built upon the date of birth of individuals.³ Aggregated outflow tables are in Appendix 3. The odds-ratios for each of these cohorts are presented in Table 2.

Table 2 – Intergenerational dualism across time: Odds-ratios

	[1920;1930[[1930; 1940[[1940; 1950[[1950;1960[[1960;1970[
Côte d'Ivoire	6,41 [2,68;15,35]	6,62 [3,64;12,03]	10,21 [5,68;18,35]	7,73 [4,88;12,25]	13,02 [8,32;20,37]
Ghana	6,09 [3,45;10,75]	4,44 [3,04;6,48]	5,26 [3,80;7,28]	4,20 [3,28;5,38]	6,00 [4,82;7,47]
Guinea	6,60 [1,77;24,61]	3,67 [2,15;6,24]	9,86 [6,01;16,16]	8,09 [5,78;11,32]	17,87 [7,48;20,06]
Madagascar	8,42 [2,33;30,49]	23,14 [11,27;47,52]	15,37 [8,96;26,35]	21,22 [14,18;31,77]	16,50 [10,97;24,82]
Ouganda	3,44 [1,57;7,53]	2,62 [1,65;4,16]	4,59 [3,35;6,28]	4,23 [3,31;5,39]	4,19 [3,52;4,97]

Coverage: Men aged 20-69 born between 1920 and 1970.

Reading: in Ivory Coast, two men born in the 1920's whose fathers were respectively a farmer and a non-farmer are 6 times more likely to reproduce their father's position than to exchange them.

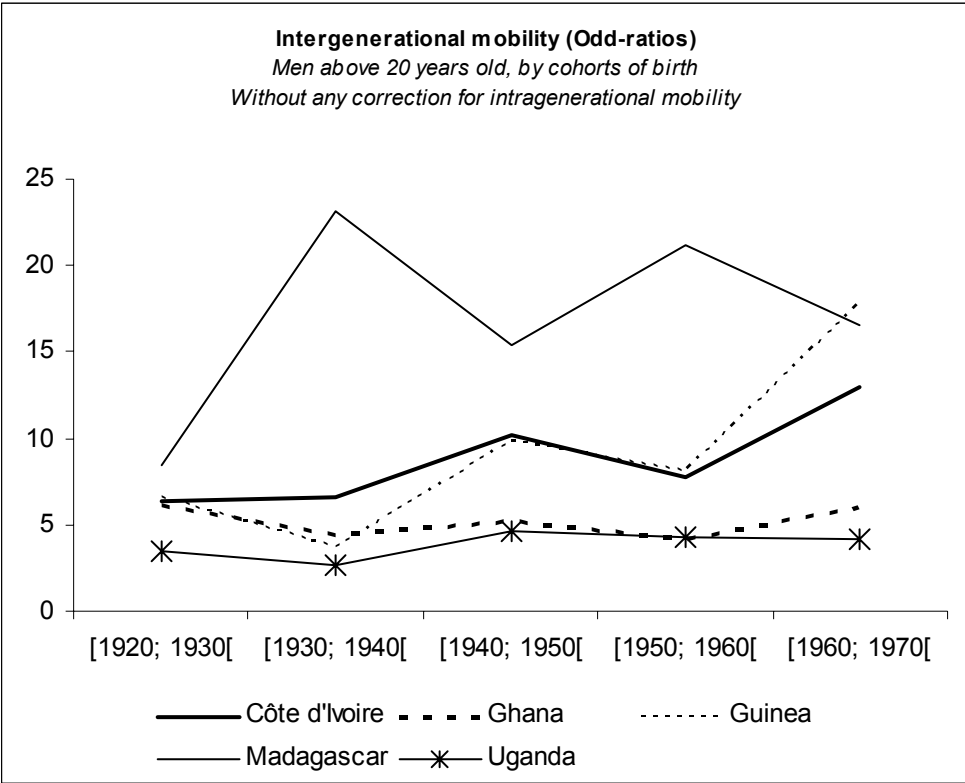
Note: Confidence intervals at 5% indicated between brackets.

Table 2 and Figure 1 separate three groups of country. In Madagascar, if one excepts the oldest cohort for which data is less reliable, intergenerational dualism seems to have remained at very high levels throughout the colonial and post-colonial eras, with odds-ratios always above 15. The four remaining countries seem to share close starting points in the 1930-39 cohort. However, in the second group made of the two former British colonies, Ghana and Uganda, intergenerational dualism is stable across time with relatively low odds-ratios, Whatever the cohort that is considered, the son of a farmer and the son of a non-farmer are 3

³ Data for the 1920-30 cohort should be taken with caution given sample sizes and differential mortality linked to father's occupation.

to 6 times more likely to reproduce their fathers' positions than to change them. In the third group of countries composed by the two Western former French colonies, Côte d'Ivoire and Guinea, intergenerational dualism seems to increase across time, bringing the odds-ratios of the 1950-59 cohorts to levels twice as high as in Ghana or Uganda. In the last and youngest cohort, intergenerational dualism is again doubled in both countries and catches up with the level of Madagascar.

Figure 1



3.2. Potential bias linked to inactivity

The method presented in the previous section provides a first measurement of the historical evolution of intergenerational mobility. It must however be completed on two levels: taking into account the level of inactivity and assessing intragenerational mobility (which will be done in the next section).

First, previous section excluded inactive or unemployed people from the analysis of intergenerational mobility. As Table 1 has shown that employment rates for each cohort vary from one country to another, this exclusion may introduce a bias in the comparisons. This

kind of bias might particularly affect the relative position of Côte d’Ivoire where more than 30% of the youngest cohort is out of work.

Indeed, a counterfactual exercise where all inactive would be doomed to become farmers would drastically change the ranks of Côte d’Ivoire in all cohorts, and to a lesser extent of Guinea in the youngest cohort. Such an extreme counterfactual is of course not very sensible. Conversely, a counterfactual exercise where all inactive people are coded as non-agricultural workers leaves all odds-ratios almost intact (Table 3). At least, these counterfactual exercises show that the inactive bias should only be a matter of worry for Côte d’Ivoire in the older cohorts, and for Côte d’Ivoire and Guinea in the youngest.

Table 3 – Counterfactual odds-ratios with recoding of inactive people

	Born before 1960		Born after 1960	
	Inactive coded as farmer	Inactive coded as non-farmer	Inactive coded as farmer	Inactive coded as non-farmer
Côte d’Ivoire	3.7	9.3	2.3	15.7
Ghana	3.8	4.6	3.7	6.3
Guinea	5.7	6.7	4.5	20.4
Madagascar	17.5	19.1	12.6	18.3
Uganda	3.7	3.8	3.2	3.8

Coverage: Men aged 20-69 born between 1930 and 1970.

Table 4 shows the father’s occupation and education profiles of inactive people and compares them with those of people not working in agriculture. This table reveals that in every country except Côte d’Ivoire, inactive men in older cohorts are significantly less educated than non-agricultural workers. In that respect they are closer to the average population. In Côte d’Ivoire they show the same average education as non-agricultural workers. In Côte d’Ivoire and Ghana, older inactive men also have less often a father farmer. In the case of older cohorts, we thus have no reason to believe that Ivorian inactive men should be considered as “hidden” agricultural workers, so that the selection bias due to retirement or to missing occupations should be rather limited.

In contrast, younger inactive in Côte d’Ivoire and Guinea actually appear as very significantly more educated than non-agricultural workers, with a large difference of more than 3 years between the two groups. They have also much less often a father farmer in Guinea. In those two countries, most of inactive men either carry on their studies or are unemployed and queue

for a skilled job. It is well-known that the economic crisis has particularly hit the employment of young skilled men, mainly because hiring in the public sector has brutally stopped. Part of the observed decrease of intergenerational mobility in Côte d'Ivoire and Guinea in the youngest cohort may be attributed to this labour market evolution translating into an increased selection based on education and, at least indirectly, on social background. But it could also be due to country specific age-employment profiles, if for instance young educated men whose father was a farmer tend to stay longer in unemployment in Côte d'Ivoire and Guinea, before finally getting a non-agricultural job. In order to make this picture clearer, it is worth taking into account foreseeable exits from inactivity as well as other intersectoral flows, as reflected by the observed trajectories of older cohorts. This is what is done in the next section.

Table 4 – Compared profiles of non-employed and non-agricultural workers

	Born before 1960		Born after 1960	
	Not employed	Working out of agriculture	Not employed	Working out of agriculture
% Father farmer				
Côte d'Ivoire	69.9	77.0	58.3	62.6
Ghana	57.1	62.4	36.4	42.2
Guinea	74.3	65.8	35.4	53.8
Madagascar	71.9	53.6	33.3	38.4
Uganda	71.4	66.1	62.7	59.2
Average number of years of education				
Côte d'Ivoire	5.6	5.7	8.5	5.6
Ghana	6.9	8.4	10.4	9.9
Guinea	3.1	5.1	8.9	4.9
Madagascar	5.0	8.0	10.8	8.8
Uganda	4.3	7.9	8.9	8.2

Coverage: Men aged 20-69 born between 1930 and 1970.

3.3. Intragenerational dualism

- *Method*

Comparing the situation of two men born at different periods on the basis of a unique observation (at the time of the survey) leads to mix up two different effects: one is the

evolution of intergenerational mobility; the other is the individuals' occupational mobility along their own career. This simple comparison does not take into account the fact that individuals are not observed at the same point of their life cycle: a 20 years old man may be less likely to have reached a non-agricultural position than a 60 timer, if people tend to move to urban areas during their lives; or a young man may be more likely to be non-farmer than an older man if men come back to land after having earned an initial capital in non-agricultural occupation during the early years of their work careers.

Moreover, the relative chance to get out of agriculture during the work career may depend on father's occupation. It might be that the weight of origin decreases with age, in which case odds-ratios of younger cohorts would be biased upward. Conversely, if social origin not only determines the starting point but also the career of individuals, divergence of social origins is underestimated at younger ages. We must therefore take into account intragenerational mobility so as to compare every individual as if he had ended his work career.

Even if we do not observe individual trajectories over time, intragenerational mobility is partially observed in the surveys thanks to an "employment history" section, except in Uganda. In the four other countries, we are able to construct mobility matrixes crossing the current occupation of the respondent and his previous occupation. These mobility matrixes are measured separately for each social origin (father farmer or not), and, as we want to correct for life-cycle effects, for different ages as well. Due to the size of the sample, we distinguish these matrixes between decennial age groups⁴. We are then able to apply to any individual a residual intragenerational mobility, estimated as the product of the decennial mobility matrixes over the ages he goes through until he reaches 'occupational maturity' (we discuss this latter concept further).

However, simple (2,2) matrixes are not sufficient for the first cohorts: as Table 1 shows, inactivity is a frequently observed state for 20 timers, and the occupational trajectory of these inactive young people might be crucial for the assessment of intragenerational mobility. A number of them are pursuing studies, which may help them reach a non-agricultural position. We therefore include inactivity as a possible origin state for the first cohort.

⁴ The ten years ago occupation is derived from the answer to the following questions: "What job did you do before the one you have today?" and "For how long do you do your current occupation?" The occupation exerted ten years ago is taken as agricultural (resp. non-agricultural) if the respondent exerts his current occupation for more than ten years AND this current occupation is agricultural (resp. non-agricultural), or if the respondent exerts his current occupation for less than ten years AND the previous occupation is agricultural (resp. non-agricultural). Note that only the duration of the current occupation is known; then, for individuals who moved only recently, the previous occupation is not necessarily the same they were having ten years ago.

This method relies on the forecasting of the future mobility of younger cohorts on the basis of intragenerational matrixes estimated for older ones. We thus make the assumption of a constant intragenerational mobility across time, for a given social origin. In other words, life cycle effects are supposed to be stable over time. This latter assumption seems however weaker than that of a “neutral” intragenerational mobility, i.e. intragenerational mobility being independent of father’s origin.

- *Intragenerational mobility and life-cycle effects*

These intragenerational matrixes represent the probability for an individual of any decennial age group to reach a given position within a period of ten years. They reveal interesting features that deserve some comments.

Figure 2

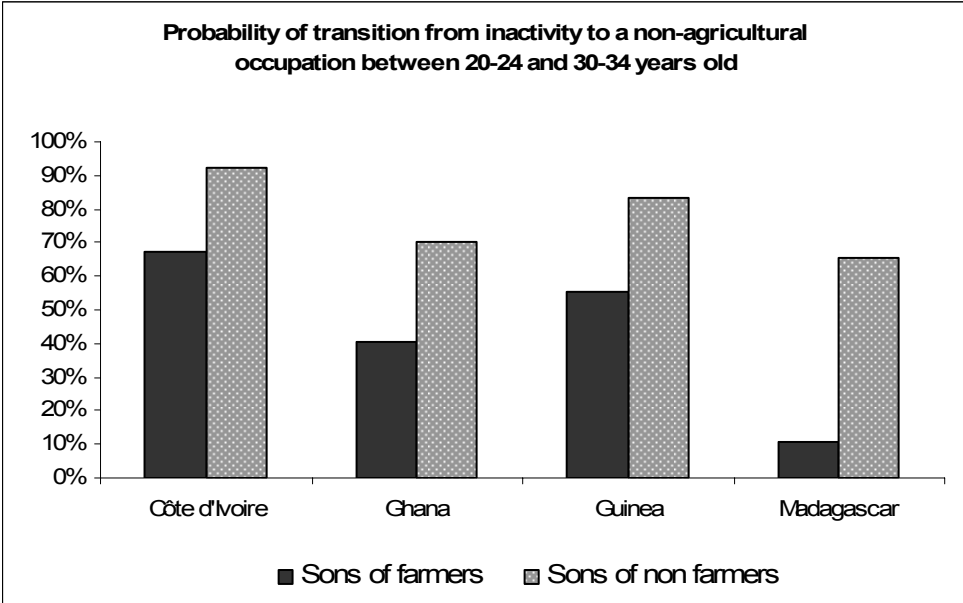


Figure 2 presents the probability to move from inactivity toward a non-agricultural occupation between 20-24 and 30-34 years old, as measured from the 30-34 age class in the surveys (excluding inactivity as a possible destination). The important rate of formerly inactive individuals who reach a non-agricultural occupation reflects the higher education of this group (see Table 4). A large share of formerly inactive farmers’ sons also does not reproduce the father’s occupation, with the exception of Madagascar.

We now turn to transitions between occupations or sectors. The reconstructed probability for a farmer to switch to a non-agricultural occupation within ten years decreases over the life

cycle. This probability is very low all along the life cycle when the father is himself a farmer (see Figure 2). When the father is not a farmer (see Figure 3), the probability is high at the beginning of the work career, and decreases progressively. Young workers are therefore the most likely to switch from an agricultural occupation to a non-agricultural occupation, but that opportunity strongly depends on the father's occupation. For that specific social transition, the weight of origins increases over time. Intragenerational dualism is large, and few people actually bridge the gap. Ghana surely is dualistic, but the son's intragenerational opportunities are less determined by the father's occupation than in Guinea, Côte d'Ivoire and Madagascar. In Guinea and Côte d'Ivoire, the probability seems very high that a young farmer rapidly leaves agriculture when his father himself is not a farmer, which increases social reproduction.

Figure 2

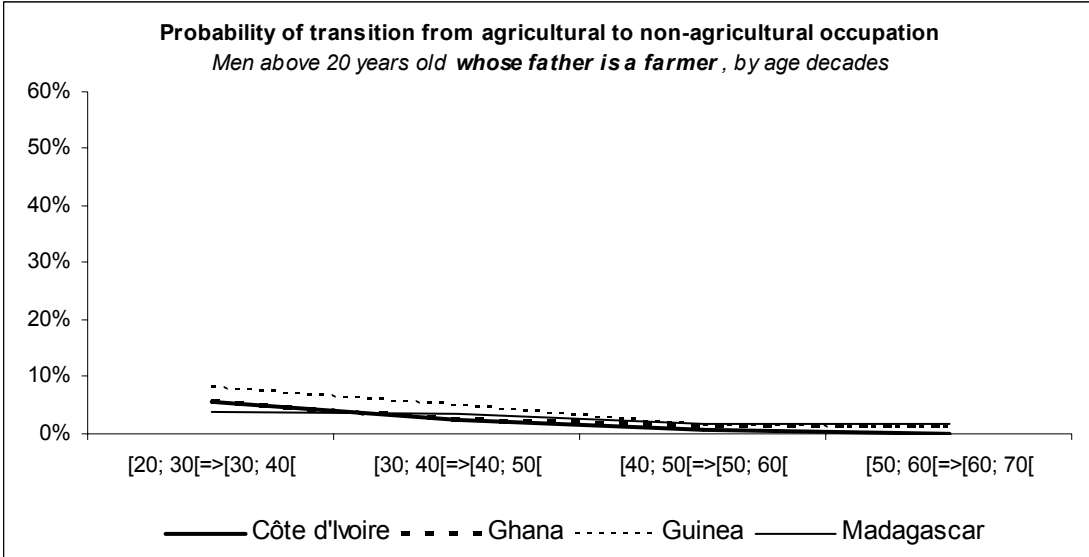
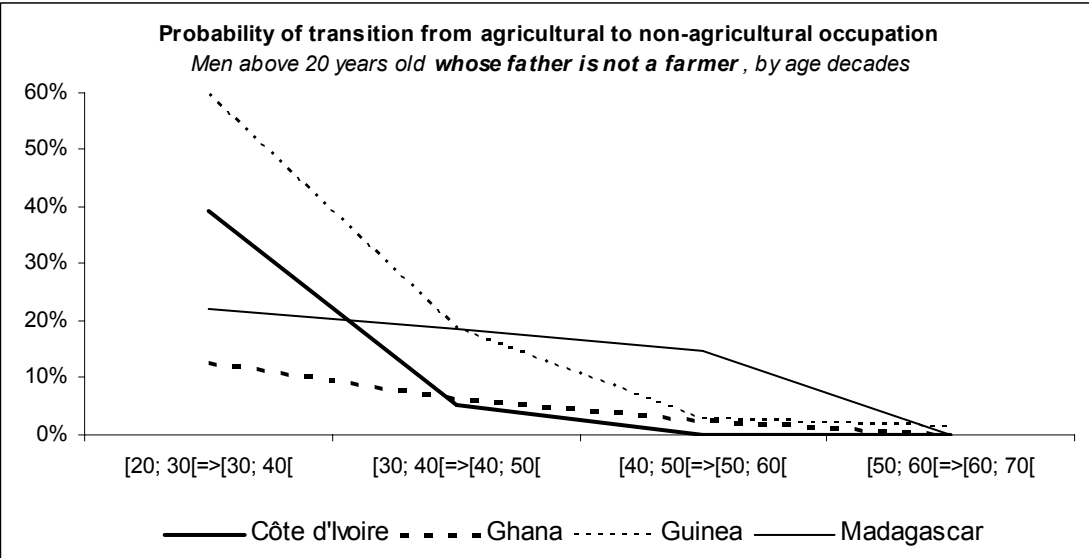


Figure 3



As for the reciprocal transitions towards agriculture, results show that they are not negligible at the beginning of the work career, but are the most likely at the very end (Figure 4). The need to go back to one's village to inherit land or to take care of one's goods and household might explain this increasing frequency with age. Having a father farmer indeed increases the probability to come back to the same position at old ages (compare Figure 4 and Figure 5).

Figure 4

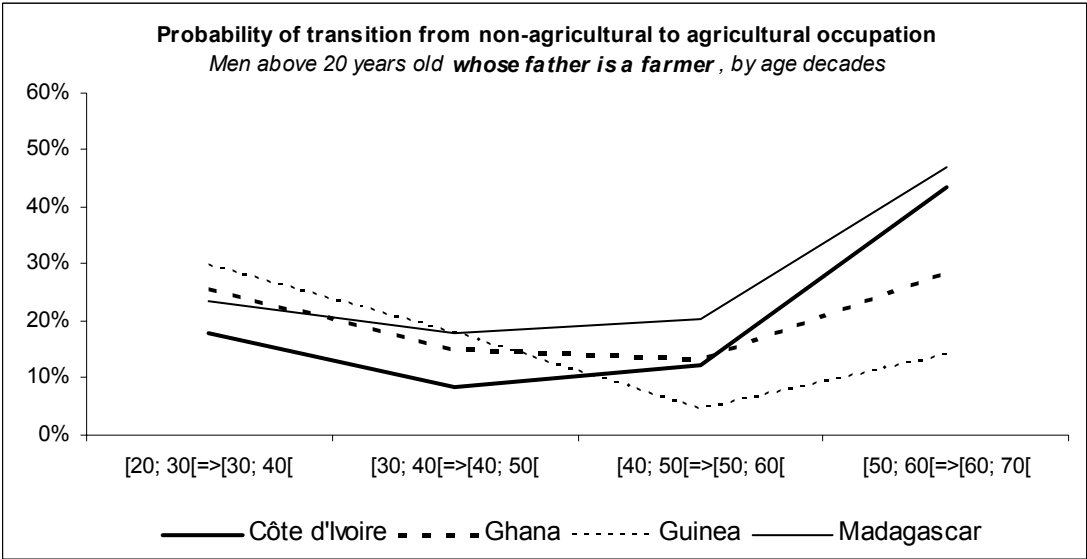
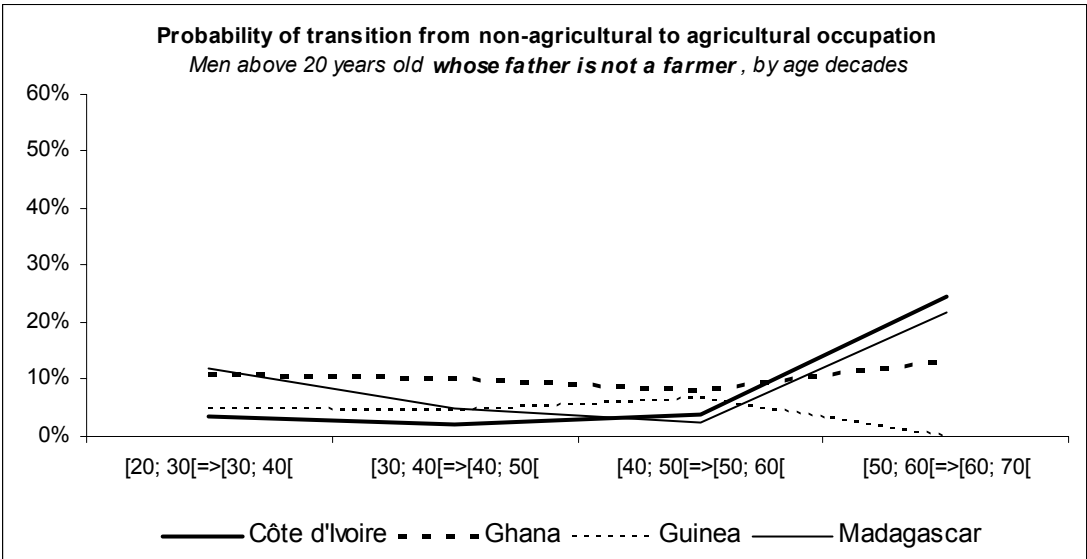


Figure 5



However, sons of non farmers also experience a fairly high probability of transition toward agricultures at the end of their lives (Figure 5). This leads us to interpret this move as a form of retirement: due to the weakness of pension systems, and because of the rural origins of the major part of the population in the countries we study, individuals get back to their villages at the end of their lives not only to inherit but also to earn a subsistence revenue from agricultural activities.

The specificity of this last move towards agriculture, the small sample size for the last age group, as well as the potential bias arising from differential mortality according to social origin, lead us to retain the 50-59 ages as the time of occupational maturity. The occupation of the 60 timers at this maturity age is directly observed ten years ago thanks to the surveys' employment history.

When the four decennial transition matrixes are cumulated, we obtain a hypothetical intragenerational matrix for the entire work career. The inequality of opportunity between individuals of different origins appears clearly (Figures 6 and 7). Ghana stands out as the country where the difference between origins is the smallest. The father's occupation is a strong determinant of trajectories for the three French-speaking countries.

Figure 6

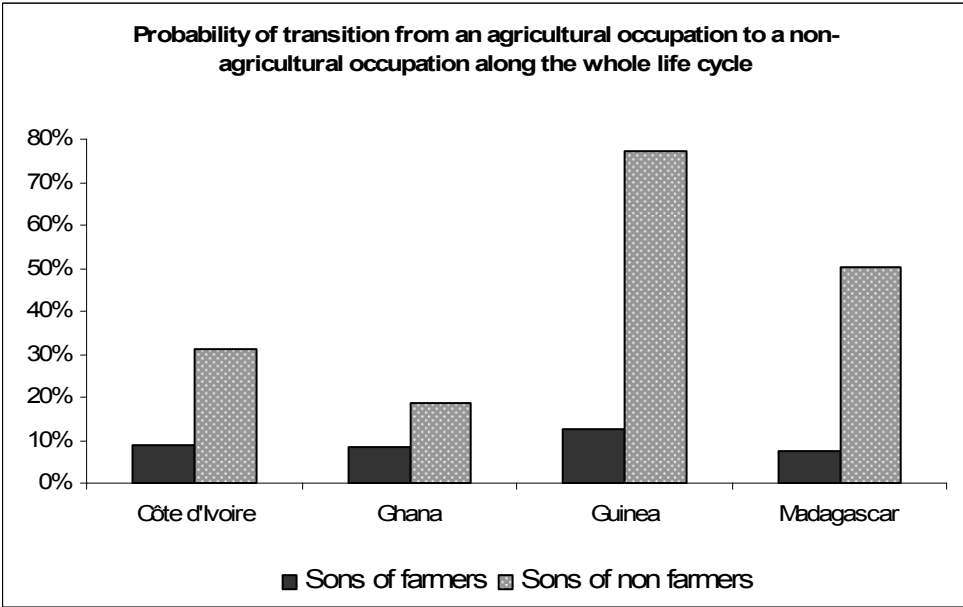
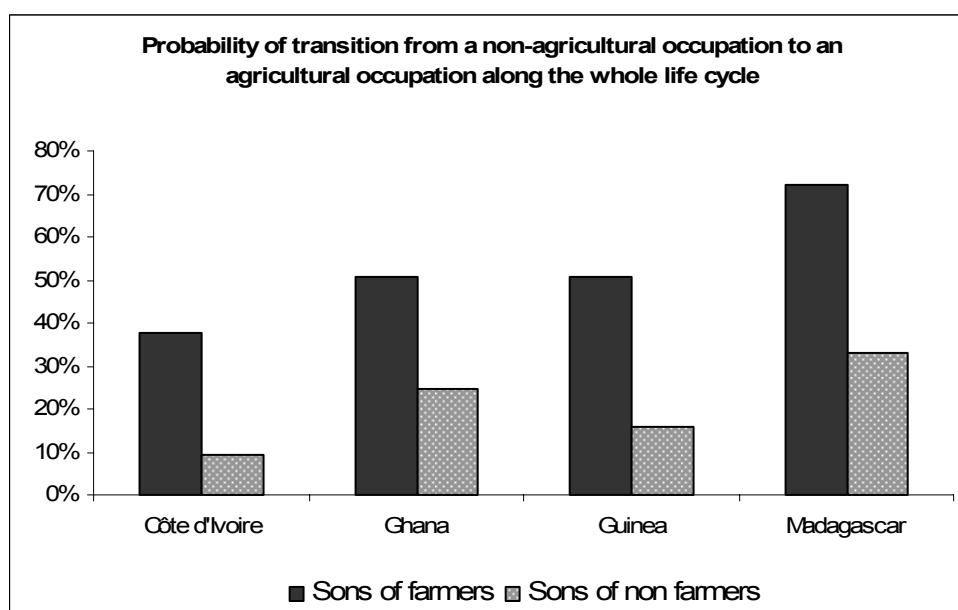


Figure 7



3.3. The impact of intragenerational mobility on intergenerational dualism

The intragenerational mobility matrixes we constructed allow correcting our intergenerational dualism comparisons for the impact of occupational transitions along the life cycle.

Table 5 – Intergenerational dualism across time and impact of intragenerational mobility

	[1920; 1930[[1930; 1940[[1940; 1950[[1950; 1960[[1960; 1970[
Côte d'Ivoire	5.93	6.79	9.28	8.37	13.60
	0.92	1.03	0.91	1.09	1.06
Ghana	6.41	4.69	4.83	3.72	5.33
	1.05	1.06	0.92	0.89	0.89
Guinea	5.28	3.74	8.43	6.32	12.72
	0.80	1.02	0.85	0.78	0.73
Madagascar	13.76	21.39	17.76	25.80	21.33
	1.63	0.92	1.16	1.22	1.26
Uganda*	3.44	2.62	4.59	4.23	4.19
	-	-	-	-	-

Coverage: Men aged 20-69 born between 1920 and 1970.

Reading: in Côte d'Ivoire, two men born in the 1950's whose fathers were respectively a farmer and a non-farmer are 8.37 times more likely to reproduce their father's position than to exchange them. Once corrected for intragenerational mobility according to our procedure, the odds-ratio raises to 1.09 times the level of the uncorrected odds-ratio.

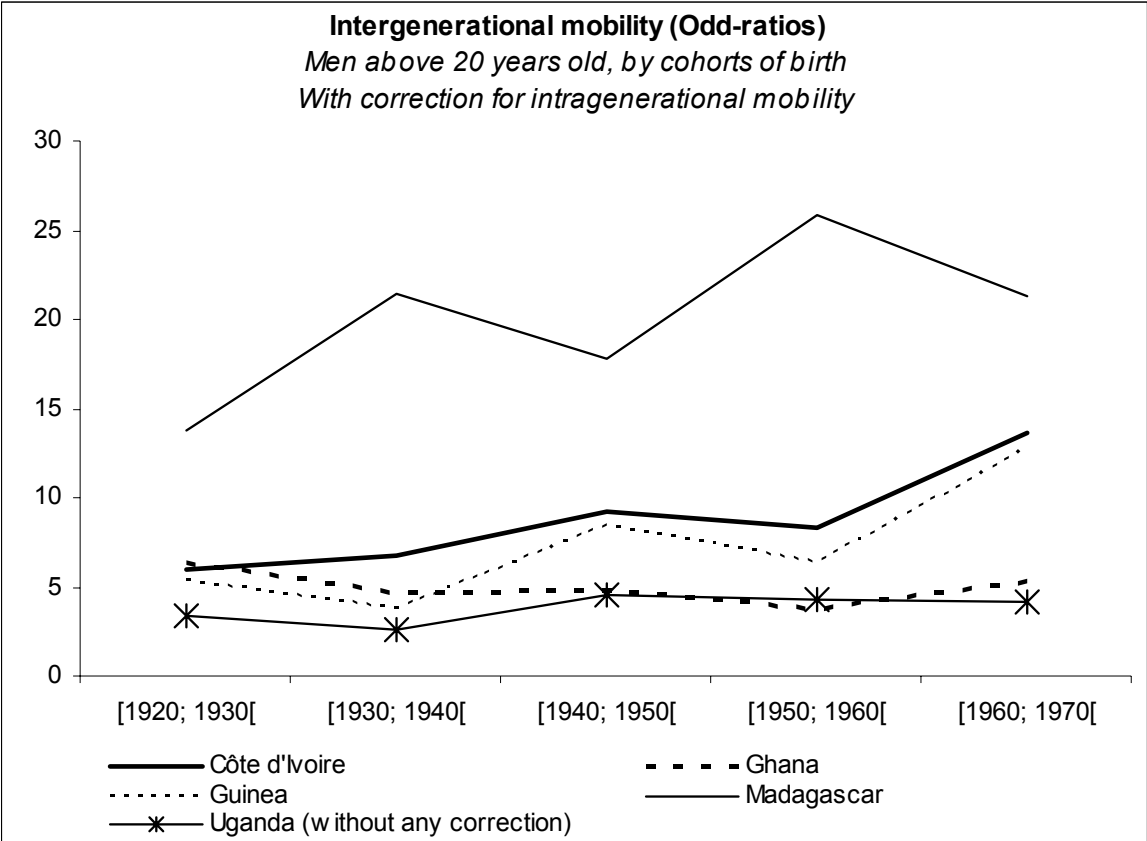
Note: confidence intervals are not shown in this panel because of the theoretical necessity to take into account the variance included in our stochastic intragenerational matrixes.

The ratios of uncorrected and corrected odds-ratios are most often close to 1 (see Table 5). On the whole, taking intragenerational mobility into account slightly lowers the estimation of

intergenerational mobility in Côte d'Ivoire and Madagascar, whereas it raises it in Guinea and Ghana. The additional correction provided by the consideration of exits from inactivity at the beginning of careers is, as expected, the largest effect in Côte d'Ivoire, where it lowers the odds-ratio by 8% for the youngest cohort (result not shown). However, after taking into account the other elements of prospective occupational mobility, the same odds-ratio ends up 6% higher than its uncorrected counterpart.

Figure 8 presents the corrected patterns of intergenerational mobility across time in the four countries (see Figure 8), aside with Uganda which stays uncorrected due to data limitations. The intragenerational corrections reinforce the similarities between Côte d'Ivoire and Guinea, while clearly separating them from Madagascar. The gap between these countries and the two former British colonies is maintained. In Ghana, the uncorrected high level intergenerational mobility is even magnified by a fairly high level of intragenerational mobility.

Figure 8



As Table 6 shows, Brazil, a country well-known for his record in inequality, and China, where labour migration is still strictly regulated, share the same level of intergenerational dualism as Côte d’Ivoire and Guinea. Madagascar stands in-between this group of countries and India, whose caste system ascribes individuals to their father’s occupation; although less prominent, caste-like discriminations also prevail in Madagascar, at least among the Merina ethnic group (Roubaud, 2000).⁵ In contrast, Uganda and Ghana stand out as much more fluid societies.

Table 6 – Out of Africa: The five countries compared with Brazil, China and India

	Odds-ratio
Uganda 1992	4.3
Ghana 1988-92	4.4
Brazil 1996	8.0
Guinea 1994	8.2
China 1996	8.6
Côte d’Ivoire 1985-88	11.2
Madagascar 1993	20.9
India 1996	32.4

Coverage: Men aged 20-69, except for India: representative sample of male electorate.

Sources: Brazil: authors’ computation from PNAD 1996 survey (see also Cogneau and Gignoux, 2006); China: authors’ computation from Table 3 in Wu and Treiman 2006; India: authors’ computation from Tables 2 and 3 in Kumar, Heath and Heath, 2002a and 2002b.

The two last sections of this paper concentrate on the between country differences that have just been established, relating them with migration and education issues. They leave aside the issue of the evolution across time of intergenerational dualism, focus on the oldest cohorts (born between 1930 and 1959) and disregard the youngest (1960-69).

4/ Migration, occupational structure and intergenerational dualism

Intergenerational entries into and exits from agriculture can be linked to migration flows between rural and urban areas on the one hand and to the diversification of occupations within localities on the other hand.

Table 7 gives the emigration rate of country natives outside their village or town of birth, among 1930-1959 cohorts. It reveals that Ghana is the country where internal emigration is

⁵ See Roubaud (2000) for a statistical analysis of the influence of caste on intergenerational mobility in the capital city of Antananarivo.

the most frequent, followed by Uganda and Côte d'Ivoire. In Madagascar and Guinea emigration only concerns a minority (between a quarter and a third).

Among men born between 1930 and 1959 and living in Côte d'Ivoire, it is worth noting that 20% were born in foreign countries, mostly Mali (5%) and Burkina-Faso (9%); in other countries this rate never goes above 3%, so that in fact Côte d'Ivoire would rank at the level of Ghana if foreign born were taken into account. The two last sections of this paper not only focus on the oldest cohorts, but also on country natives, excluding international immigrants, in order to facilitate comparisons. This change in coverage has the consequence of slightly decreasing the intergenerational odds-ratio in Côte d'Ivoire, as people coming from Burkina-Faso and Mali are more often farmers' sons and work in agriculture.

Table 7 – Percentage of migrants outside the village or town of birth

Birth cohort	1930-39	1940-49	1950-59	All: 1930-59
Côte d'Ivoire	31.6	41.3	55.7	44.4
Ghana	52.7	60.2	52.5	55.1
Guinea	18.6	25.4	35.8	27.8
Madagascar	29.6	36.3	36.4	34.9
Uganda*	42.9	47.8	49.7	47.6

Coverage: Men aged 20-69 born between 1930 and 1960 in the country, whose occupation is known.

Reading: Percentage of people dwelling in the village/town of birth

* in Uganda, people whose previous residence was outside the country are considered as international immigrants and withdrawn from the table; in other countries, country of birth is known

The first column of table 8 presents the estimation of one logit model per country, where the left-hand side variable takes the value of one when the individual is staying in his village or town of birth, and zero when the individual has emigrated elsewhere. On the right-hand side, along with a father farmer dummy, we additionally introduce the region of birth of the individual (as well as decennial cohorts dummies whose coefficients are not shown).

This last variable is of outmost importance in the African context of State consolidation and ethnic conflicts. We distinguish individuals born in the most peripheral region of each country, i.e. the Northern parts of Côte d'Ivoire, Ghana, and Uganda, the North-Eastern Guinea (Haute Guinée and Guinée Forestière) and the Coastal regions of Madagascar (all regions except the highlands around the capital city Antananarivo). Table 8 shows that being born in a peripheral region also limits migration at around the same rate in each country (between 1.4 and 2), except in Madagascar.

Besides and most importantly, the estimation results reveal that having a father farmer increases the odds of staying in the locality of birth in every country except Ghana. In Côte d'Ivoire, Guinea and Madagascar, a farmer's son is at least three times more likely to stay,

while in Uganda this differential probability is half (1.7), Ghana showing no difference. Thus, migration is not only less frequent in former French colonies it also more often selects non-farmer's sons.

Table 8 – Sequential logit model for migration

	Having stayed in village/town of birth		Working in agriculture			
	Odds-ratio	s.e.	Migrants		Non-migrants	
	Odds-ratio	s.e.	Odds-ratio	s.e.	Odds-ratio	s.e.
Father Farmer						
Côte d'Iv.	3.0	0.5	3.4	1.2	12.5	3.5
Ghana	(1.0)	0.1	3.1	0.4	5.6	0.8
Guinea	3.6	0.5	(1.9)	1.0	7.9	1.7
Madagascar	3.4	0.5	8.3	2.2	34.8	9.5
Uganda	1.7	0.2	3.5	0.5	4.5	0.7
Region of birth						
Northern Côte d'Ivoire	1.4	0.2	(1.5)	0.3	(1.8)	0.5
Northern Ghana	2.0	0.2	(1.3)	0.2	3.2	0.5
Northern Guinea	2.0	0.2	(1.7)	0.7	2.1	0.3
Coastal Madagascar	(1.0)	0.1	2.0	0.6	2.6	0.6
Northern Uganda*	1.5	0.2	(1.3)	0.2	1.5	0.3
N	13,698		6,911		6,787	
Log. Likelihood	-8,720		-3,933		-2,666	
Pseudo-R ²	0.07		0.17		0.17	
Tests Father Farmer:						
C. d'Iv. = Ghana			0.750		0.011	
C. d'Iv. = Uganda			0.962		0.002	
Guinea = Ghana			0.989		0.198	
Guinea = Uganda			0.282		0.041	

Coverage: Men aged 20-69 born between 1930 and 1970 in the country, whose occupation is known.

Notes: Logit models for having stayed in place of birth or working in agriculture; decennial cohorts' dummy variables for each country are introduced (coefficients not shown)

(): not significantly different from one at 5%

++, +, - or -- : significant change at 5%

* former region of residence instead of region of birth

The two other columns of Table 8 apply the same logit model to a dummy variable indicating whether the individual is working in agriculture, separately for migrants and non-migrants. The estimation reveals that the bulk of between-country differences in intergenerational dualism can be attributed to non-migrants. Excepting Madagascar, the odds of becoming a farmer for a farmer's son are the same, whatever the country where he is born, provided he has left the village or town of birth, i.e. conditionally to having emigrated. Conversely, the same odds are very much contrasted between countries among non-migrants.

First, farmers' sons less often leave their locality of origin in the three former French colonies. Second, those who stay are much more likely to reproduce their father's occupation, i.e. stay a

farmer, than in the two former British colonies. Without computing counterfactual simulations, it is hard to say which of those two features explain the most of intergenerational dualism differences. However, those results suggest that they can not only be explained by migration costs differentials. Intergenerational dualism differences are a fact even among non-migrants, which may reflect a greater spatial segregation of populations and a higher spatial polarization of jobs in former French colonies.

As appendix 6 shows, more than one third of people whose main occupation is not agricultural also work in agriculture as a secondary job, whereas less than one tenth do the same in Côte d'Ivoire and Guinea. Conversely, around one fifth of farmers also have a non-agricultural secondary job in Ghana, Guinea and Uganda, versus only 8% in Côte d'Ivoire. This latter observation suggests that the borders between occupations are more open in Ghana and Uganda in comparison with Guinea and particularly Côte d'Ivoire. It is consistent with the differences in the spatial polarization/diversification of activities that has just been observed among non-migrants. Under this new light, Madagascar still stands out as a special case: while the mixing of main and secondary jobs is as high as in Ghana and Uganda, the weight of father's occupation carries over for migrants and for non-migrants as well.

5/ Educational mobility and intergenerational dualism

5.1. Educational development and educational intergenerational mobility

Before introducing education into the analysis of intergenerational dualism, we examine here the educational development experience of each country and the intergenerational mobility matrixes linking father's occupation and education and son's education.

Table 9 shows that Madagascar and Uganda developed occasional primary schooling the earliest; in Madagascar, the Merina kingdom is known to have had a schooling policy before French colonization in the late nineteenth century. Yet this advantage does not give rise to a high proportion of individuals completing primary school and disappears completely at the secondary level when compared with Ghana. At the other extreme, Côte d'Ivoire and even more so, Guinea, stand out as countries where primary education was reserved to a small minority during the 1930s. These historical microeconomic statistics are in perfect keeping with the number of pupils recorded by historical statistics (Mitchell, 2001). In fact, Madagascar makes an exception among French colonies: A continental overview confirms the British colonies' advantage in terms of school extension before 1960. The computation of

international databases also shows that the British advance has been maintained up to the 1990s, after thirty years of continued educational expansion (Cogneau, 2003).

Table 9 – Educational developments across time in the five countries

	Born in 1930-39	Born in 1940-49	Born in 1950-59	Born in 1960-69
% Never attended school (or never achieved any level with success)				
Côte d'Ivoire	81.3	63.1	40.1	31.7
Ghana	60.3	41.1	28.8	21.3
Guinea	93.9	85.2	62.2	52.2
Madagascar	48.5	33.5	23.3	18.0
Uganda	41.5	26.1	18.5	15.9
% Middle or secondary level				
Côte d'Ivoire	3.2	16.7	36.0	40.6
Ghana	32.0	49.8	62.3	68.5
Guinea	3.2	9.8	26.0	27.2
Madagascar	6.9	16.3	20.8	36.8
Uganda	10.2	23.7	27.3	29.4

Coverage: Men aged 20-69 born between 1930 and 1970.

Table 9 is again in line with this latter point, as the countries' ranks are unchanged when comparing the youngest cohorts educated after independence with the oldest, educated during the 1940s. The main change comes from Côte d'Ivoire which got further and further from Guinea while catching up with the other countries. While being still behind in terms of access to school in the 1970s, Côte d'Ivoire had overrun Madagascar and Uganda at the middle ("*collège*" in the French-origin systems) and secondary levels (see also Cogneau et al., 2007 for a comparison of Côte d'Ivoire with its neighbours: Burkina-Faso, Guinea and Mali). Besides, it seems that expansion of the secondary level has lagged behind in Uganda since independence in 1958.⁶

⁶ In Ghana, middle school level is more like an upper primary level. In fact, for the generations concerned, the Ghanaian education system offered much longer schooling than elsewhere based on the "6-4-5-2" format: six years in primary school, four in middle school, five years in secondary school and two pre-university years (lower sixth and upper sixth). Individuals could pass an exam to go directly from primary to secondary school, cutting out middle school. However, since primary school had no system of repeating a failed year, half of the individuals (those who had at least reached middle school) had at least completed these six years of schooling. Most of the other half had never attended school, with only a small minority having left school at primary level. This system was reformed in 1987 and changed to the "6-3-3" format. In Madagascar and Uganda, however,

Of course, any educational expansion does not necessarily translate into higher equality of opportunity in favour of unprivileged children whose parents are poor or uneducated (see, e.g. Goux and Maurin, 1997, on the example of France; Cogneau and Gignoux, 2007 on Brazil; Pasquier-Doumer, 2004, on Peru).

For our five countries, Table 10 presents the estimation of three logits models per country explaining respectively the probability of having never attended school (see top panel of Table 9), of having reached primary level only (conditionally to having attended school), and of having reached middle school or ‘collège’ level (conditionally to having attained primary level; see bottom panel of Table 9). The estimated coefficients presented in Table 10 compare the probabilities of access to each level of education for two sons with different social origins as characterized by the father farmer dummy, the region of birth, and a variable indicating whether the father ever attended school or not (or reached primary level in the third column).⁷

The first column of Table 10 shows that the intergenerational educational mobility for schooling alone is low in Côte d’Ivoire and in Guinea, in keeping with the low extension of primary schooling in those two countries. Both countries display higher odds-ratios than Ghana and Uganda for the father farmer dummy as well as for the father school attendance dummy. Uganda, where primary education is the most widespread in the 1930-59 cohorts, displays the lower discrimination in access to schooling. Ghana comes second, excepting the fact that Northerners are very much discriminated in terms of access to school, which has already be noted in previous studies (see Shepherd and Gyimah-Boadi, 2005). Notwithstanding this huge regional inequity, it is worth noting that Ghana does not show much more inequality of opportunity than Madagascar, even though primary schooling in this country was less frequent.⁸

The second and third series of odds ratios establishes that, in the case whereby some sort of schooling was received, Madagascar presents the most discriminating educational heritage

two-thirds of individuals aged 20 and over had successfully completed one year of primary education, but very few had completed all five (Madagascar, “5-4-3”) or seven (Uganda, “7-4-2”) years of this level.

⁷ Aggregate educational mobility tables crossing fathers’ and sons’ education levels are given in Appendix 5. The accuracy of comparisons involving Côte d’Ivoire should be taken with caution when father’s education is considered, as it is not measured like in the other countries (by the last degree obtained rather than by the higher level attained, see Section 1 and footnote in Appendix 5).

⁸ Other results not shown here about the younger cohorts (1960-69) suggest that equality of opportunity had even dramatically improved in Ghana, while staying at a very high level in Madagascar. This evolution has put Ghana at the level of Uganda. In the 1970s, the two former British colonies were showing the most advanced level of “democratisation” of access to school.

inequalities. The influence of these inequalities carries through to both middle school and secondary school. In the other two former French colonies, where schooling is less developed, the majority of the inequality of opportunity for education is concentrated in initial schooling factors. Lastly, the education systems in the two former British colonies are clearly less selective than the education system in former French colonies, at all levels of schooling. This latter result is strikingly in line with our previous results regarding occupational intergenerational mobility.⁹

Table 10 – Intergenerational barriers in schooling attainments

	Never attended school		Primary level only		Middle school level only	
	Odds-ratio	s.e.	Odds-ratio	s.e.	Odds-ratio	s.e.
Father farmer						
Côte d'Ivoire	2.9	0.6	2.6	0.6	1.7	0.3
Ghana	(1.1)	0.1	(0.8)	0.1	1.6	0.2
Guinea	3.8	0.6	2.2	0.5	1.7	0.4
Madagascar	4.4	0.8	6.7	1.1	(1.4)	0.4
Uganda	1.9	0.3	2.3	0.3	1.7	0.3
Region of birth						
Nth. C. d'Iv.	3.6	0.5	(1.5)	0.3	(0.6)	0.2
Nth. Ghana	14.5	1.6	2.6	0.5	(0.7)	0.2
Nth. Guinea	(0.8)	0.1	(1.2)	0.2	(1.3)	0.3
Coast. Mad	2.7	0.5	(0.7)	0.1	2.0	0.5
Nth. Uga.*	(0.8)	0.1	(0.8)	0.1	2.1	0.5
Father never reached:						
			Primary level		Middle school level	
Côte d'Ivoire**	6.5	3.0	3.3	1.4	(2.3)	1.0
Ghana	7.0	1.4	2.7	0.6	2.2	0.3
Guinea	10.0	3.3	(1.8)	0.8	(2.0)	1.0
Madagascar	5.6	0.9	3.6	0.8	3.3	0.8
Uganda	5.9	0.9	2.7	0.3	(1.0)	0.3
N	24,225		16,436		9,204	
Log. Likelihood	-111,020		-8,683		-5,061	
Pseudo-R ²	0.31		0.23		0.11	

Coverage: Men born between 1930 and 1960.

Notes: Decennial cohorts' dummy variables for each country are introduced (coefficients not shown)

Unless noticed, all odds-ratios are significantly different from one at 5%

(): not significantly different from one at 5%

++, +, - or -- : significant change at 5%

* former region of residence instead of region of birth

** 2 first columns: father never obtained primary level certificate (CEP); last column: father never obtained 'collège' level certificate (BEPC)

5.2. Education as an additional correlate of intergenerational dualism

⁹ A deeper analysis of educational mobility matrixes with the log-linear model confirms those country rankings

This last sub-section confronts our main results regarding intergenerational dualism with educational developments that have just been examined. We estimate logit models in which the individuals' education level enter as another explanatory variable for the individuals' occupation, aside with the father farmer dummy variable.

Table 11 presents the estimation results of three models per country, explaining the probability of working in agriculture as main occupation. In the left part of the table (Model I), the "father farmer" dummy is introduced alone, in the middle part (Model II) education is added; lastly, the right part (Model III) also adds the migration variable already introduced in section 4.

Model I purely reproduces the "uncorrected" occupational odds-ratios described in section 3 with two differences: cohorts born before 1960 are now aggregated into a single one, and international immigrants are withdrawn.¹⁰ Results and tests shown in the bottom panel of the Table plainly confirm the countries' rankings obtained above.

Model II very significantly improves Model I in terms of likelihood, by introducing the individual's education as an additional correlate for working in agriculture. When the impact of father being a farmer on education is cancelled out, the odds-ratio corresponding to the father farmer dummy is significantly diminished in every case except Ghana. Côte d'Ivoire and Guinea end up not being different from the latter, while Uganda still stands in a lower position. At the other extreme of the spectrum, Madagascar still holds its first rank in terms of intergenerational reproduction. As expected, the influence of education on occupational selection is large. For cohorts born before 1960, the countries where education determines the most entries and exits from agriculture are first Côte d'Ivoire by far and large, then Madagascar and Uganda. Ghana again stands out with the lowest 'returns of education', with Guinea closely nearby. These latter features question the quality of education in both countries, in comparison with Côte d'Ivoire (see in particular Cogneau et al. 2007). In sum, the introduction of education gives a rather simple explanation for the difference in intergenerational dualism between Ghana and Guinea: in both countries education seems to play a similar role in intergenerational mobility, but education is much less widespread and less evenly distributed in Guinea than in Ghana (see comments of Tables 9 and 10). When turning to the comparison between Côte d'Ivoire and Ghana, part of the explanation is the same; however, a large remaining part must be attributed to differences in returns to education.

and evolutions (see, Hiller, 2005).

¹⁰ See section 4 about this point. In the case of Côte d'Ivoire, this withdrawing of international immigrants has the effect of decreasing the father farmer odds-ratio from 7.8 to 6.8.

Table 11 – Intergenerational dualism and education: working in agriculture

	Model I		Model II		Model III	
	Odds-ratio	s.e.	Odds-ratio	s.e.	Odds-ratio	s.e.
Father farmer						
Côte d'Ivoire	6.8	1.3	4.2	1.1	4.1	1.3
Ghana	4.4	0.4	3.6	0.4	3.8	0.4
Guinea	6.5	1.1	4.5	0.8	4.7	1.1
Madagascar	19.8	3.6	8.3	1.8	8.6	2.0
Uganda	4.0	0.4	2.5	0.3	2.5	0.3
Never reached primary level						
Côte d'Ivoire			111.8	54.2	60.0	29.5
Ghana			14.7	2.6	14.1	2.6
Guinea			22.5	7.0	18.9	6.2
Madagascar			89.6	33.6	51.0	19.3
Uganda			46.7	14.1	45.1	13.9
Primary level only						
Côte d'Ivoire			49.1	23.8	20.7	10.2
Ghana			12.9	2.7	12.9	2.8
Guinea			11.2	3.9	6.8	2.5
Madagascar			27.4	9.2	17.8	6.0
Uganda			29.0	8.3	28.2	8.2
Middle school level only						
Côte d'Ivoire			7.6	3.8	6.7	3.4
Ghana			5.0	0.9	5.0	0.9
Guinea			5.9	2.4	3.8	1.6
Madagascar			5.3	2.0	4.7	1.8
Uganda			6.3	1.8	6.2	1.9
Stayed in village/town of birth						
Côte d'Ivoire					21.9	3.4
Ghana					2.8	0.2
Guinea					55.0	12.0
Madagascar					3.8	0.6
Uganda					1.8	0.2
N			13,788			
Log. Likelihood	-7,868		-6,833		-5,799	
Pseudo-R ²	0.11		0.23		0.34	
Tests Father Farmer odds-ratio equality:						
C. d'Iv. = Ghana	0.040		0.565		0.813	
C. d'Iv. = Uganda	0.013		0.069		0.161	
Guinea = Ghana	0.049		0.240		0.379	
Guinea = Uganda	0.015		0.006		0.019	

Coverage: Men born between 1930 and 1960 and whose occupation is known (employed).

Note: Logit models for working in agriculture; decennial cohorts' dummy variables for each country are introduced (coefficients not shown)

Unless noticed, all odds-ratios are significantly different from one at 5%

(): not significantly different from one at 5%

Model III results show that the introduction of a migration variable does not change much the results already obtained for education, and is not sufficient to explain the persistent singularity

of Uganda and Madagascar at both ends of the spectrum of intergenerational dualism. Côte d'Ivoire and especially Guinea stand out as countries where emigration is largely a prerequisite for the access to non-agricultural jobs, whatever the education level attained. This latter result is in line with both countries' spatial polarization and occupational rigidity that have been already noticed in section 4. In the end, migration does not help explaining intergenerational dualism differences between countries, as the bulk of them is observed among non-migrants.¹¹

Table 12 tentatively applies the same kind of logit models to explaining the entry into the higher "*salariat*" or white collar jobs, conditionally to being out of the agricultural sector.¹² Estimation results show that the father farmer dummy plays a negligible role in the occupation selection outside of agriculture, except in Guinea (Model I). When education is controlled for (Models II and III), having a father farmer even slightly increases the odds for becoming a white collar in Ghana, Madagascar and Uganda.¹³ Estimates show that middle or high school education is the required passport to enter this domain of skilled, protected and relatively well-paid jobs. Côte d'Ivoire again comes out as the country where education is by far the most selective.

This section finally shows that countries where intergenerational dualism is the most pronounced also exhibit lower intergenerational educational mobility. In that sense, the uneven distribution of education contributes to the explanation of intergenerational dualism. However, the selectivity of education is also much different between countries, if only for explaining entries into and exits from agriculture. This higher selectivity (higher returns) of education constitutes another facet of dualism, that combines with inequality of opportunity in access to school. In comparison with the neighbouring Ghana, Côte d'Ivoire can hence be depicted as a country where the social distance between occupations is maximal, whether it is measured by the spatial mixing of activities or by the education level attached to each job.¹⁴ However, the relatively high levels of internal migration and of educational development compensate for these handicaps. Conversely, in Guinea, low migration rates and educational

¹¹ When migration status is added before education, Model I results are hardly modified.

¹² Interestingly enough, results are quite the same when the subset of public white collar jobs is considered.

¹³ Region of birth also plays this compensatory influence in the same three countries, with individuals born in peripheral regions getting better access to white collar jobs or civil service, once education is controlled for. This feature may either be explained by measurement errors in education or by affirmative action designed to preserve ethnic and social balance.

¹⁴ Income dualism against agriculture and income disparities between non-agricultural occupations were also more pronounced in the three former French colonies. See Cogneau et al. (2006).

underdevelopment make satisfactory explanations for the high level of intergenerational dualism. In Ghana, both spatial distance and educational distance are minimal and combine with high migration rates and widespread post-primary education.

Table 12 – Intergenerational dualism and education: blue collars vs. white collars

	Model I		Model II		Model III	
	Odds-ratio	s.e.	Odds-ratio	s.e.	Odds-ratio	s.e.
Father farmer						
Côte d'Ivoire	(1.4)	0.3	(0.6)	0.2	(0.7)	0.2
Ghana	(0.9)	0.1	0.6	0.1	0.6	0.1
Guinea	1.6	0.2	(0.7)	0.1	(0.7)	0.1
Madagascar	(1.1)	0.2	0.6	0.1	0.6	0.1
Uganda	(0.8)	0.1	0.5	0.1	0.5	0.1
Never reached primary level						
Côte d'Ivoire			181.0	76.2	178.6	75.5
Ghana			21.4	4.7	21.4	4.7
Guinea			33.4	7.6	33.3	7.7
Madagascar			11.4	5.4	11.1	5.3
Uganda			13.7	4.9	15.4	5.5
Primary level only						
Côte d'Ivoire			48.6	18.1	46.2	17.3
Ghana			33.7	12.2	33.3	12.0
Guinea			21.1	5.8	20.5	5.7
Madagascar			5.8	1.9	6.5	1.9
Uganda			10.5	2.7	11.4	2.9
Middle school level only						
Côte d'Ivoire			4.5	1.5	4.8	1.8
Ghana			8.7	1.5	8.8	1.5
Guinea			7.6	2.4	7.3	2.3
Madagascar			(1.4)	0.4	(1.4)	0.4
Uganda			3.1	0.8	3.4	0.9
Stayed in village/town of birth						
Côte d'Ivoire					2.9	0.9
Ghana					(1.2)	0.2
Guinea					1.8	0.3
Madagascar					(1.2)	0.3
Uganda					0.7	0.1
N			6,406			
Log. Likelihood	-7,868		-3,298		-3,267	
Pseudo-R ²	0.04		0.24		0.25	

Coverage: Men born between 1930 and 1960 and whose occupation is known (employed).

Note: Logit models for working in blue collar rather than white collar jobs; decennial cohorts' dummy variables for each country are introduced (coefficients not shown)

Unless noticed, all odds-ratios are significantly different from one at 5%

(): not significantly different from one at 5%

As for the two extremes in the spectrum of intergenerational dualism, Madagascar and Uganda, these explanations in terms of spatial distance and educational distance are only

partial. In Madagascar, the persistence of caste-like distinctions probably makes part of the explanation for the outstanding level of intergenerational reproduction. In Uganda, the political violence which has particularly affected this country since the end of 1960s might have contributed to its record level of intergenerational mobility, through forced downward mobilities or migrations (like for instance the Indian minority who was expelled by Idi Amin Dada) or even premature deaths.

7/ Conclusion

This paper sets down a first comparative measurement of the features and of the evolution across time of the intergenerational mobility of men in five countries of Sub-Saharan Africa. It focuses on intergenerational entries into and exits from agriculture, which is most important in countries where more than half of the population still today works in farms. Intragenerational entries and exits flows are also considered, as well as the link with educational developments and with migration issues.

The comparison establishes two large divides between three groups of countries, whether in terms of occupational or educational mobility. The two former British colonies, Ghana and Uganda, stand out by far with the lowest degree of intergenerational dualism. In those two countries, the education system seems less selective; the sorting power of education on the labour market is also more limited, especially in Ghana. In contrast, in the two former French Western colonies, Côte d'Ivoire and Guinea, the opportunity structure of the society seems much less opened in all respects. Lastly, Madagascar forms a clearly distinct group on its own.

Intergenerational dualism and educational reproduction have strong consequences in terms of distributive justice. The social rigidity of the three former French colonies also translates in higher inequality of opportunity for income and living standards, and goes together with high cross-sectional inequalities in welfare (Cogneau et al., 2006).¹⁵

Further research is warranted to understand the sources of such a divergence between the three groups of countries. Differences in initial development give no immediate clue: centralised pre-colonial kingdoms have ruled parts of Ghana and Uganda, but also

¹⁵ It has also probable consequences in the political field, through a less opened access to “voice” and a higher social reproduction of elites. The early extension of political voice and of elite competition in the two former British colonies could have been at the expense of post-colonial political stability. See also Cogneau, 2006.

Madagascar, and population density is roughly the same in all countries (when measured with arable land: see Appendix 2). Differences in modernisation and economic development give no clue either: Côte d'Ivoire and Ghana are the most developed countries. Differences in political regimes hardly help as well: Guinea has been the most socialist country and Côte d'Ivoire the most economically liberal.

The process of State construction and consolidation is probably a better track, when connected with economic dualism and the status of education. On one side, like all British colonies on average, Ghana and Uganda have benefited from higher educational investments during the colonial period. They also could have inherited a more decentralized State structure and perhaps a more competitive political field. On the other side, francophone States' policies have set high levels of income dualism and monetary returns to education, regardless of their respective level of industrial and educational development, and following the interests of a small educated class.

Obviously, putting together the pieces of the puzzle requires a better understanding of the interaction between pre-colonial conditions, colonial powers' policies and consecutive or disruptive post-colonial State trajectories. However, it seems rather well established that institutional persistence and long-term history carry their weight onto the patterns of intergenerational mobility and of structural change (urbanization, human capital accumulation) in African countries.

References

- Behrman J.R., A. Gaviria and M. Székely, 2004. Intergenerational Mobility in Latin America *Economia*, 2(1): 1-43.
- Bourguignon F., F. Ferreira and M. Menendez, 2005. Inequality of Opportunity in Brazil, Ibero-America Institute for Economic Research, Discussion Paper No. 133, University of Göttingen, 45 pp.
- Cheng Y. and J. Dai J, 1995. Intergenerational Mobility in Modern China, *European Sociological Review*, 11(1):17-35.
- Cogneau D., 2003. Colonisation, School and Development in Africa – An Empirical Analysis, *DIAL Working paper DIAL*, DT 2003/01.
- Cogneau D., 2006. *L'Afrique des inégalités: où conduit l'histoire*. Opusculer CEPREMAP n°4, Paris : Editions de l'École Normale Supérieure rue d'Ulm.
- Cogneau D., T. Bossuroy, P. De Vreyer, C. Guénard, V. Hiller, P. Leite, S. Mesplé-Somps, L. Pasquier-Doumer, and C. Torelli, 2006. Inequalities and Equity in Africa, Working paper *DIAL DT 2006/11* and *AFD Notes et Documents 31*.

- Cogneau D. and Gignoux J., 2007. Earnings Inequalities and Educational Mobility in Brazil over Two Decades, forthcoming in Klasen S. (ed.), *Poverty, Inequality and Policy in Latin America*, CESifo Series, Harvard, Mass.: MIT Press.
- Dunn C., 2003. Intergenerational Earnings Mobility in Brazil and its Determinants, Working Paper, University of Michigan.
- Erikson R. and J. Goldthorpe, 1992. *The Constant Flux: A Study of Class Mobility in Industrial Societies*, Oxford: Clarendon Press.
- Ganzeboom H. B. G., R. Luijkx and D. J. Treiman, 1989. International Class Mobility in Comparative Perspective, *Research in Social Stratification and Mobility*, 8: 3-84.
- Goldthorpe J., 1985. On Economic Development and Social Mobility, *The British Journal of Sociology*, 36(4): 549-573.
- Goux D. and E. Maurin, 1997. Meritocracy and Social Heredity in France: Some Aspects and Trends, *European Sociological Review*, 13(2): 159-178.
- Grusky D. B. and R.M. Hauser, 1984. Gaps Comparative Social Mobility Revisited: Models of Convergence and Divergence in 16 Countries, *American Sociological Review*, 49(1): 19-38.
- Hiller V., 2005. Comparaisons de mobilité intergénérationnelle, rapport de stage ENSAE, mimeo, 52 pp.
- Huillery E., 2006. Colonisation and Development in the Former West Africa: the Long-Term Impact of the Colonial Public Policy, Working Paper DIAL, 2006/12.
- Kumar S., A. Heath and O. Heath, 2002a. Determinants of Social Mobility in India, *Economic and Political Weekly*, July 20.
- Kumar S., A. Heath and O. Heath, 2002b. Changing Patterns of Social Mobility, Some Trends Over Time, *Economic and Political Weekly*, October 5.
- Lam D., 1999. Generating Extreme Inequality: Schooling, Earnings and Intergenerational Transmission of Human Capital in South Africa and Brazil, Research Report, Population Studies Center, University of Michigan.
- Louw M., S. Van Der Berg and D. Yu, 2006. Educational Attainment and Intergenerational Social Mobility in South Africa, Stellenbosch Economic Working Paper 09/06.
- Maddison A., 2001. *The World Economy: Historical Statistics*, Paris: OECD Development Centre.
- Mitchell B.R., 2001, *International Historical Statistics, 1750-1993: Africa, Asia, Oceania*, Mac Millan Reference Ltd.
- Pasquier-Doumer L., 2004. Vers plus d'opportunités scolaires ? Evolution de la mobilité scolaire intergénérationnelle au Pérou depuis un siècle, *Revue d'Economie du Développement*, 2004/1 : 101-135.
- Pastore J., 1982. *Inequality and Social Mobility in Brazil*, Chicago: University of Wisconsin Press.

- Pastore J. and Valle Silva N., 2000. Mobilidade Social no Brasil, Makron, Sao Paulo.
- Picanço F., 2004. Economic Modernization and Socio-Occupational Mobility in Brazil, Communication at the International Sociological Association, RC28, 21 pp.
- Roubaud F., 2000. *Identités et transition démocratique : l'exception malgache ?* Paris : L'Harmattan et Antananarivo : Tsipika.
- Schultz T. P., 1999. Health and Schooling Investments in Africa, *Journal of Economic Perspectives*, 13(3), 67-88.
- Shepherd A. and E. Gyimah-Boadi, 2005. Bridging the north-south divide in Ghana? Background paper for the 2005 World Development Report, mimeo, World Bank, Washington DC.
- Tyree A., M. Semyonov and R.W. Hodge, 1979. Gaps and Glissandos: Inequality, Economic Development and Social Mobility in 24 countries, *American Sociological Review*, 44(3): 410-424.
- Wu X. and D. J. Treiman, 2006. Inequality and Equality Under Socialism: Occupational Mobility in Contemporary China, California Center for Population Research, On-Line Working Paper Series, CCPR-09-06.

Appendix 1: Description of the surveys used

The surveys used in this paper were based on the World Bank's methodology for the comprehensive LSMS surveys. They were conducted by the national statistics institutes with the assistance of this institution. They cover a wide range of subjects including education, health, housing, employment, migration, income and consumption. They constitute rare examples of this type of survey in Africa and include information on the parents of the respondents, giving rise to a measurement and analysis of intergenerational mobility.

Côte d'Ivoire

The data come from the four *Enquêtes Permanentes auprès des Ménages* (EPAM) conducted by the Côte d'Ivoire National Institute of Statistics (INS). The first survey (1985) was fielded from February 1985 to January 1986, the second (1986) was carried out from February 1986 to January 1987, the third (1987) was conducted from March 1987 to February 1988, and the fourth (1988) from May 1988 to April 1989. These four surveys were stacked to obtain a database of 3,964 households. As regards the first three years, half of the sample was again interviewed the following year in the form of a panel. We kept only the most recent information on the panel households, such that the final sample contains approximately 800 households observed in 1985, 800 in 1986, 800 in 1987 and 1,600 in 1988.

Ghana

The first wave of the *Ghana Living Standards Survey* (GLSS1) was conducted by the Ghana Statistical Service (GSS) from September 1987 to July 1988. The database obtained covers around 3,000 households. The third wave of the *Ghana Living Standards Survey* (GLSS3) was conducted by the Ghana Statistical Service (GSS) from September 1991 to September 1992. The database obtained covers around 4,500 households.

Guinea

The *Enquête Intégrale Budget et Consommation* (EIBC) was carried out by the Republic of Guinea's National Statistics Directorate (DNS) from January 1994 to February 1995. The database obtained comprises around 4,500 households.

Madagascar

The *Enquête Permanente auprès des Ménages* (EPM) was fielded by the National Institute of Statistics (INSTAT) from April 1993 to April 1994. The database obtained contains 4,500 households.

Uganda

The *Uganda National Integrated Household Survey* (IHS) was conducted by the Statistics Department of the Ministry of Finance and Economic Planning from March 1992 to March 1993. The database obtained covers around 9,800 households.

Appendix 2: Political regimes and economic development in the five countries

The Socialist experiences during the post-independence eras.

	1960	1970	1980	1990
Côte Ivoire (60)	Liberal (P)			
Ghana (57)	Social.(A) Lib.(P)	Military(A)	Military (P)	
Guinea (58)	Socialism (A)		Military (P)	
Madagascar(60)	Liberal (P)	Socialism (A)		
Uganda (62)	Socialism (A)	Military (A)	Instability	

Reading: Ivory Coast never experienced socialism. It only experienced (P=Pro-western) liberalism. Guinea experienced (A=Anti-western) socialism until the mid-eighties and the death of Sekou Toure. The number between parenthesis is the date of independence: Madagascar became independent in 1960.

Development indicators

	1985-88 Côte d'Ivoire	1988 Ghana	1994 Guinea	1993 Madagascar	1992 Uganda
Population	10	14	6	12	12
GDP per capita in international \$	1724*	1035	514	709	574
Gini index (income inequality)	0.56	0.46	0.59	0.53	0.49

Source: World Development Indicators 2006 for population; Maddison (2001) for GDP per capita in Purchasing Power Parity. Own estimates from surveys for the Gini index: see Cogneau et al. (2006).

*: 4 years average

Population density across time

	Inhabitants per sq km			Inhabitants per sq km of arable land	
	1921-25	1960	1990	1960	1990
Côte d'Ivoire	5.1 ^a	11.2	37.7	2.1	4.9
Ghana	10.1 ^b	30.6	67.7	4.1	5.7
Guinea	7.4 ^a	12.3	25.6	4.6	8.6
Madagascar	5.8 ^b	9.4	19.8	2.8	4.2
Uganda	14.6 ^b	36.4	85.5	2.3	3.4

Sources: a: in 1925; from French colonial archives (E. Huillery)

b: in 1921; from Mitchell, 2001

1950 and 2001: Maddison, 2001.

Appendix 3: Outflow tables of intergenerational occupational mobility

Côte d'Ivoire					Madagascar				
		Son's occupation					Son's occupation		
		Agricultural	Non-Agricultural				Agricultural	Non-Agricultural	
Father's occupation	Agricultural	2554	1205	3759	Father's occupation	Agricultural	2634	414	3048
		67.9	32.1	100.0			86.4	13.6	100.0
		96.4	73.5	87.6			93.9	47.6	82.9
Non-Agricultural		96	435	531	Non-Agricultural		172	456	628
		18.17	81.83	100			27.4	72.6	100.0
		3.64	26.5	12.38			6.1	52.4	17.1
Total		2650	1640	4290	Total		2806	870	3676
		61.8	38.2	100.0			76.3	23.7	100.0
		100.0	100.0	100.0			100.0	100.0	100.0

Ghana					Uganda				
		Son's occupation					Son's occupation		
		Agricultural	Non-Agricultural				Agricultural	Non-Agricultural	
Father's occupation	Agricultural	2845	1238	4083	Father's occupation	Agricultural	4247	1363	5609
		69.7	30.3	100.0			75.7	24.3	100.0
		86.0	55.9	73.9			87.4	62.2	79.6
Non-Agricultural		464	977	1441	Non-Agricultural		610	830	1440
		32.2	67.8	100.0			42.4	57.6	100.0
		14.0	44.1	26.1			12.6	37.9	20.4
Total		3309	2215	5524	Total		4857	2192	7049
		59.9	40.1	100.0			68.9	31.1	100.0
		100.0	100.0	100.0			100.0	100.0	100.0

Guinea				
		Son's occupation		
		Agricultural	Non-Agricultural	
Father's occupation	Agricultural	2352	897	3249
		72.4	27.6	100.0
		93.9	61.8	82.1
Non-Agricultural		153	554	707
		21.6	78.4	100.0
		6.1	38.2	17.9
Total		2505	1451	3956
		63.3	36.7	100.0
		100.0	100.0	100.0

Coverage: Men aged 20-69 born between 1930 and 1970, whose occupation is known (employed)

Appendix 4: Reconstructed tables of intragenerational occupational mobility

Côte d'Ivoire

		[20-30[=> [30-40[
		Father A		Father NA	
		A	NA	A	NA
A		99%	1%	100%	0%
NA		3%	97%	1%	99%

		[30-40[=> [40-50[
		Father A		Father NA	
		A	NA	A	NA
A		99%	1%	100%	0%
NA		1%	99%	0%	100%

		[40-50[=> [50-60[
		Father A		Father NA	
		A	NA	A	NA
A		100%	0%	100%	0%
NA		2%	98%	0%	100%

		[50-60[=> [60-70[
		Father A		Father NA	
		A	NA	A	NA
A		100%	0%	100%	0%
NA		16%	84%	0%	100%

Ghana

		[20-30[=> [30-40[
		Father A		Father NA	
		A	NA	A	NA
A		94%	6%	88%	13%
NA		26%	74%	11%	89%

		[30-40[=> [40-50[
		Father A		Father NA	
		A	NA	A	NA
A		97%	3%	94%	6%
NA		15%	85%	10%	90%

		[40-50[=> [50-60[
		Father A		Father NA	
		A	NA	A	NA
A		99%	2%	98%	2%
NA		14%	87%	8%	92%

		[50-60[=> [60-70[
		Father A		Father NA	
		A	NA	A	NA
A		99%	1%	100%	0%
NA		28%	72%	13%	87%

Guinea

		[20-30[=> [30-40[
		Father A		Father NA	
		A	NA	A	NA
A		92%	8%	40%	60%
NA		29%	71%	7%	93%

		[30-40[=> [40-50[
		Father A		Father NA	
		A	NA	A	NA
A		95%	5%	82%	18%
NA		19%	82%	4%	96%

		[40-50[=> [50-60[
		Father A		Father NA	
		A	NA	A	NA
A		99%	1%	97%	3%
NA		5%	95%	6%	94%

		[50-60[=> [60-70[
		Father A		Father NA	
		A	NA	A	NA
A		99%	1%	99%	2%
NA		14%	86%	0%	100%

Madagascar

		[20-30[=> [30-40[
		Father A		Father NA	
		A	NA	A	NA
A		96%	4%	78%	22%
NA		24%	76%	12%	88%

		[30-40[=> [40-50[
		Father A		Father NA	
		A	NA	A	NA
A		96%	4%	81%	19%
NA		18%	82%	5%	95%

		[40-50[=> [50-60[
		Father A		Father NA	
		A	NA	A	NA
A		98%	2%	85%	15%
NA		21%	79%	3%	97%

		[50-60[=> [60-70[
		Father A		Father NA	
		A	NA	A	NA
A		98%	2%	100%	0%
NA		47%	53%	22%	78%

Appendix 5: Matrices of intergenerational educational mobility

Côte d'Ivoire

	0	1	2	total
0	3032.07 62.65%	930.81 19.23%	876.53 18.11%	4839.42 100%
1	7.59 5.05%	33.79 22.46%	109.1 72.5%	150.49 100%
2	1.72 2.6%	8.56 12.95%	55.52 84.46%	66.09 100%
total	3041.39 60.15%	973.16 19.25%	1041.45 20.6%	5056 100%

Ghana

	0	1	2	total
0	2370 47.42%	486 9.72%	2142 42.86%	4998 100%
1	33 11.70%	21 7.45%	220 80.85%	244.52 100%
2	65 6.57%	60 6.06%	865 87.37%	244.52 100%
total	2468 39.36%	567 9.04%	3235 51.59%	6270 100%

Guinea

	0	1	2	total
0	4001.54 76.58%	477.79 9.14%	745.71 14.27%	5225.04 100%
1	23.35 17.67%	30.4 23%	78.41 59.33%	132.17 100%
2	18.67 9.03%	31.06 15.02%	157.05 75.95%	206.79 100%
total	4043.56 72.67%	539.26 9.69%	981.18 17.63%	5564 100%

Madagascar

	0	1	2	total
0	944.29 47.55%	893.4 44.98%	148.38 7.47%	1986.08 100%
1	162.92 9.71%	995.29 59.33%	519.41 30.96%	1677.62 100%
2	7.11 1.95%	71.44 19.56%	286.76 78.5%	365.31 100%
total	1114.31 27.66%	1960.13 48.65%	954.56 23.69%	4029 100%

Uganda

	0	1	2	total
0	1624.24 35.03%	2472.57 53.33%	539.67 11.64%	4636.48 100%
1	201.42 8.26%	1481.48 60.73%	756.53 31.01%	2439.43 100%
2	30.63 3.46%	306.78 34.66%	547.69 61.88%	244.52 100%
total	1856.28 23.32%	4260.83 53.52%	1843.88 23.16%	7961 100%

Rows: Father's education
Columns: Son's education

0: Did not attend school*

1: Attended primary school*

2: Attended secondary school*

Coverage: Men aged 20 and over whose father's occupation is known.

*: To be more precise, the last year successfully completed was at this level. In the case of Côte d'Ivoire, only the last qualification obtained is known for the fathers. We therefore had to code as 0 the fathers who had not passed the basic exam sat at the end of primary education, as 1 those who had passed it, as 2 those who had passed the school certificate at middle school, and 3 those with the *baccalauréat* or a higher qualification. Technical qualifications were coded as 2. This classification underestimates the level of education of fathers from Côte d'Ivoire compared with the other countries and also compared with their sons.

Appendix 6: Secondary occupations

Côte d'Ivoire

	Secondary occupation		
	Farm	Non-Farm	No sec.
Farm	3.1	8.3	88.6
Non-Farm	10.8	1.6	87.6

Ghana

	Secondary occupation		
	Farm	Non-Farm	No sec.
Farm	3.4	22.6	74.0
Non-Farm	40.3	5.3	54.4

Guinea

	Secondary occupation		
	Farm	Non-Farm	No sec.
Farm	11.9	23.5	64.6
Non-Farm	12.0	7.1	80.9

Madagascar

	Secondary occupation		
	Farm	Non-Farm	No sec.
Farm	45.2	16.8	38.0
Non-Farm	35.9	10.9	53.2

Uganda

	Secondary occupation		
	Farm	Non-Farm	No sec.
Farm	18.9	19.2	61.9
Non-Farm	36.6	7.1	56.3

Coverage: Men aged 20-69 born between 1930 and 1970 whose occupation is known (employed)

Reading: Main occupation in rows; % having a farm or non farm secondary occupation.