

Employment Vulnerability and Earnings in Urban West Africa

Philippe Bocquier
University of the Witwatersrand, Johannesburg

Christophe J. Nordman
IRD, DIAL, Paris
nordman@dial.prd.fr

Aude Vescovo
IRD, CERA-AFRISTAT, Bamako
aude.vescovo@afriostat.org

Motivations (1)

- It is now recognised that job insecurity is a major concern among poor workers and that job instability is a leading cause and expression of poverty (World Bank, 2000), mainly present in the ‘informal sector’ of developing countries.
- The 1993 System of National Accounts (SNA93, United Nations) defines the informal sector at the firm level based on statistical or tax registration criteria and keeping written accounts.
- Yet this distinction serves no purpose when it comes to capturing individuals’ working conditions. So the concept of ‘informal workers’ emerged.
- Rather than ‘informal workers’, we focus here on a broader concept, ‘employment vulnerability’, measuring how hard it is for individuals to manage the risks or cope with the losses and costs associated with the occurrence of risky situations related to their job.
 - Definition close to the ‘fuzzy and relative’ notion of vulnerability - or exposure to the risk of poverty - of Cheli et Lemni (1995) and Qizilbash (2006).

Motivations (2)

Research question: what is the link between employment vulnerability and individual earnings?

- Adam Smith (1776) already identified five circumstances to explain why it is not the wage that is the balancing factor among different jobs on a competitive market (“perfect liberty”), but the “*whole of the advantages and disadvantages*” of a job:

*“The five following are the principal circumstances which, so far as I have been able to observe, make up for a small pecuniary gain in some employments, and counter-balance a great one in others: first, the **agreeableness or disagreeableness of the employments themselves**; second, the **easiness and cheapness, or the difficulty and expense of learning them**; third, the **constancy or inconstancy of employment in them**; fourth, the **small or great trust which must be reposed in those who exercise them**; and fifthly, the **probability or improbability of success in them.**” (Book I, Chap. X, part I)*

Motivations (3)

- In the 90s, the theory of compensating differentials (Brown, 1980; Rosen, 1986; Murphy and Topel, 1987) formalized the possibility that workers may receive pecuniary compensation commensurate with the strenuous or hazardous nature of their tasks or adverse working conditions.
- In developed countries for example, it has been observed that physically hazardous and highly strenuous jobs are often better paid than jobs that don't have these characteristics (Poggi, 2007; Fernandez and Nordman, 2009).
- **Working assumption in this paper:** workers classified as vulnerable may be better paid than more stable, steady workers classified as less vulnerable.
- While it has been revealed in some developed countries (with no great deal of evidence though), is this evidence still relevant in the African case?

Maybe: if the medium- or long-run advantage associated with stable jobs is not valued by households force into short-term income management:

- for some workers, higher and immediate earnings from vulnerable jobs may be better than stable earnings from non-vulnerable jobs

Motivations (4)

What we do in this paper:

- We build employment vulnerability indicators and study their links with earned income of workers in **seven economic capitals of West Africa**.
- We follow **three approaches**:
 - **Quantitative analysis**: Does the effect of vulnerability on earnings vary depending on its intensity?
 - **Distributional analysis**: Do any compensating mechanisms differ along the earnings distribution?
 - There are reasons to believe that bargaining power and labour market imbalances may explain (affect) the existence (extent) of compensating mechanism, and these are likely to vary along the earnings distribution (Fernandez and Nordman, 2009).
 - **Qualitative analysis**: What are the different aspects of vulnerability and which ones may be compensated for by earnings?

The data

- Data from Phase 1 of the *1-2-3 Surveys* in West Africa in Niamey, Ouagadougou, Dakar, Bamako, Cotonou, Lomé and Abidjan (PARSTAT project 2001-2003).
- The data base is made of 93 000 observations gathering about 70 000 working age individuals. It includes individual earnings and information on working conditions in the main and secondary employment.

Selection of the sample:

- Working-age individuals of 15 years old and over, with at least 5 years of potential experience in the labour market.
- We restrict the sample to the private sector (formal and informal).
 - Global sample (seven cities): 50 772 individuals including 32 314 active individuals.

Measuring employment vulnerability (1)

- We construct a composite index of vulnerability composed of 9 dichotomous variables:
 - i. Contractual insecurity:** informal nature of the contract, i.e. no contract OR no payslip (variable not defined for independent workers).
 - ii. Independent with no employees,** wage-earning or otherwise.
 - iii. Adverse working conditions:** workplace or premises not dedicated to the job (itinerant, worked from a makeshift or fixed street pitch, at the customer's home or from the individual's own home without having a dedicated set-up for the job).
 - iv. Casual labour:** the individual is a piece-rate, day or seasonal worker.
 - v. Unstable remuneration:** dependent worker is not paid a fixed wage or independent worker is not paid in the form of a fixed wage or profits (i.e. if she is paid by the day, hour, piece rate, commission, in kind or is not paid at all).

Measuring employment vulnerability(2)

- vi. **Visible underemployment:** individual works less than the statutory working week (35h) when he would like to work more.
- vii. **Exerting a secondary vulnerable job** (i.e. outside the public sector, in a place or premises not dedicated to this job and in a firm of less than five people, and if the number of cumulative hours worked in the two jobs is 70 hours or more a week).
- viii. **Instability in employment:** change of job without occupational improvement or with a drop in status in the last five years.
- ix. **Unwanted job:** job with which the worker is dissatisfied and which she has taken on following an involuntary departure from the previous job (may indicate a subsistence job).
- We then define an **Intensity variable of vulnerability (I):** for each employment status (dependent or independent), it is the sum of the eight previously defined criteria applicable to this status.

Descriptive statistics

Distribution of vulnerability in all seven cities

Vulnerable: meets at least one of the vulnerability criteria		Formal private sector	Informal private sector	Total private sector
	Independent	0.42	0.87	0.86
	Dependent	0.62	0.98	0.82
	All	0.60	0.90	0.85

Source: 1-2-3 Surveys, authors' calculations on the weighted data.

Distribution of vulnerability in all seven cities

Vulnerable: meets at least one of the vulnerability criteria		Formal private sector	Informal private sector	Total private sector
	Independent	0.42	0.87	0.86
	Dependent	0.62	0.98	0.82
	All	0.60	0.90	0.85

- **85% of the private sector workers in all the economic capitals are vulnerable** on the basis of at least one criterion.
- 50% of the dependent workers in the formal private sector do not have written contracts or payslip and 23% do not receive a fixed wage.
 - This implies that the distinction between formal and informal firms is not enough to analyse workers' living and working conditions.
- The main sources of vulnerability among independent workers in the informal sector: adverse working conditions (59%) and own-account employment (68%).

**Chart 1a: Average income by vulnerability intensity
(Formal private sector)**

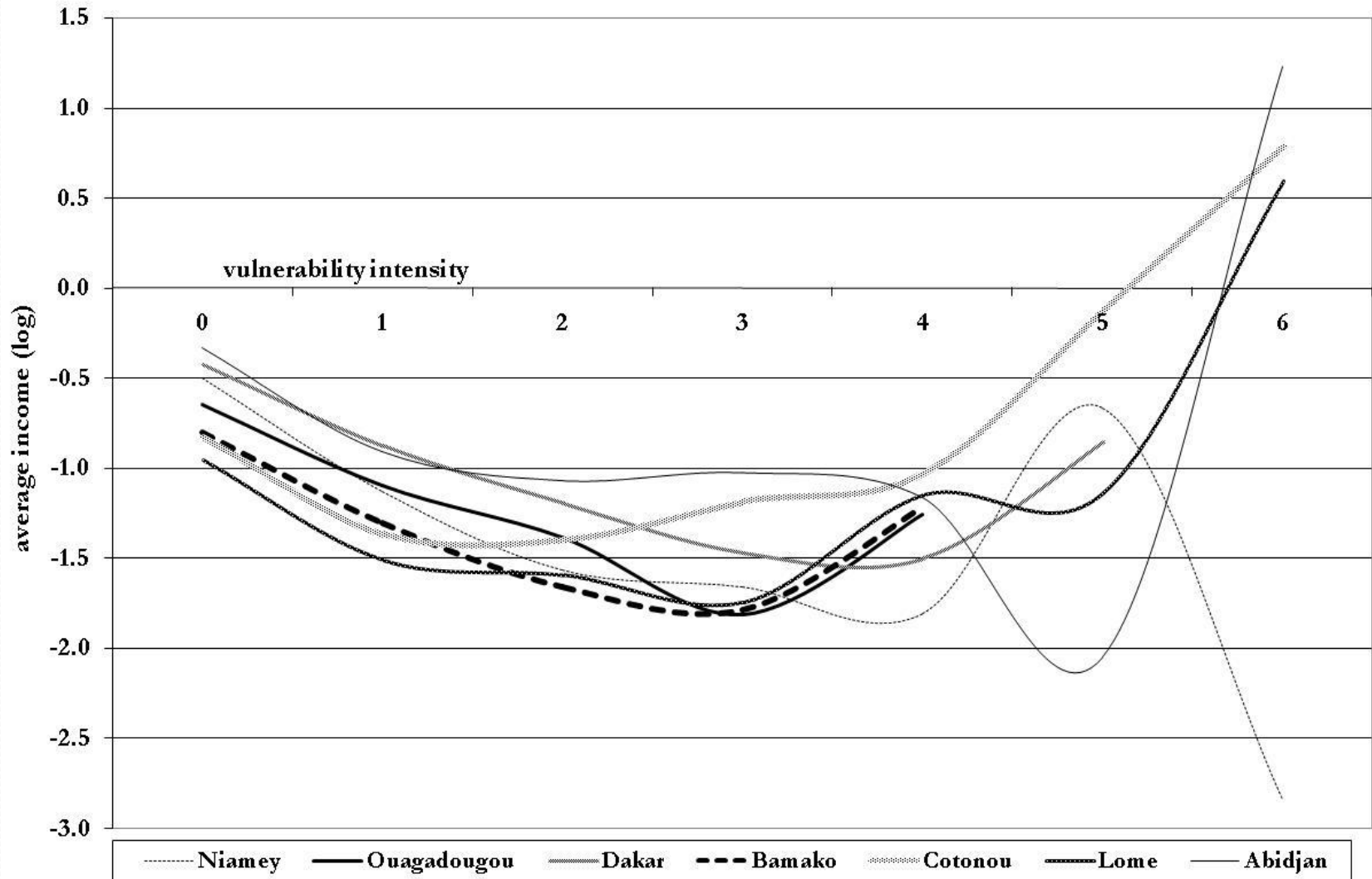
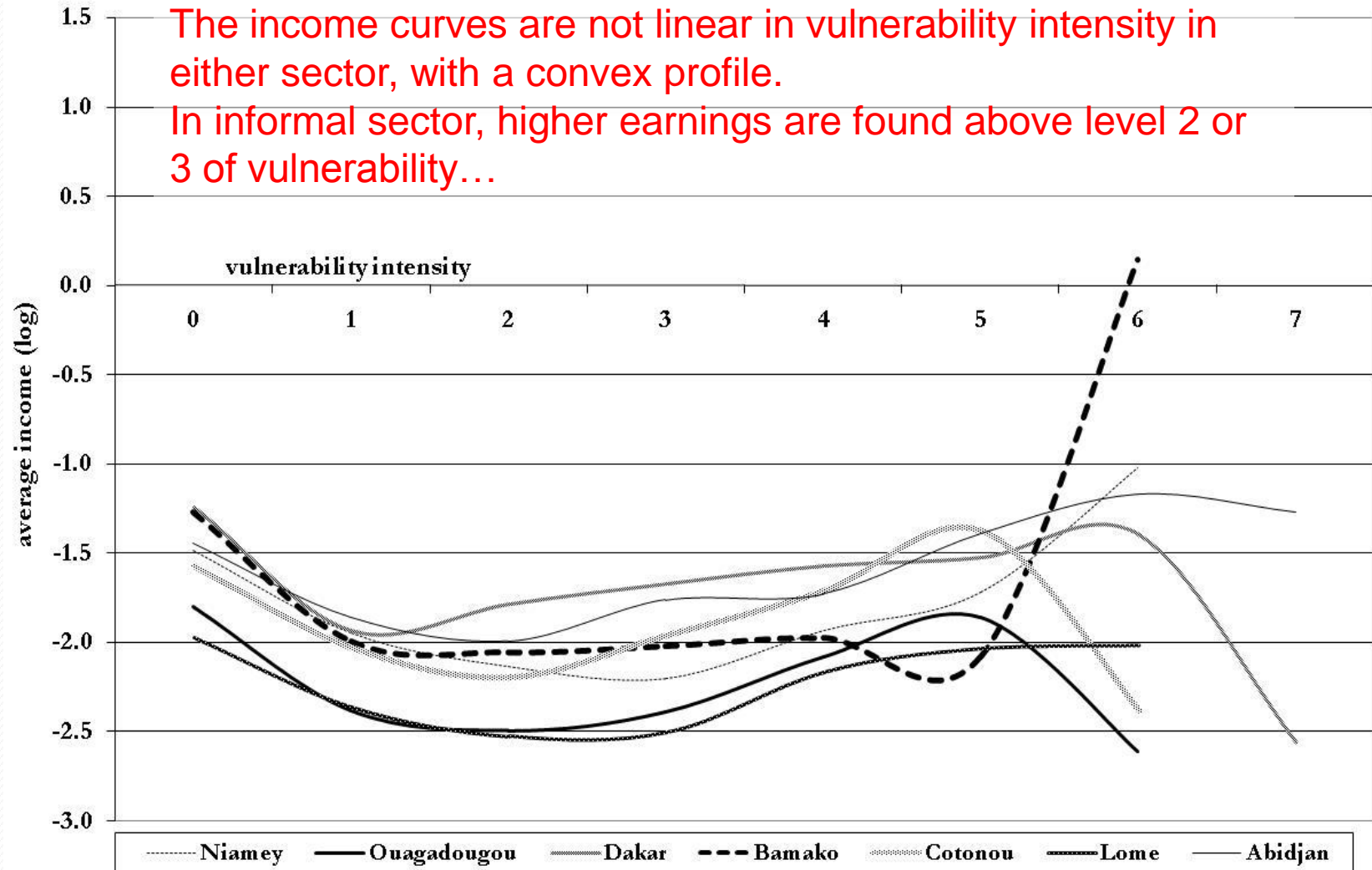


Chart 1b: Average income by vulnerability intensity
(Informal sector)



Econometric methods (1)

Quantitative approach

- We regress the log hourly earnings (from principal employment) on intensity of vulnerability (I) in a quadratic form:

$$Y_h = \beta_h X + \varphi_{1h} I + \varphi_{2h} I^2 + \varepsilon_h$$

with h =formal, informal

- *Potential econometric problems?*
 - Selection at labour market entry and sector choices: we use Lee method, generalisation of Heckman's correction for several modalities (identifying variables: dependency ratio, father's schooling, dummy household head).
 - Vulnerability being endogenous in earnings equations (unobservables affecting both vulnerability and earnings): use of control function method (Wooldridge, 2002) with the head of the household's and father's occupation as instruments.

Econometric methods (2)

Distributive approach

We allow the impact of vulnerability on earnings to differ along the conditional earnings distribution using quantile regressions.

Problem: The use of a cumulative index of vulnerability intensity assumes that all the criteria involved in vulnerability have the same weight.

Approche qualitative

Is income influenced by the number of vulnerability criteria satisfied or the existence of one given vulnerability criterion?

- We thus perform a principal component analysis (PCA) of the vulnerability criteria separately for dependent and independent workers. For each status, we retain the 4 principal axes summarising most of the statistical information.
- The 8 axes are then introduced into the earnings equations.

Results (1): quantitative approach

	Niamey	Ouagadougou	Dakar	Bamako	Cotonou	Lome	Abidjan
Marginal effect at the average vulnerability point in the formal private sector							
Selection correction, endogenous vulnerability	-23.0%	-22.5%	-33.5%	-37.3%	-15.5%	-24.8%	-24.2%
Observations	409	336	950	452	509	302	825
Average intensity of vulnerability (o to 8)	1.325	1.077	1.024	0.858	0.967	1.199	1.035
Marginal effect at the average vulnerability point in the informal sector							
Selection correction, endogenous vulnerability	-9.7%	-15.6%	1.0%	-17.2%	-3.4%	-13.1%	-19.9%
Observations	2,230	2,745	3,492	2,906	3,236	2,857	2,842
Average intensity of vulnerability (o to 8)	2.229	1.787	1.959	1.801	1.757	1.960	1.661

The marginal effects at the average level of vulnerability show no compensating payments in all cities and sectors, with the exception of the informal sector in Dakar.

In all cases, the impact of vulnerability has a convex profile (coefficient of $I^2 > 0$ and significant).

Chart 2a: Average predicted income by vulnerability intensity
(formal private sector)

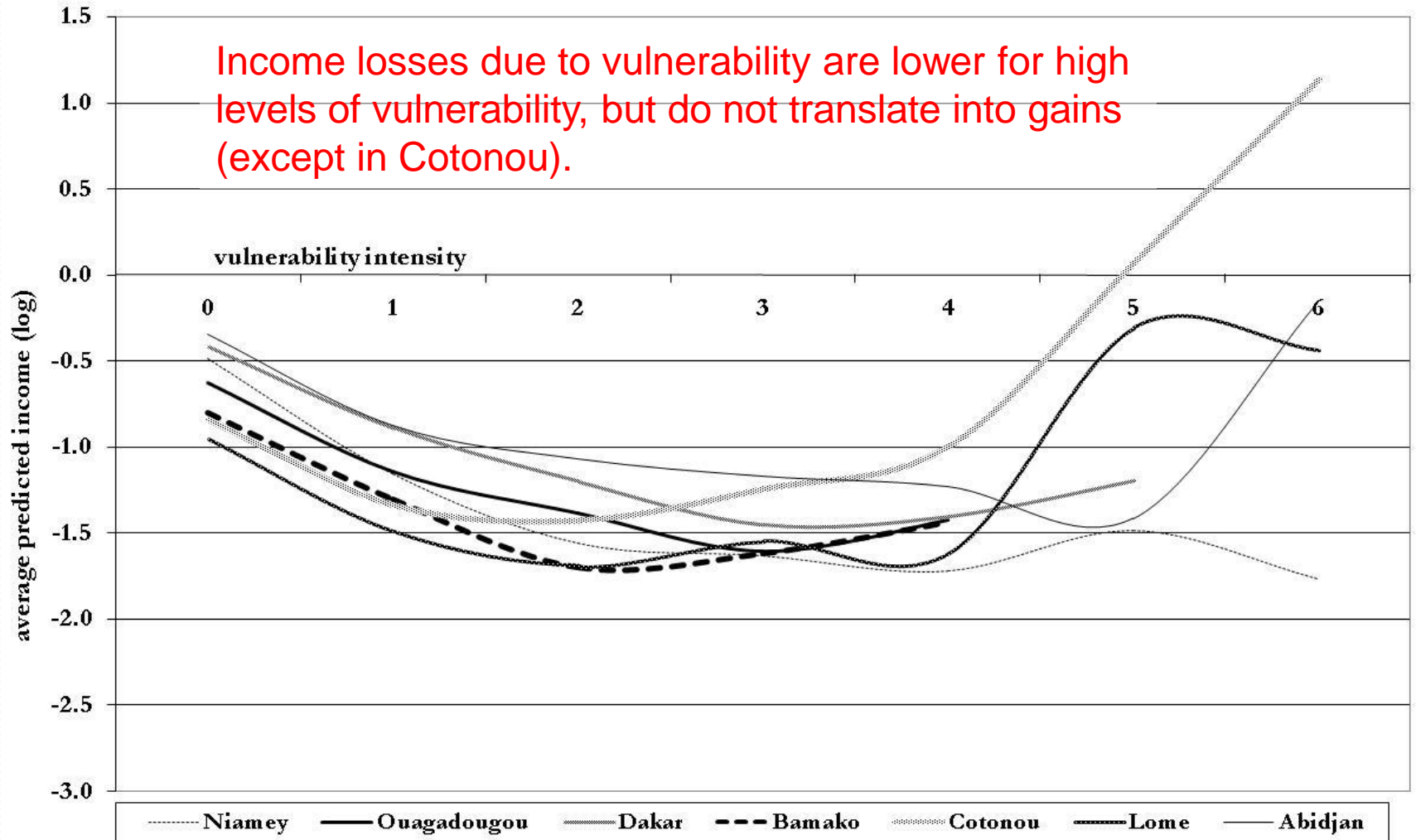
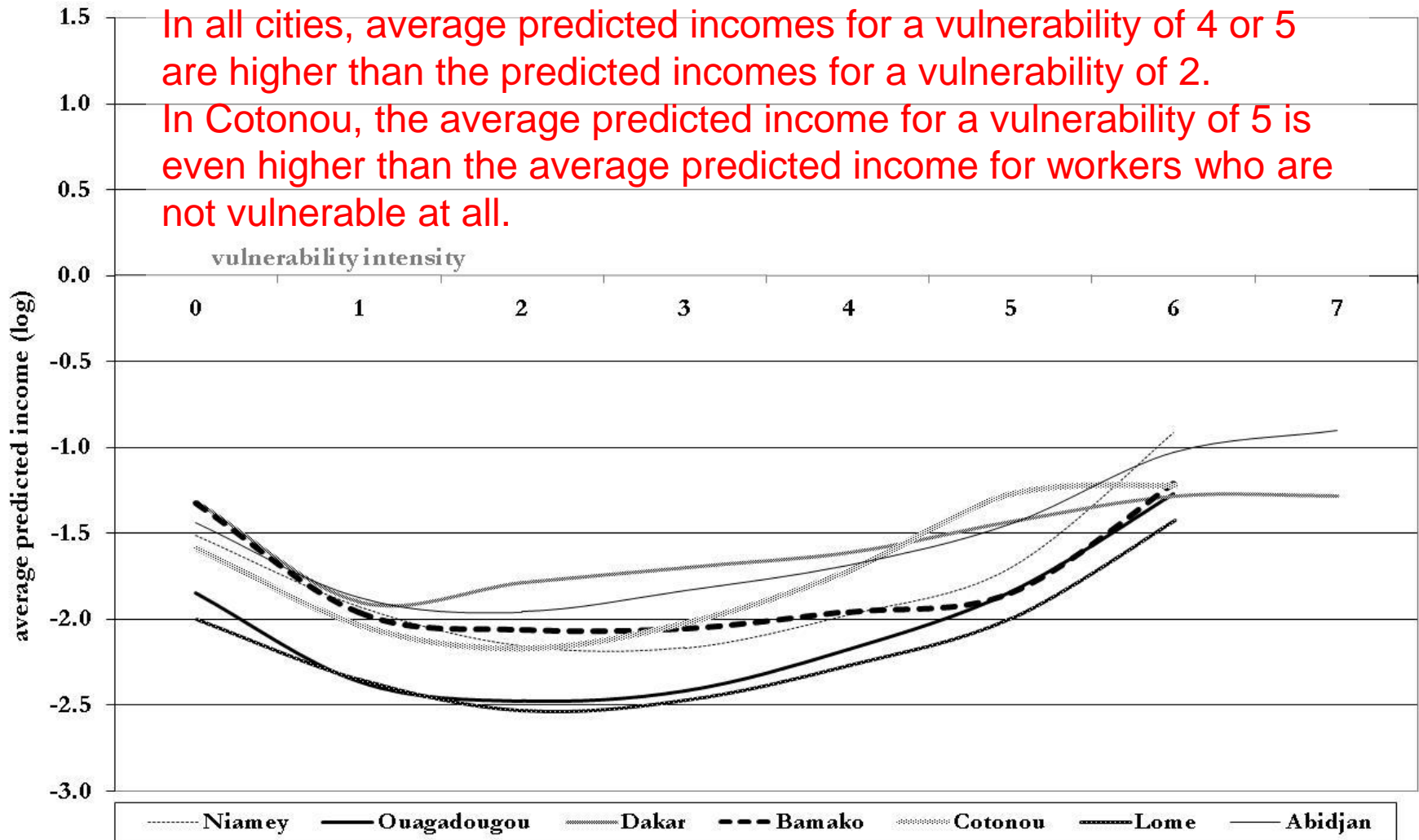


Chart 2b: Average predicted income by vulnerability intensity (informal private sector)



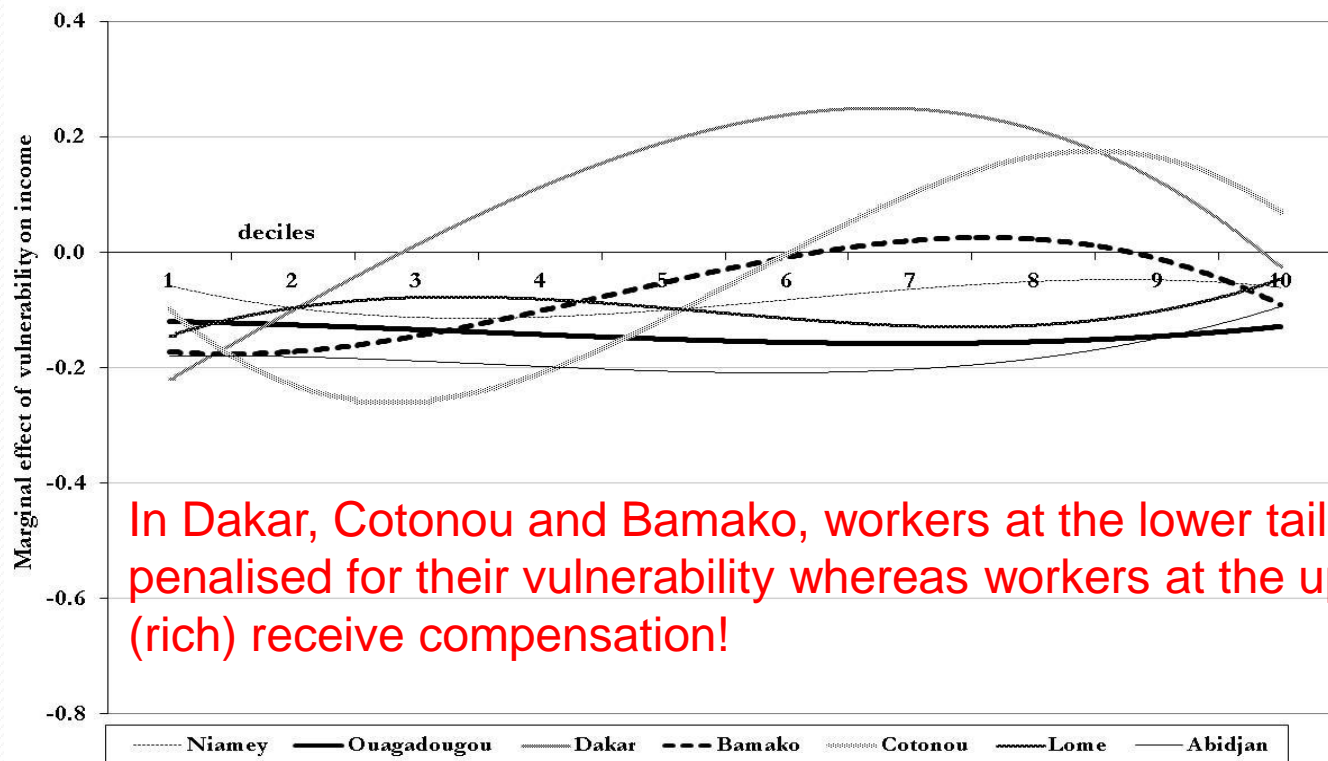
Results (1): quantitative approach

Summary of results

- *Private formal sector*: vulnerability-earnings profiles are convex in all cities, but decreasing.
 - Earnings losses due to vulnerability diminish for high levels of vulnerability, but do not translate into gains.
- *Informal sector*: also convexity for all cities. The earnings curves even present an increasing profile above a level of vulnerability equal to 2
 - Assumption of compensating earnings is not rejected
- **vulnerability ≤ 2 : imposed to all workers, common characteristic of the job markets in these cities.**
- **vulnérabilité > 2 : compensated by greater earnings**

Results (2): distributive approach

- *Formal sector*: marginal effect of vulnerability at the average point is negative along the conditional earnings distribution: at the average point, no compensation
- *Informal sector* of Dakar, Cotonou and Bamako: marginal effect has an increasing profile, in most cases concave effect along the distribution.



Results (3): qualitative approach

Interpretation of the PCA	Private formal	Informal
Axis 1 - Dependent workers: Contractual insecurity, casual employment and adverse working conditions	Marginal effect is negative	Marginal effect is negative except in Bamako
Axis 2 - Dependent workers: Subsistence job	Marginal effect is negative in Niamey, Bamako, Abidjan	No significant impact
Axis 3 - Dependent workers: Underemployment	Marginal effect is positive except in Dakar	Marginal effect is positive
Axis 4 - Dependent workers: Working a second highly vulnerable job	No significant impact	Marginal effect is negative in Cotonou
Axis 1 - Independent workers: Subsistence job		No clear impact
Axis 2 - Independent workers: Underemployment		Marginal effect is positive
Axis 3 - Independent workers: No employees and adverse working conditions		Marginal effect is negative except in Dakar
Axis 4 - Independent workers: Working a second highly vulnerable job		Marginal effect is negative except in Ouaga

Results (3): qualitative approach

Summary of results

The different aspects of vulnerability have differentiated effects on earnings:

- Subsistence jobs tend to have a negative effect, though rarely significant;
- Working a second vulnerable job would be a sign of main job vulnerability in the informal sector, a way of diversifying excessive risks;
- No compensation for contractual insecurity among dependent workers and for itinerant and solitary independent workers;
- Visible underemployment is compensated for both dependent and independent workers:
 - Employees may bargain to obtain a minimum living wage even if this is supposed to be earned from a greater number of hours than those actually worked;
 - Independent workers may work less hours than the statutory working week simply because their hourly wage is higher (or just bill their services regardless of the number of hours worked).

Conclusion (1)

- For an overwhelming majority of workers, the studied West African urban labour markets impose a minimum level of employment vulnerability.
- The quantitative analysis finds that the impact of vulnerability on earnings is generally negative for an average level of vulnerability.
- However, depending on the sector, compensating mechanisms are revealed:
 - In the *formal private sector*, income losses due to vulnerability are lower for high levels of vulnerability, but do not translate into gains;
 - In the *informal sector*, the average predicted income for high vulnerability is higher than the average predicted income for relatively low vulnerability.
- This compensating mechanism concerns a non-negligible share of workers.
- However, imposed “minimum” vulnerability is not compensated for since it is common to nearly all workers: it is an inherent characteristic of the job markets in these cities.

Conclusion (2)

- The effect of vulnerability also varies along the earnings distribution, in particular in the informal sector:
 - For average levels of vulnerability, compensating differentials are found for earnings at the upper tail of the distribution;
 - The compensating mechanism does not concern the poorest workers, perhaps because of less bargaining power or labour market imbalances (supply exceeds demand in the lower tail).
- The different aspects of vulnerability have differentiated effects on earnings with visible underemployment being the only aspect to be compensated for:
 - Employees may bargain to obtain a minimum living wage even if this is supposed to be earned from a greater number of hours than those actually worked;
 - Independent workers may work less hours than the statutory working week simply because their hourly wage is higher (or just bill their services regardless of the number of hours worked).
- In sum, this study highlights that the private formal sector does not necessarily offer the best protection against the common features of employment vulnerability.

Thank you for your attention