Income Inequality in Côte d'Ivoire from 1985 to 2014

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18 décembre 2017

Highlights

Regarding Côte d'Ivoire :

- We had access to fiscal data for 2014. (first time for West Africa)
- Using this data we show that the 2014-2015 survey underestimate top incomes.
- Extrapolating underestimation bias to previous years we show that income inequality in Côte d'Ivoire since the 1980s is comparable to that of the US.

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Research on income inequality in Sub-Saharan Africa is still in its infancy :

- often poor macro data
- very little fiscal data
- most of what we know is about consumption, computed from survey data only.
- measurement issues in surveys is still a serious concern.

Survey and Fiscal Data

Fiscal data :

- Access to tabulations for 2014 **wages**.
- Likely to be more reliable
- 2 sectors : **Public** and **Formal Private Sector**.
- 180 669 + 180 503 = **4 %** of adults (>20 y.o).

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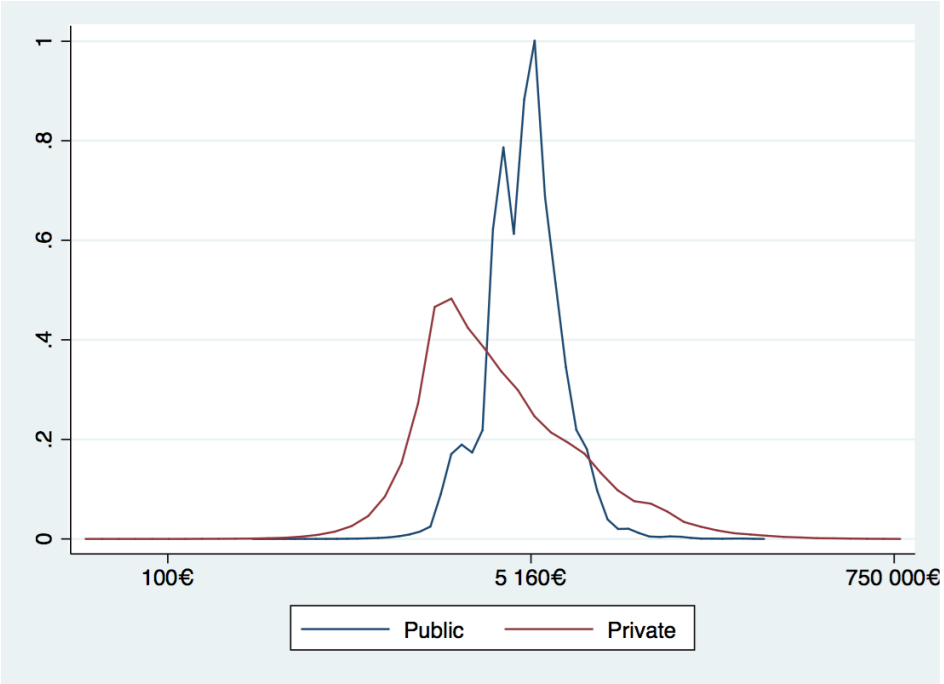
Survey data :

- 2014-2015 household survey
- Information about all income (and expenditure) components for a **nationally representative sample**.

How to combine both sources ?

2014 Fiscal Data



- the public sector is much much less unequal than the private sector. Gini : 0.272 VS 0.64.
- The top 0.3 % wages from the private sector are above the French top 1 % wage threshold.

Côte d'Ivoire in 2014, a (survey) picture

We identify the **Formal Sector within working population of the survey**

Table: Formal/Informal percentage by percentile groups

		Top 1	Top 10	Mid 40	Bot 50	Total
Formal	Public	14	23	1	0	3
	Private	27	13	4	0	3
Informal	Wage Earners	20	20	25	12	18
	Self-Employed	16	21	31	28	28
	Agriculture	20	18	30	44	36
	Domestics	0	1	2.5	11	6.3
	Others	2	4	6.5	5	5.7

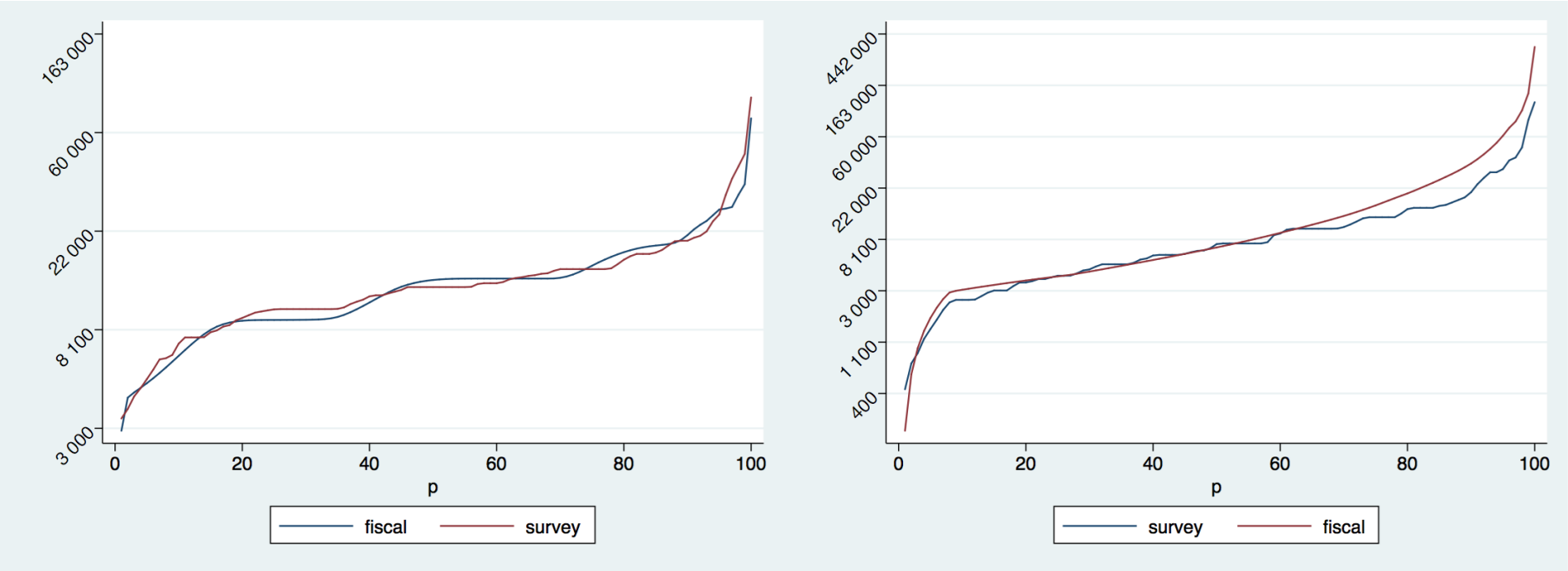
The Formal sector represent 6 % of the individuals with a main activity.

It is almost entirely concentrated at the top.

Still >50 % of the top comes from the informal sector.

Comparing Fiscal and Survey in 2014

Both are well captured w.r.t population size.



(a) Public

(b) Private

Public = well captured.

Private = underestimated top from 9,833 $2011 PPP.

3,300 wages from the fiscal source are above the maximum survey wage

Sources of difference ?

2 explanations :

1. Under-reporting
2. Missing rich
   - Higher non-response rates among the richest
   - Under-sampling

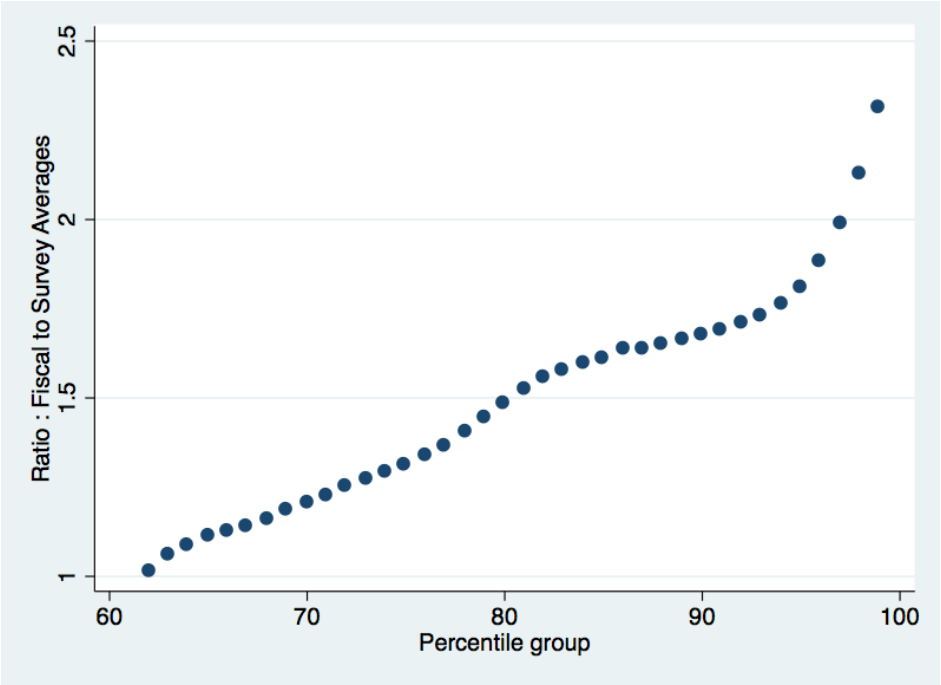
Evidence of sampling bias : no French, no Libanese in the 2014-2015 survey data set (issues also in former surveys see Guénard et al, 2010)

French expatriates could represent about 35 % of individuals earning more than the maximum wage in the survey.

Syro-Libanese ? Little information. SwissLeaks scandal : 2/3 of the 382 Ivorian Bank accounts belonged to Syro-Lebanese (average of €412,000 (in 2014 €) per account)

Extract Under-estimation biases

We extract ratios of fiscal to survey averages by percentile within the formal private sector capturing under-estimation for a given interval.



Lowest threshold : 9,833 $2011 PPP, i.e 3.2 times the overall mean income and 14 times the $1.9/day absolute poverty line.

3 correction steps toward national income inequality

We then use **correction coefficients** to :

Step 1 : adjust **wages** from the **formal private sector**.
Hypothesis : fiscal data is more reliable.

Step 2 : adjust **earnings** from main activity in the **informal sector**.
Hypothesis : non-response and under-reporting biases are the same in the formal private sector and the informal sector.

Step 3 : adjust **other income components** for all.
Hypothesis : non-response and under-reporting bias are the same for earnings from the main activity as for other income components (secondary activities, rents, dividends etc ...).

Results for 2014 - step by step

Table: Inequality Statistics Before and After Correction - hh Income per Adult

	Gini	*Top 1 %*	*Top 10 %*	*Middle 40 %*	*Bottom 50 %*	*Pct. Increase of the mean*
(0)	0.530	11.6	40.8	43.3	15.8	–
(1)	0.543	13.6	42.5	42.2	15.3	4
(2)	0.582	16.6	47.5	38.7	13.8	15
(3)	0.591	17.1	48.7	37.8	13.5	17

After all correction, top 1 % and top 10 % increase by 5.5 and 8 percentage points. Gini increase by 6 points.

Largest increase happens at step 2.

Only households from the top 17 % are significantly affected by the correction.

What about the years before ?

No fiscal data. But 8 other surveys.

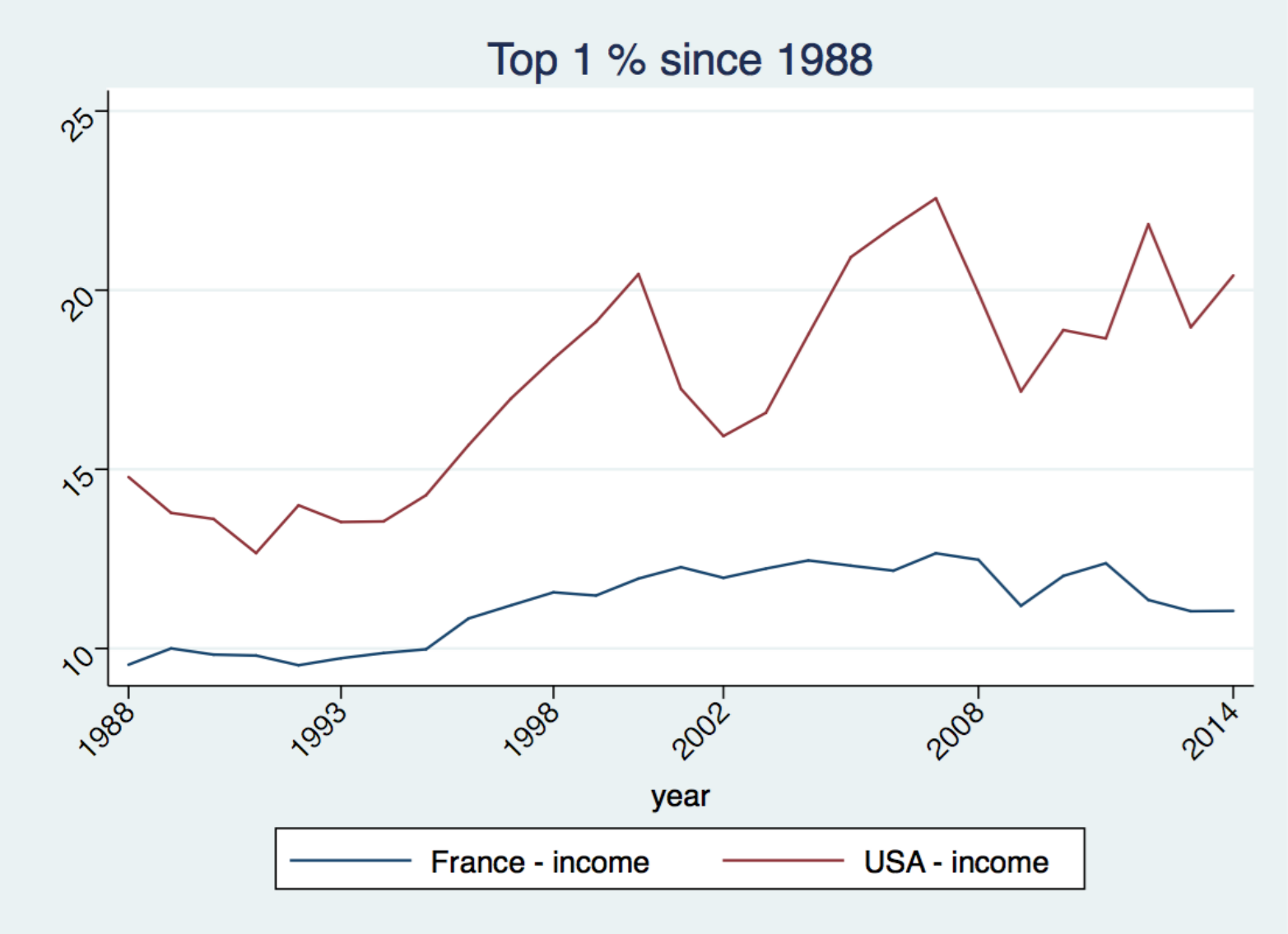
First step : compute income distribution for the previous years.

- go back to the raw data to make surveys as comparable as possible, in spite of differences in questionnaires.
- serious measurement issues for the early years 1985-1987. We discard them.

Second step : adjust top incomes by extrapolating the correction in 2014 to former studies, by percentile.

- Increases averages within the top 17%.
- Induces no change in trends.

Comparison with France and the US



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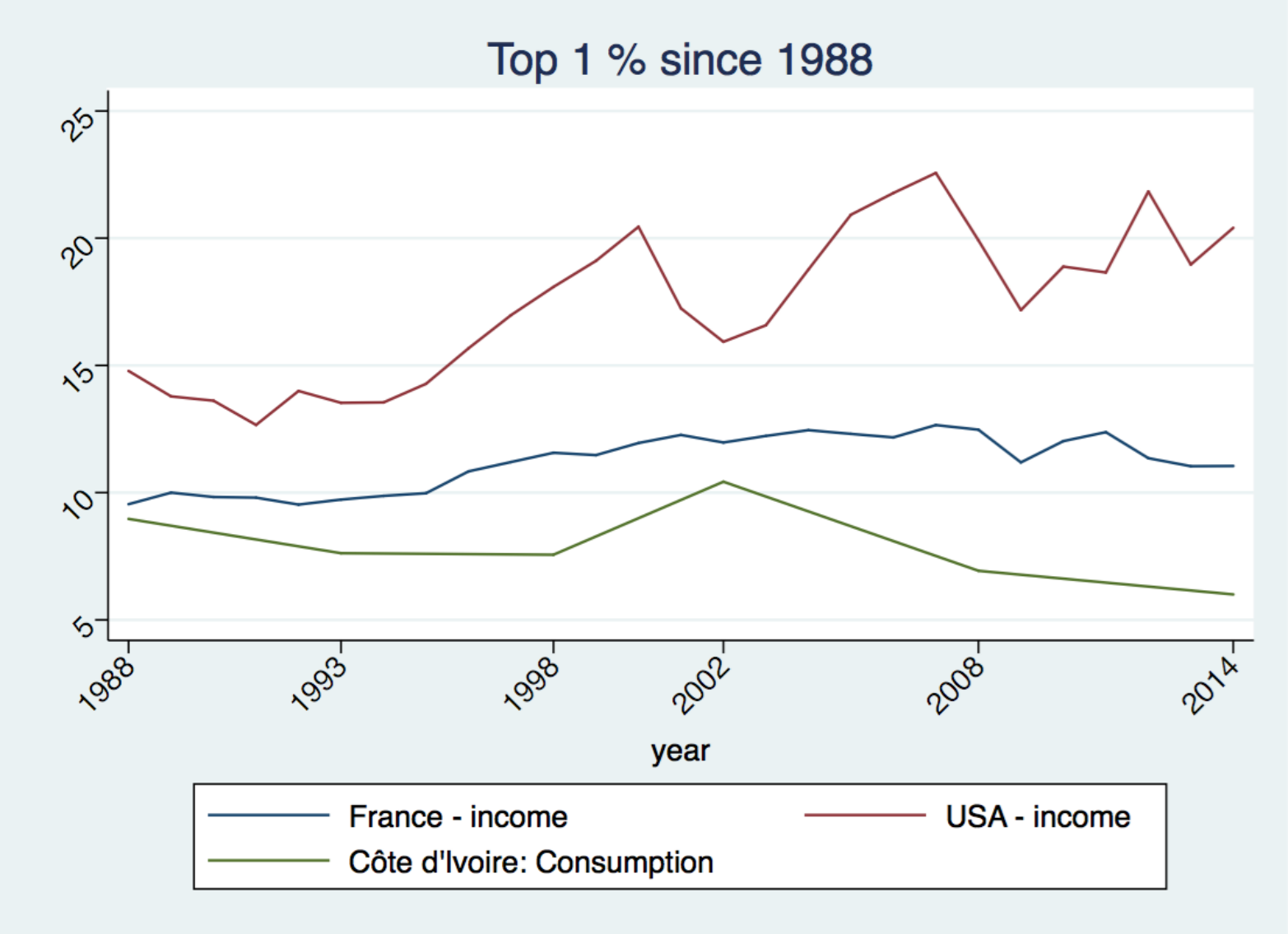

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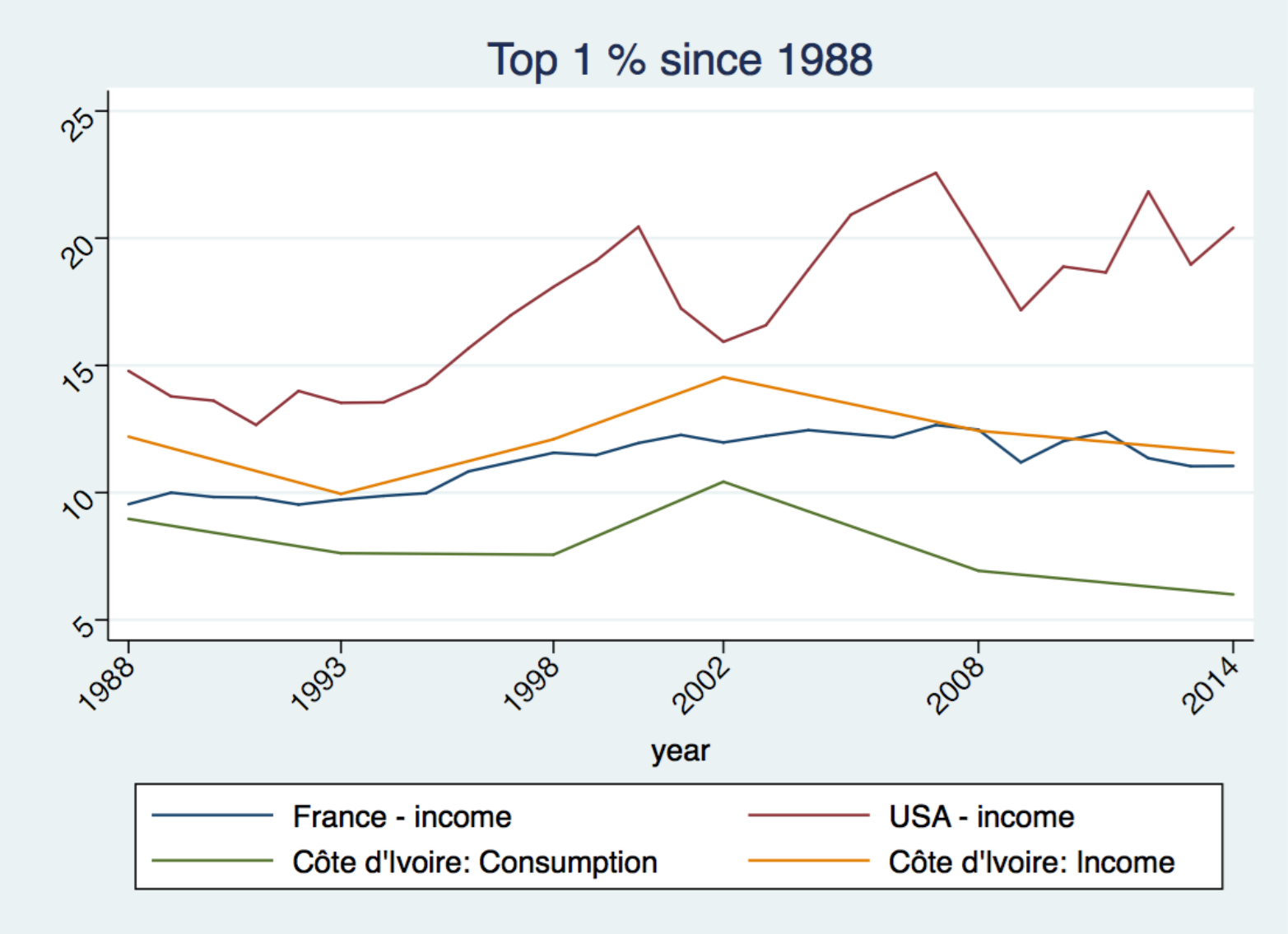

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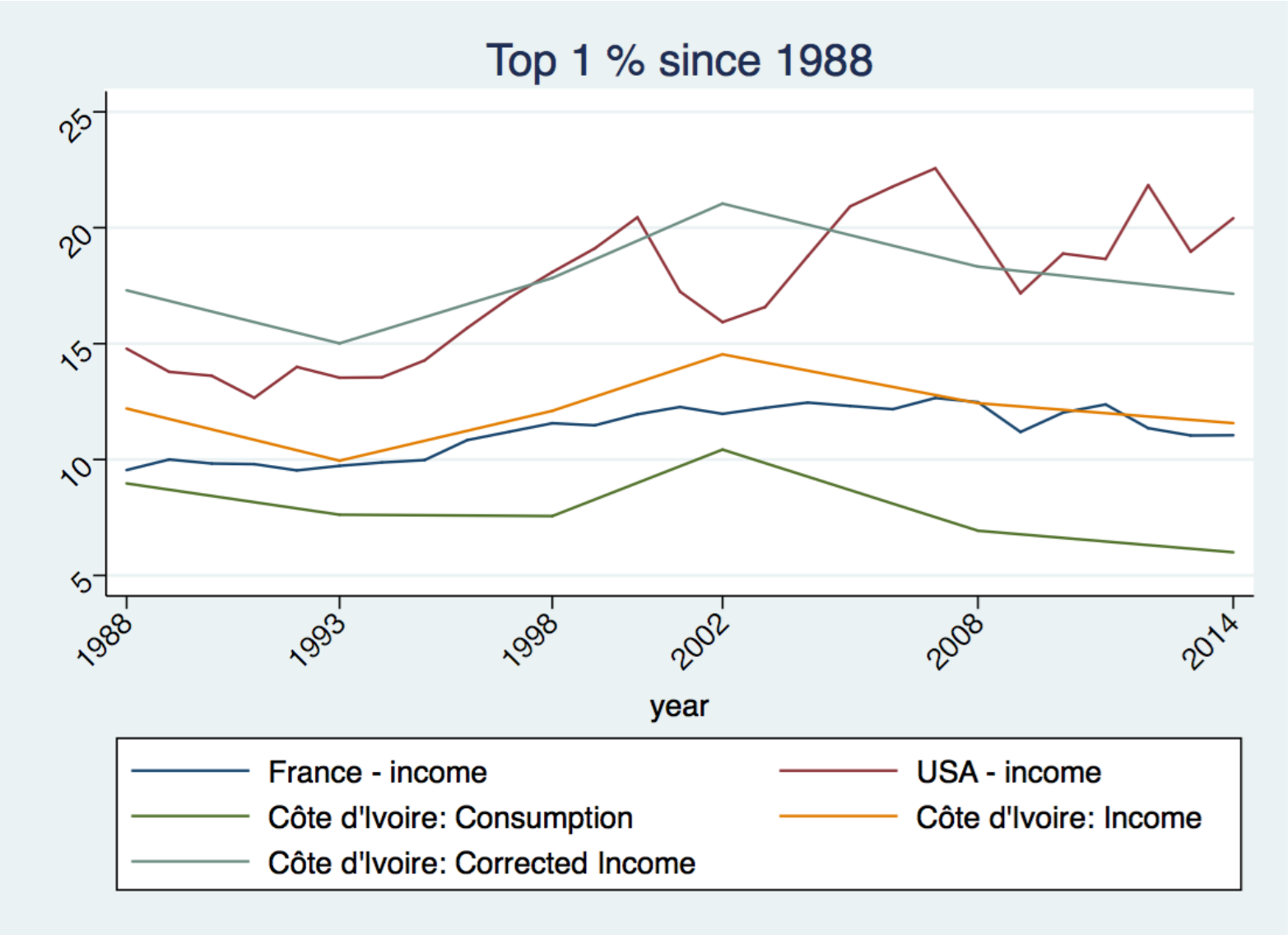

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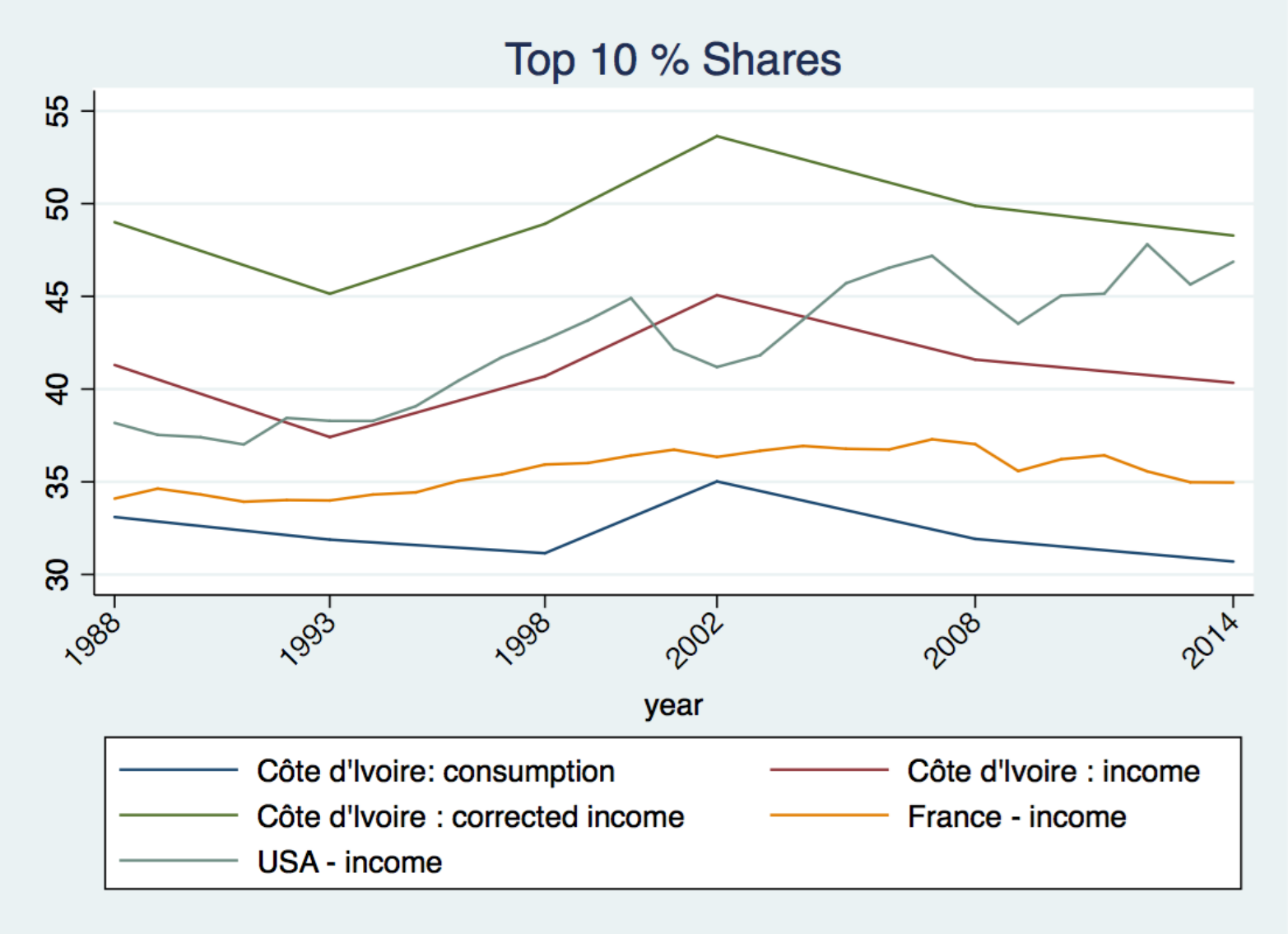

Inequality in Sub-Saharan Africa : Where are we now ?

Our current knowledge on inequality in SSA is based on consumption.

Access to fiscal data is key to measure income inequality and its evolution.

Fiscal data :

- Long-run series until recent years : 2 countries (South Africa and Mauritius).
- Historical series : 9 countries (Zimbabwe, Zambia, Malawi, Tanzania, Kenya, Uganda, Seychelles, Ghana, Nigeria).
- Some recent years : Côte d'Ivoire. To come : Senegal (4-5 years). Others ?

For the rest : survey data only.

Since in 1980 : only 27 countries at least 2 comparable surveys.

Measuring issue 1 : Consumption VS Income

Why income is systematically more unequal than consumption ?

Consumption is smoothed.

Richer individuals save, while poorest one borrow or use previous savings ?
Not sufficient.

Measuring issues :

- Tendency to exaggerate expenditure and understate income.
- As it is smoothed, it may also be easier to remember.
- Self-employed individuals mix personal and business income. Which direction for the bias ?

More research is needed here

Measuring issue 2 : data quality (1/2)

"The code that generates the income figures is many hundreds of line long, and embodies many difficult decisions, both about conceptual matter, and about likely measurement errors." Deaton (1992) writing about ... Côte d'Ivoire !

2014's examples of "hard" decisions :

- 2 sources to take agriculture income from. Which one to take ?
- How to annualize the different income components ?
- What shall we do with missing values ?
- How to identify and correct outliers ?
- What about anomalies like extremely large gaps between income and consumption ?
- What about inconsistencies like "unpaid apprentices" who, actually, are paid ?
- etc ...

Measuring issue 2 : data quality (2/2)

Example from UN-WIID : same data & same concept == different results (24 cases, +/-3 gini points or +/-5% p.p in Top 10 %).

With that many measurement questions, open access for computer codes is not a trivial issue.

- clarifies all underlying assumptions
- disincentivizes cherry-picking
- safer against errors
- saves a lot of time