

Poverty risk profile in Cameroon: a gender headship analysis

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Abstract: This paper investigates the poverty risk profile by gender headship in Cameroon using a twofold methodological approach based on data from the fourth Cameroonian household survey (ECAM 4). These methodological approaches enabled us to define four heterogeneous sub-groups (*de facto* and *de jure* female-headed households, single and in union male-headed households) and also to analyse the correlates of consumption spending, vulnerability to poverty as well as its causes (poverty or risk induced vulnerability) in each group of households. Two main results emerge from this work. First, the lower vulnerability level is observed in single men group and the highest in married men group (18.55 against 49.79). Between *de facto* and *de jure* female-headed households, the difference is at least 3 points in favour of *de jure* female-headed households. Furthermore, the vast majority of households appear to be affected by low expectation of consumption except single men-headed households for whom the risk induced vulnerability (estimated at 10.88) is higher than poverty induced vulnerability. This result points to large potential gains from social risk management policies targeting poverty risk while taking into account the gender bias.

Keywords: Poverty risk, De jure and De facto household heads, vulnerability, gender

I. INTRODUCTION

Since the dawn of the second millennium, eradicating poverty in all its forms and dimensions, is among the key objectives pursued by the global community for accelerating development. Thus, besides being the first objective of the 17 Sustainable Development Goals (SDGs)¹ which succeeded the Millennium Development Goals (MDGs) in 2015, it is also reflected in several other targets of this international action plan (United Nations, 2015). These include SDG 10, which aims at "*reducing inequalities*" and SDG 5, which aims at "*achieving gender equality and women empowerment*". Despite this strong mobilization, poverty is still a phenomenon that deserves much attention because of the large number of poor people in the world (689 million people); number which has probably increased by an additional 88 to 115 million people because of the current COVID19 pandemic (World Bank, 2020).

This problem deserves special attention as far as women in developing countries are concerned. Indeed, developing countries form environments prone to multiple risks, such as price volatility, natural disasters, climatic instability, or illnesses. Therefore, the presence of ex ante risk affects household welfare which directly contributes to slow

recovery or even poverty traps through costly risk-management strategies (Fafchamps, 2003; Premand & Vakis 2010). In these countries, women most often bear the burden of cultural norms and values, gendered division of assets, and power dynamics between men and women. These cultural norms and values socially constructed on the concepts of familial altruism and individual self-interest generally held women to higher standards of family responsibility than men (Badgett & Folbre, 1999). Consequently, they are said to be disadvantaged regarding access to labour, land, credit, and insurance markets (World Bank, 2011).

Despite the fact that women are grossly under-resourced to deal with risks, many gender-sensitive poverty analyses focus mainly on static analyses (Zick & Smith, 1991; Quisumbing et al, 2001; Chant, 2010). Such static assessments of poverty are limited for several reasons. Firstly, some studies mostly present women as less poor than men (Quisumbing et al, 2001). However, this glowing situation of women may mask a profound deficit in their well-being because vulnerability analyses show that not only is it linked to poverty, but also, the non-poor are not immune from future poverty (risk induced vulnerability) (Dang & Lanjouw, 2014; Gallardo, 2018). Moreover, prolonged poverty alleviation depends on accurate identification of the vulnerable, their sources of vulnerability and design of social safety nets that would enable the vulnerable to reduce risks and cope better with rapid integration of markets with the larger global economy (Imai et al., 2011). Such orientations are missing in such studies.

Added to this is the weight of the heterogeneity of female-headed households. By considering this heterogeneity, Klasen et al. (2014) classified female-headed households in two groups: *de facto* household heads (i.e. women whose partners have migrated) and *de jure* household heads (i.e. households headed by single women and widows). Thus, these authors showed strong heterogeneity of poverty risk in the subgroups of female-headed households. However, all household groups may be heterogeneous when marital status is considered. Indeed, marriage encourages people to live a good and acceptable life style; subjective well-being and income are higher for married men than it does for singles (Haring-Hidore et al., 1985; Dunga, 2017). Therefore it is necessary to consider this heterogeneity as a whole, for both men and women.

While there are many studies on poverty in Cameroon, those that focus on the poverty risk by gender are scarce. Many of these studies analyze the causes of poverty with

¹ MDG 5 aims to "Achieve gender equality and empower all women and girls".

particular emphasis on gender (Epo et al., 2011, Baye & Epo, 2016). Even though they highlighted that female-headed households face more human and household capital deprivation, they are quite limited to tackle future poverty because of the non-consideration of vulnerability in the definition of household poverty profiles. Thus, our study aims to fill this gap. Given the renewed importance through the 2020 National Development Strategy 2020 (NDS30) of the fight against poverty in the agenda of Cameroonian policy makers, this study attempts to investigate the poverty risk in heterogeneous subgroups in Cameroon. That is, to define the type of vulnerability (poverty or Risk induced Vulnerability) observed in heterogeneous groups in Cameroon. This study contributes to this discussion in two ways: First, it takes into account the definition of the heterogeneity among female-headed households' initiated by Klasen et al. (2014) as *de facto* female heads and *de jure* female heads and the literature on wellbeing by marital status to compare households' vulnerability to poverty. Second, it analyzes the causes of vulnerability (poverty or Risk induced Vulnerability) in each group of households.

The paper is organized as follows: After this introductory section, section 2 presents a literature review, section 3 the methodology, section 4 the empirical results and section 5 draws conclusions and makes policy recommendations.

II. LITERATURE REVIEW

Vulnerability is a concept at the crossroads of several disciplines such as medicine, political science, criminology, economy and psychology. In such a global context, it materializes a state of defencelessness against adverse shocks that could inflict damage to an agent or system² (Gallardo, 2018). This adverse shock can be characterized either by the presence of certain weaknesses or internal conditions inherent to the agent or system in question (*idiosyncratic* shocks), or by the presence of certain probable external shocks, to which the agent or system does not have the ability to manage (*covariate* shocks). In economic fields, vulnerability to poverty represents an *ex ante* risk that an individual will be affected by poverty in the future because he is unable to cope with the risk of becoming poor (Chaudhuri et al, 2002; Dang & Lanjouw, 2014) or will remain poor because he possess some structural characteristics that maintain his consumption at low levels (Subbarao & Christiaensen, 2004; Calvo & Dercon, 2013). Thus, vulnerability is split into two groups: risk-induced vulnerability and poverty-induced vulnerability.

When the problem of vulnerability to poverty is approached according to gender, it makes it possible to question the heterogeneity of human beings, a notion dear to Sen's (1995) capability approach. Sen's (1995) argument is that inequalities depend on personal heterogeneities, social and cultural factors, among others. Women most often bear the burden of cultural norms and values, which generally held them in a disadvantaged position regarding access to labour, land, credit, and insurance markets. Indeed, in most cultures, a daughter who neglects her parents, a wife who

leaves a husband, a mother who abandons a child, all are considered more blameworthy than a son, husband or father who does the same; which explains why women are generally kept at the forefront of family responsibilities while men are in the labour market (Badgett & Folbre, 1999). Then, under African cultural heritage, women do not receive donations of land nor do they enjoy user rights to land from either husbands or fathers. Wives can only inherit land from husbands if they have male children who will later own the land (Wanyeki, 2003; Akinola, 2018). In addition, women have limited access to formal credit markets, linked to the lack of collateral or discrimination in credit access (Kinget al, 2009). Finally, while men and women are all affected by the seldom functioning of the insurance market or its scarcity, the latter are likely more affected in the absence of a functioning safety net and equal property rights (Klasen et al, 2014). Most often, women usually contract health insurance through spouses employed in formal sector jobs.

Moreover, female-headed households are heterogeneous because some are highly dependent on an uncertain remittance income while others are not. The high dependency burdens mostly the future of females whose partners have migrated. Thus, the literature considers the latter as *de facto female heads* (they are self-reported female heads whose husband is present or absent for most of the time) as opposed to *de jure female heads* (i.e., households led by single women and widows; they are legally and customarily heads) (Klasen et al, 2014). This classification is traced back to Chant (2010) who found distinct income profile between self-reported female headship and a female household member being identified as the main breadwinner. This difference makes some female-headed households meet specific disadvantages. First, *de jure female heads* usually face a "double day burden" when their heads have to handle domestic work and the role of breadwinner simultaneously (World Bank, 2011). This restrains their mobility and time spent on income-generating activities. Neither social networks nor the state offers an alternative to male provider once this source has dried up (Chant, 2008). However, *de facto female heads* may receive increased remittances income (Buvinic & Gupta, 1997).

Beside these difficulties faced by female-headed households, literature on the role played by marital status on poverty emphasizes that marital status can be associated with several factors whose control could limit poverty risk. Without being exhaustive, Zick & Smith (1991) highlight that healthier people are more likely to be selected for long term relationships. Moreover, marriage encourages people to live a good and acceptable life style. This could result from the fact that living as a couple can provide an important opportunity to face poverty risk: the possibility that a "supplementary" wage generally earned by a wife can be combined with the income of the male breadwinner to improve household well-being. It is equally observed that people that engage in marriage are more likely to be those with a stable flow of income possibly with a job and a good level of education. This is not the case among single people, who may be relatively young, affected by low human

² Person, household, economy, financial system, climate system, etc.

capital, the mismatch between available jobs and training, and the lack of jobs (Marginean, 2014; Dyer et al. 2018).

This general apprehension is equally trustworthy so far as gender is concerned. Whether the household head is a man or a woman, taking into account marital status shows that couples seem to have higher standard of living than the other categories (Dunga, 2017; Ortega-Díaz, 2020). Taking also into account the fact that subjective well-being is higher for married men than it does for singles (Haring-Hidore et al., 1985), this makes the consideration of the category of single men in the analysis of poverty risk imperative, since single men can be more affected by poverty-induced vulnerability than married men.

However, despite the well-documented empirical framework on poverty risk, this question is still relevant because the analyses are not oriented in such a way as to deeply capture the gender heterogeneity of households. The main studies carried out reveal that the vulnerability approach is very important for a better understanding of poverty and that its level varies across individuals groups, regions or countries. Vulnerability is mainly a characteristic of rural households. The work of Günther & Harttgen (2009) shows that people in rural Madagascar are more vulnerable to consumption poverty than those in urban areas. The same is true for Hill & Porter (2017) who found that in Ethiopia, despite similar poverty rates between urban and rural areas, the vulnerability of rural households is significantly higher than that of urban households. This stems from their dependence on agriculture whose success is ensured by external shocks. This claim is echoed in the work of Subbarao & Christiaensen, (2004) indicating that households in arid areas appear to be more vulnerable than those in non-arid areas and that of Zereyesus et al. (2014) which shows that agrarian households are highly vulnerable to macroeconomic shocks, such as rapid food price increases and exchange rate fluctuations.

Although scarce, results of gender-sensitive analyses are mixed. That is the case of Christiaensen & Boisvert (2000) that shows that female-headed households are less vulnerable to drought shocks partly due to community solidarity in Mali. Moreover, Subbarao & Christiaensen (2004) found that female-headed households are less vulnerable in rural Kenya. On the other hand, Kuhl (2003) reveals that female-headed households are more vulnerable than male-headed households.

Using panel data of over 4000 rural households from Thailand and Vietnam to compare male headed households to *de facto* or *de jure* female-headed households, Klasen et al. (2014) show strong heterogeneity of poverty risk in the subgroups of female-headed households. In particular, *de facto* female-headed ones are found to be richer in Thailand, but prone to more severe shocks in both countries. Furthermore, in Thailand single female-headed households are less vulnerable to poverty than households headed by men. However, in Vietnam these households are particularly poor and vulnerable to poverty due to their greater poverty rather than their higher risk exposure. This last analysis shows that for better poverty reduction policies, poverty risk

analyses should take into account at least the heterogeneity among female headed households.

With regard to Cameroon, although the National Institute of Statistics (NIS) data highlights that since 2001, the incidence of poverty remained higher in male-headed households (38.9% versus 32.8% among women)(INS, 2015), there seem to be little analysis on gender vulnerability profile. The only one to the best of our knowledge is the analysis of Molua (2011) who shows that in the face of climate variability that disproportionately affects men and women, female-owned farms in the northern Sahel savannah zone rely on more sophisticated strategies to reduce the impact of shocks. Yet women are subject to a glaring lack of resources to tackle poverty. About 87.8 women out of 100 men are active in the labour market and in similar jobs, a woman earns on average 63.6% of a man's salary (WEF, 2018). Wives hardly inherit land from husbands (Wanyeki, 2003; Akinola, 2018). Therefore, a gender profile of poverty risk can serve as future orientation of poverty alleviation policies in Cameroon.

III. EMPIRICAL METHODOLOGY

This study employs the fourth Cameroonian household survey (ECAM 4) which provides important information on household living conditions. It provides information specifically on (i) household member characteristics such as demographics, education, and health; (ii) agriculture; (iii) employment sector; (iv) borrowing, lending, public transfers, and insurance; (v) expenditures; and (vii) housing conditions. Adding to this is the information on average rainfall (the most important asset of agriculture) by region from climate-data.org. Indeed, agriculture, the key sector of the Cameroonian economy, contributes about 22.9% to the national GDP and employs nearly 62% of the active population. Moreover, farm households generally appear to be more vulnerable to poverty. In the absence of panel data on living conditions, which is a major problem in developing countries, these cross-sectional data can be used to estimate the mean and variance in consumption (Günther & Harttgen 2009).

The mean and variance in consumption

In this study, specific differences in headship are analysed for per capita consumption and vulnerability to poverty. For this purpose, we apply a multilevel model proposed by Günther & Harttgen (2009). Such a model allows to take into consideration the multilevel structure of the population that can determine the form of the error term. And so the unexplained variance in the consumption of households otherwise, captures the impact of both household-specific and community-specific shocks of households. This supposes the existence of heteroskedasticity, i.e. the variance of the shocks is not constant in linear regression. Following Günther & Harttgen (2009), we can specify this model:

$$\ln Y_{ij} = \varphi_{00} + \varphi_{01} C_j + (\varphi_{10} + \varphi_{11} C_j) X_{ij} + u_{0j} + u_{1j} X_{ij} + \epsilon_{ij} \quad (1)$$

In this model, level 1 corresponds to households, indexed by i (with $i=1,2, \dots, n$ units) and level 2 to the communities indexed by j (with $j=1, \dots, m$ units) with household i contained in community j . $\ln Y_{ij}$ is the logarithm of consumption per capita of household i in community j , C_j the characteristics of the communities and X_i the set of characteristics of household i . φ are the regression coefficients. ϵ_{ij} is the unexplained variance in the consumption expenditure of households in the community, u_{0j} and u_{1j} are the second level residuals corresponding to the unexplained variance of consumption in community level. The residuals ϵ_{ij} , u_{0j} and u_{1j} are assumed to have a mean of zero. The residual u_j is assumed to be independent of ϵ_{ij} . The covariance between u_{0j} and u_{1j} is assumed to be different from zero, which reveals a certain dependency between the error terms in a multi-level analysis.

In order to analyse differences in headship for per capita consumption, four types of headship are taken into consideration. The analysis sets off with aggregate headship, a binary indicator equal to unity for female-headed households, and zero otherwise. Second, *de jure* and *de facto* female-headed households as well as single and couple male-headed households are differentiated. As Günther & Harttgen (2009) suggest, model (1) can be estimated using the maximum likelihood method.

Vulnerability Measures: exposure to shocks

Vulnerability measures rely on the indicator method or econometric method. Indicator method is based on selecting some indicators from the whole set of potential indicators and then systematically combining them to indicate the level of vulnerability (Deressa, et al. 2008). This approach is a suitable measure of the level of vulnerability in a community, but does not relate the indicator to any economic variable of interest such as poverty. Moreover, Luers et al. (2003) criticize the indicator method because the choice of variables and their weights is subjective. Conversely, the econometric method mainly requires panel data which is hard to obtain in the case of developing countries. Thanks to Chaudhuri et al. (2002), it is possible to transcend this limit by using cross sectional data, assuming that the unexplained variance in consumption generating process relates to the stochastic innovation. Further, it is assumed that the variance of household consumption can be explained with observable household characteristics (Günther & Harttgen, 2009; Azeem et al., 2016).

In this study, we use the econometric method based on a multilevel model to investigate exposure to shocks in four heterogeneous subgroups. Following Günther & Harttgen (2009), we can define the following measure of vulnerability:

$$\hat{v}_{ij} = \hat{P}(\ln z | X, Z) = \phi \left(\frac{\ln z - \ln \hat{Y}_{ij}}{\sqrt{\hat{\sigma}_{ij}^2}} \right) \quad (2)$$

Where $\phi(\cdot)$ represents the cumulative density function of the standard normal distribution, z the poverty line, $\ln \hat{Y}_{ij}$ the

expected mean of log of expenditure per consumption unit, $\hat{\sigma}_{ij}^2$ the estimated variance of log of expenditure per consumption unit, \hat{v}_{ij} is the estimated vulnerability or the probability of falling below the poverty line. Estimation is carried out separately, respectively for the variance of individual characteristics of the households and the total variance of consumption.

The above measure of vulnerability relies on these preliminary steps: i) a poverty line, ii) a vulnerability threshold, iii) and the time horizon over which vulnerability is to be measured. Poverty line can either be: official poverty line set by the government, international poverty line, relative poverty or counterfactual poverty line (Azeem et al., 2016). The choice being arbitrary, we choose for this study the official poverty line set by the government that can allow to compare vulnerability measure to the level of poverty. Moreover, the vulnerability threshold is defined as 0.29 for the next two years. This means a vulnerable household has a probability of at least 29 percent of becoming poor in the next two years. The choice of the vulnerability threshold is arbitrary (Chaudhuri, et al. 2002) but generally it is 50 percent for the next year and 29 percent for the next two years (Azeem et al., 2016).

IV. RESULTS AND DISCUSSION

In order to assess the poverty risk profile in Cameroon, we first present a description of the data sample, then an analysis of the correlation between the expenditures per consumption unit of the different household heads, and finally we will break down the poverty risk and its causes in heterogeneous household groups.

Table 1 below reveals that household heads are different in several ways. First, out of the 10,303 households that provided information for ECAM 4, over 28% are women. This shows that despite the fact that Cameroonian law gives men the responsibility of household' head, a significant proportion of women leads households. A large majority of these female headship (21.55%) are victims of life circumstances (single, widow) as opposed to a small proportion (6.55) who assume this responsibility on a temporary basis just because of the mobility or disability of the husband. Among the 71.91% of male headship, a little over 16% are single.

This grouping of households by gender headship also reveals their singularity. Indeed, single men are the biggest spenders (13.74 of logarithms of spending per consumption unit versus 13.11 for men living with their partner), yet they are relatively younger and have fewer family responsibilities. The estimated average dependency ratio of 0.19 in these households is sufficient evidence of the absence of young children and/or elderly persons in such households, in contrast to households headed by *de facto* females where the dependency ratio is 1.52. Moreover, in such male households on average, less than two individuals reside. This proves that the apparently high expenditures among single or widowed men would be directed towards increasing their potential.

In addition, as regard to the assets possessed by these households, we find that men in union or married are better off. They are in high proportion among the owners of land, whether it is exploitable or not, have larger areas of land and more access to credit, are better educated and have more access to management positions. Female headed households in general and *de facto* headed in particular are the least endowed in these respects. Given these differences, it is possible to observe a variability in consumption between these households and consequently a vulnerability of some in relation to others.

Table1: Headship and characteristics

Proportion of household heads in total population	Female		Male	
	28.09		71.91	
	De jure	De facto	Single	In union
	21.55	6.55	16.17	55.73
Household characteristics				
Logarithms of spending per consumption unit	13.37	13.19	13.74	13.11
Age	48.90	40.90	33.57	44.56
Dependence ratio	0.92	1.52	0.19	1.08
Household size	3.48	4.68	1.81	5.62
Urban	45.73	48.32	57.58	39.72
Level of study				
Uneducated	6.58	1.54	1.62	10.68
Primary	7.22	2.27	4.13	18.85
Secondary	6.65	2.58	7.51	19.83
University	1.59	0.50	3.10	5.34
Occupation				
Firm owner	0.43	0.22	0.60	2.67
Self-employment	13.34	4.07	6.92	31.64
Executive manager	0.51	0.26	0.72	3.64
Qualified employer	1.93	0.65	2.90	8.19
Makeover	1.05	0.23	2.44	4.19
Inactive	4.78	1.46	2.77	4.38
Employment sector				
Public	2.53	0.58	1.97	5.64
Private formal	1.57	0.46	1.20	3.57
Informal non-agricultural	10.36	3.44	8.02	25.71
Informal agricultural	7.65	2.40	4.91	19.98
Households assets				
Access to Credit	8.73	7.83	6.96	10.26
Area of land under cultivation	42541.78	30337.94	33441.04	34526.73
Area of land owned	16551.74	13371.32	27596.06	28439.7
Proportion owning land	44.81	48.22	26.31	56.86
Proportion of land owned that is farmed	16.20	14.83	16.73	24.97

Source: computed by authors using ECAM4.

Table 2 shows the result of specific correlation between spending per consumption unit and headship, while controlling for other covariates. We began this analysis by presenting the differences that would exist between male and female-headed households before looking at a breakdown by household headship. The results show that there is a significant difference between expected consumption levels of men and women. This difference persists when a decomposition by household headship is performed, relegating the high variability in consumption levels to *de facto* female-headed households. Thus, *de jure* female-headed households spend about 8.26% more than married men. Among *de facto* female-headed households, this share is 8.74%. The figure for Cameroon differs from that found by Klasen et al. (2015) in Vietnam where *de jure* headed households spend significantly less than men. Rather, it is closer to the situation described by Azeem et al. (2016) in Pakistan. Moreover, there is no difference between men in a couple female-headed households and those in a single situation.

Table2: Correlates of expenditures per consumption unit

Variables	Spending per consumption unit	
Female head	0.0792***	
	(0.0118)	
De jure household head		0.0826***
		(0.0138)
De facto household head		0.0874***
		(0.0205)
Single men household head		0.0191
		(0.0163)
Controls for individuals characteristics	yes	yes
Controls for community	yes	yes
Constant	13.49***	13.47***
	(0.0637)	(0.0669)
Observations	9,941	9,941
Number of department	57	57

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: computed by authors using ECAM4.

The analysis of the global models of consumer spending seems to confirm the gender profile that would exist in consumption in Cameroon. Indeed, table 4 in appendix shows that, on the one hand, almost all the explanatory variables are significant and have the expected signs, although with different propensities according to the household headship. For example, the level of wealth, access to credit and ownership of farmland are statistically significant and positively correlated with consumption spending. On the other hand, some specificities can be noted such as consumption spending that decreases over the years in female-headed households, especially in *de facto* headed,

while they increase in male-headed households. Consumption spending decreases by 1.61% in *de jure* headed households and increases by 0.89% in single men headed households. In addition, the Non-employment benefits seem to raise the expected consumption level of male-headed households by 11.1%. In female households, being self-employed seems to reduce significantly their expected consumption level.

These differences seem to persist when the vulnerability profile is assessed. Overall, even if the levels of vulnerability are close, there is at least a difference of more than three points between male and female, with male being more vulnerable. An analysis of this difference, taking into account the specificities of household headship, shows that 38.28% *de jure* female-headed households are vulnerable, whereas in *de facto* female-headed households, this proportion is greater and estimated at 42.97%. As for men, 18.55% of single men are vulnerable compared to 49.79% of men in union. Thus, in Cameroon, households headed by single or widowed men are less vulnerable while those with two parents are the most vulnerable. This problem is mainly caused by the low level of expected consumption. With the exception of single men, where lack of assets to face risks is indexed as the main cause of vulnerability (7.66% are victims of poverty-induced vulnerability while 10.88% are victims of risk-induced poverty), the other households are victims of low expected consumption.

Table3: Gender profile of vulnerability in Cameroon

	Female			Male		
	Glob al	De jure	De facto	Glob al	Singl e	Unio n
Logarithms of spending per consumption unit	13.34	13.37	13.23	13.26	13.65	13.15
Variance	0.53	0.55	0.51	0.52	0.52	0.52
Vulnerability	39.66	38.27	42.97	43.00	18.55	49.79
Poverty induced vulnerability	25.60	22.65	30.51	27.29	7.66	38.88
Risk induced vulnerability	15.05	15.60	12.43	15.71	10.88	16.90

Source: computed by authors using ECAM4.

V. CONCLUSION

This study aimed to access poverty risk profile by gender headship in Cameroon. To achieve this objective, we applied a twofold methodological approach on data from the fourth Cameroonian household survey (ECAM 4). First, Klasen et al. (2014) theoretical framework enable us to define four heterogeneous subgroups including two by gender: *de facto* and *de jure* female-headed households, single and in union male-headed households. A description of the data shows that those households do not have the same characteristics neither do they possess the same assets of risk management. Particularly, single men households are small and have fewer family responsibilities as compared to female *de facto*. Moreover, Women household heads in general and *de facto* heads in particular are the least equipped with risk management assets.

Furthermore, the application of Günther & Harttgen (2009)'s approach to analyse the correlates of consumption spending and vulnerability to poverty highlights a lower vulnerability profile for single men and the highest for the other men (18.55 against 49.79). Between *de facto* and *de jure* female-headed households, the difference is at least 3 points in favour of *de jure* female-headed. Moreover, the vast majority of households appear to be affected by low expectation of consumption except single men who are poor in risk management assets. The risk-induced vulnerability estimated at 10.88 for single men group is higher than poverty-induced vulnerability. Our findings suggest that differentiation by gender of headship is important for policy development and targeting as well as future research.

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Table: Regression results of spending per consumption unit

VARIABLES	Male	Female	De jure	De facto	Men alone	Men in couple
Age	0.00319 (0.00233)	-0.0137*** (0.00363)	-0.0161*** (0.00414)	-0.0130 (0.00953)	0.00890* (0.00470)	0.000815 (0.00289)
age2	-2.02e-05 (2.41e-05)	0.000126*** (3.68e-05)	0.000143*** (4.11e-05)	0.000171 (0.000108)	-5.39e-05 (5.40e-05)	1.89e-06 (2.89e-05)
Household size	-0.114*** (0.00410)	-0.118*** (0.00768)	-0.122*** (0.00915)	-0.0918*** (0.0158)	-0.177*** (0.0168)	-0.107*** (0.00458)
Dependance ratio	-0.104*** (0.00795)	-0.0921*** (0.00896)	-0.102*** (0.0113)	-0.0673*** (0.0157)	-0.0662*** (0.0247)	-0.0959*** (0.00848)
Non-employment profit	0.111*** (0.0329)	0.0578 (0.0564)	0.0637 (0.0645)	0.0330 (0.119)	0.0773 (0.0831)	0.129*** (0.0356)
Wealth indice	0.215*** (0.0186)	0.260*** (0.0359)	0.245*** (0.0454)	0.254*** (0.0597)	0.308*** (0.0454)	0.187*** (0.0203)
Number of livestock	0.00104*** (0.000228)	7.41e-05 (9.45e-05)	7.44e-05 (9.54e-05)	0.000386 (0.00231)	0.00424*** (0.00132)	0.000956*** (0.000229)
Working in farm	0.00625 (0.0135)	-0.000862 (0.0218)	-0.000577 (0.0255)	-0.0518 (0.0424)	0.00777 (0.0295)	0.00269 (0.0150)
Possession of the land	-0.114*** (0.0143)	-0.0452* (0.0232)	-0.0734*** (0.0280)	-0.0146 (0.0425)	-0.0806** (0.0334)	-0.113*** (0.0157)
Land exploitable	0.0528*** (0.0145)	0.0824*** (0.0267)	0.104*** (0.0313)	0.0480 (0.0511)	0.0581* (0.0341)	0.0526*** (0.0158)
Primary	0.0853*** (0.0193)	0.145*** (0.0289)	0.145*** (0.0335)	0.222*** (0.0566)	0.0848* (0.0515)	0.0888*** (0.0206)
Secondary	0.186*** (0.0202)	0.309*** (0.0341)	0.297*** (0.0398)	0.416*** (0.0653)	0.174*** (0.0505)	0.193*** (0.0220)
University	0.377*** (0.0275)	0.533*** (0.0514)	0.495*** (0.0604)	0.630*** (0.101)	0.357*** (0.0590)	0.380*** (0.0322)
Credit borrow	0.0802*** (0.0199)	0.0887*** (0.0328)	0.0936** (0.0381)	0.0365 (0.0643)	0.113** (0.0457)	0.0664*** (0.0219)
Firm' owner	0.249*** (0.0340)	0.0833 (0.0647)	-0.0158 (0.0811)	0.249** (0.108)	0.160** (0.0724)	0.263*** (0.0393)
Self-employment	0.0227 (0.0224)	-0.0919*** (0.0264)	-0.0934*** (0.0311)	-0.0977* (0.0509)	0.0186 (0.0401)	0.0184 (0.0277)
Executive manager	0.318*** (0.0328)	0.210*** (0.0625)	0.255*** (0.0769)	0.146 (0.108)	0.342*** (0.0691)	0.310*** (0.0389)
Qualified employer	0.109*** (0.0251)	0.0326 (0.0379)	0.0261 (0.0442)	0.0259 (0.0757)	0.120*** (0.0441)	0.0994*** (0.0313)
Other	0.0118 (0.0278)	-0.107** (0.0482)	-0.129** (0.0545)	-0.0722 (0.108)	-0.0416 (0.0453)	0.0326 (0.0353)
Urban	0.286*** (0.0182)	0.242*** (0.0298)	0.179*** (0.0348)	0.429*** (0.0530)	0.156*** (0.0387)	0.325*** (0.0203)
Average distance to health facilities	-5.06e-06 (1.60e-05)	2.75e-05 (2.10e-05)	2.85e-05 (2.30e-05)	3.53e-05 (2.99e-05)	-4.24e-06 (2.06e-05)	-6.57e-06 (1.69e-05)
Average distance to education facilities	-3.08e-05* (1.83e-05)	-2.87e-05 (2.34e-05)	-4.29e-05* (2.52e-05)	1.90e-05 (3.69e-05)	-7.72e-06 (2.44e-05)	-4.00e-05** (1.93e-05)

Wealth*health facilities	4.79e-06	-1.61e-05	-2.83e-06	-4.68e-05*	1.68e-05	2.19e-06
	(6.75e-06)	(1.34e-05)	(1.59e-05)	(2.48e-05)	(1.87e-05)	(7.18e-06)
Wealth*education facilities	1.69e-05**	1.81e-05	8.60e-06	4.99e-05*	-6.44e-06	2.56e-05***
	(7.88e-06)	(1.46e-05)	(1.74e-05)	(2.73e-05)	(2.12e-05)	(8.41e-06)
Education facilities*household size	4.24e-06***	5.53e-06*	7.75e-06**	-2.66e-06	1.70e-06	4.36e-06***
	(1.44e-06)	(2.93e-06)	(3.34e-06)	(6.44e-06)	(5.22e-06)	(1.66e-06)
Health facilities*household size	1.55e-06	-3.94e-06	-5.32e-06	-1.22e-06	9.40e-08	1.88e-06
	(1.34e-06)	(2.97e-06)	(3.42e-06)	(6.12e-06)	(4.18e-06)	(1.56e-06)
Constant	13.37***	13.83***	14.00***	13.30***	13.31***	13.39***
	(0.0779)	(0.112)	(0.126)	(0.229)	(0.126)	(0.0933)
Idiosyncrastic variance (Household)	0.489***	0.481***	0.484***	0.458***	0.480***	0.483***
	(0.00410)	(0.00654)	(0.00764)	(0.0129)	(0.00860)	(0.00460)
covariate variance (Division level)	0.209***	0.243***	0.253***	0.200***	0.226***	0.208***
	(0.0219)	(0.0275)	(0.0297)	(0.0373)	(0.0322)	(0.0223)
Observations	7,182	2,759	2,065	694	1,627	5,555
Number of Division	57	57	57	54	57	57

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: computed by authors using ECAM4.