Thèse

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UNIVERSITE DE YAOUNDE II

Implications of Employment Quality for Private Sector Household Income Distribution and Social Welfare Analysis in Cameroon

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Implications of Employment Quality for Private Sector Household Income Distribution and Social Welfare Analysis in Cameroon

A Thesis submitted to the Faculty of Economics and Management of the University of Yaoundé II, and Publicly Defended for the Award of the

Degree of Doctor of Philosophy (PhD) in Economics

By

NDAMSA Dickson Thomas

BSc, Post-Graduate Diploma, Master of Science in Economics

Under the supervision of

Francis Menjo BAYE (PhD)
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We certify that we have read this Thesis and found it satisfactory in scope and quality for the award of a PhD Degree in Economics.

DISSERTATION COMMITTEE

Chair Person

Disclaimer

The policy views and suggestions expressed in this Thesis are solely those of the author and not the host or funding institution.

Dedication

TO MY FAMILY

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Abstract

This thesis assesses the implications of employment quality (vulnerability and decency) for private sector household income distribution and social welfare, while controlling for other income components, using the 2007 Cameroon household consumption survey. Specifically, this thesis develops a conceptual framework that reconciles the above concepts; constructs and studies the distribution of employment quality indicators; determines the effect of employment vulnerability on private sector income, while verifying the theory of compensating wage differentials; studies the determinants of private sector income inequality; assesses the social welfare shares and impacts of regressed-income sources and sectors of employment. To address these objectives, use is made of multiple correspondence and stochastic dominance analyses, control function econometric analyses, regression-based and generalised social welfare decompositions. In terms of employment vulnerability, results show a net dominance of the private sector over the public sector. Within the private sector, informal sector employment clearly dominates formal sector employment, and farm employment dominates non-farm employment. Econometric results show that employment vulnerability generally correlates inversely with private sector income. Results indicate evidence of compensation for managerial and supervisory duties in the private sector. Employment vulnerability registers the largest diluting effect on private sector income and is inequality increasing. The within-sector component overwhelmingly accounts for observed private sector income inequality and the bulk of this within component of income inequality is captured in the informal and farm sectors of employment. Education human capital and decent employment endowments are prominent in determining overall private sector social welfare, and growth in decent employment that is distributed proportionately to all private sector workers, increases social welfare considerably while reducing overall private sector inequality. These findings have implications for creating an enabling environment that promotes employment quality among private sector workers in Cameroon. In this regard, to eradicate employment vulnerability while improving access to education, public policy may also target a delivery system that meets labour market requirements.

Résumé

Cette thèse évalue les implications de la qualité de l'emploi (la vulnérabilité et la décence) sur la distribution du revenu des ménages du secteur privé et sur leur bien-être social, tout en contrôlant l'influence des autres facteurs qui expliquent le revenu. Les données utilisées sont issues de la troisième enquête camerounaise auprès des ménages (ECAM 2007). Spécifiquement, cette thèse développe un cadre conceptuel qui réconcilie les concepts évoqués plus haut; construit et étudie la distribution des indicateurs de la qualité de l'emploi; détermine l'effet de la vulnérabilité de l'emploi sur le revenu des employés du secteur privé en vérifiant la théorie de l''indemnisation des différentiels de salaire; étudie les déterminants de l'inégalité des revenus dans le secteur privé; évalue les parts des 'sources estimées' du revenu et des secteurs d'emploi dans le bien-être social ainsi que leurs impacts sur le bien-être social. Pour atteindre ces objectifs, nous utilisons des analyses en correspondance multiple et dominance stochastiques, des analyses économétriques de Contrôle de Fonction, des décompositions de l'inégalité du revenu et celles du bien-être social généralisée. En termes de vulnérabilité d'emploi, l'analyse indique clairement que le phénomène est beaucoup plus présent dans le secteur privé que dans le secteur public. Dans le secteur privé, nous observons la prédominance nette de la vulnérabilité de l'emploi dans le secteur informel par rapport au secteur formel ainsi que la prédominance nette du phénomène dans le secteur agricole par rapport au secteur non agricole. Les résultats économétriques montrent que la vulnérabilité de l'emploi a généralement un effet négatif sur le revenu du secteur privé au Cameroun. Les résultats montrent l'évidence des compensations pour les tâches managériale et surveillance. La vulnérabilité de l'emploi enregistre le plus grand effet de dilution sur le revenu et augment l'inégalité du revenu des travailleurs du secteur privé. La composante intra-secteur explique fortement l'inégalité du revenu des ménages du secteur privé et la plus grande partie de cette inégalité intra-secteur est enregistrée dans les secteurs informel et agricole. La dotation en capital humain éducatif et le degré de décence de l'emploi sont primordiaux dans l'amélioration du bien-être social du secteur privé. En conséquence, une augmentation proportionnelle du niveau de décence de l'emploi parmi les travailleurs du secteur privé améliorera le bien-être social et réduira l'inégalité du revenu dans ce secteur. Ces résultats ont pour implications de mettre en place un environnement facilitant la promotion des emplois décents parmi les travailleurs du secteur privé au Cameroun. Ainsi, pour améliorer la qualité de l'emploi, il convient aussi de réconcilier les objectifs du système éducatif avec ceux du marché du travail.

Extended Abstract

This thesis assesses the implications of employment quality (vulnerability and decency) for private sector household income distribution and social welfare, while controlling for other income correlates, using the 2007 Cameroon household consumption survey. Specifically, this thesis develops a conceptual framework that reconciles the above concepts; constructs and studies the distribution of employment quality indicators; determines the effect of employment vulnerability on private sector income, while verifying the theory of compensating wage differentials; studies the determinants of private sector income inequality; assesses the social welfare shares and impacts of regressed-income sources and sectors of employment.

In this context, it constructs employment quality indicators using the Multiple Correspondent Analyses (MCA); next, it employs the control function approach to investigate the effect of employment vulnerability on private sector household income; it uses the Regression-based Decomposition, developed in Wan (2004), to assign weights to employment vulnerability and other regressed sources of income in accounting for private sector income inequality; it again borrows from the approach developed in Araar (2006a) and Baye (2008) to account for the within- and between-sector components of inequality, with and without vulnerability; and lastly, it resorts to the framework developed by Mukhopadhaya (2001a; 2001b) to tease-out the private sector social welfare shares of regressed-income components and investigate the impacts of growth in the mean value of regressed-income components on social welfare. It further investigates the social welfare shares of the employment sectors under study and the impacts on social welfare of growth in the mean income of each employment sector.

This thesis was motivated by a number of considerations:

(1) The proportion of vulnerable jobs is on a steady increase in African in general and sub-Saharan Africa in particular (ILO, 2011). Labour market related policies in most low income countries have had as tradition to address employment creation or generation per se. However, it is probable that the problem in low income countries like Cameroon is more that of employment quality than just employment generation. This may be a reason justifying the increasing rate of working poverty, among individuals actively employed. It is true that some awareness in this direction is raised in the 2009 Growth and Employment Strategy Paper

(GESP). But for such initiatives to produce better fruits, an in-depth investigation of the situation of employment vulnerability/decency in Cameroon in order to identify the most vulnerable employment sectors and socio-economic sub-groups is crucial.

(2) Essentially, we were interested in knowing how employment quality can underlie some major economic outcomes like poverty, income inequality and social welfare. This interest was however supported by the projections of the WDR 2013 and the ambitions of the ILO (2007) to check how some jobs do more for development than others. This way, we thought it wise that to further guarantee the growth, decent employment and poverty reduction objectives outlined in the 2009 Cameroon GESP, (i) we should have informed knowledge on the configuration of employment quality (vulnerability/decency) in Cameroon by sectors and sub-groups (ii) we should better understand the role of employment vulnerability among other determinants of household income; (iii) we should point out the contribution of employment vulnerability in accounting for household income inequality; and (iv) finally, we should identify the role of employment sectors, decent employment as well as other income sources in enhancing social welfare (in terms of efficiency and equity) for policy targeting.

In this perspective, our thesis is organised in seven chapters: *Chapter 1* presents the general introduction. *Chapter 2* provides a conceptual framework that constructs linkages between employment quality, income distribution and social welfare. *Chapter 3* constructs employment quality indicators and assesses their configuration across employment sectors, location, gender, and expenditure quintiles in Cameroon. *Chapter 4* assesses the role of employment vulnerability, while controlling for other correlates, in determining private sector income in Cameroon. *Chapter 5* evaluates the contributions of regressed-income sources in accounting for measured income inequality in Cameroon. *Chapter 6* reconciles efficiency and equity in the analysis of social welfare of regressed-income sources and employment sectors and *Chapter 7* presents the general conclusion.

In more detail, we build an employment vulnerability index using a number of employment status variables for the worker's main and second jobs, which permit us to characterise vulnerability in the main job. The analysis employed the indicator approach of the MCA given the qualitative nature of the sources of employment vulnerability. On investigating the role of employment vulnerability in determining private sector income, this thesis adopts the control function econometric approach that purges parameter estimates of endogeneity bias

and unobserved heterogeneity of employment vulnerability. Econometric results are substantiated by performing a joint distribution surface of employment vulnerability and per capita monthly income. To track the contributions of regressed-income sources in explaining private sector income inequality, this work uses the regression-based decomposition approach. This approach engineers its decomposition in a way that the variation of income, gauged for example by an inequality measure, is broken down into the various determinants of private sector income. In addition, this framework generates marginal contributions, based on the Shapley value approach, for each income inequality source. The work further employs the approach developed in Araar (2006a) and Baye (2008) to account for the within- and between-sector contributions to income inequality, with and without employment vulnerability.

Finally, we generate the impacts on private sector social welfare of growth in the mean value of each income-component and mean income growth in each employment sector, hinging on the approaches in Mukhopadhaya (2001a; 2001b). These approaches investigate whether growth in the mean value of each regressed-income component is welfare enhancing or reducing and whether income growth in employment sectors generates different impacts on social welfare. With this framework, income sources are combined into six major components: direct decent employment endowment; human capital endowment; financial capital endowment; household demographics; indirect decent employment endowment; and other income sources. The analysis of social welfare allowed us to reconcile our thesis in the same framework that is, bring together household income distribution, regressed-income sources, and the employment sectors under consideration in the same framework based on social welfare analysis.

Findings showed that factors like payslip and social security made the highest contributions followed by paid leaves, remuneration stability and housing allowance. Yet, the substantial contributions made by labour status, job satisfaction and employment contract were also important. Analysis indicated that vulnerable employment is clearly a private sector phenomenon, as confirmable by the net dominance of the private sector on the public sector in terms of employment vulnerability. Within the private sector, we observed the net dominance of informal sector employment on formal sector employment in terms of vulnerability and also the net dominance of farm employment on nonfarm employment. Employment vulnerability was observed to be more prevalent in rural than in urban areas. We only

observed a weak dominance of female household heads on their male counterparts involved in private sector employment. Analysis also confirmed a net stochastic dominance of the poor on the rich in terms of employment vulnerability.

Econometric results indicated that employment vulnerability generally has a diluting effect on private sector incomes in Cameroon. However, we registered that above a given level of vulnerability (that is, above 0.96), private sector workers receive non-significant pecuniary compensations for their adverse working conditions. We found that formal, as opposed to informal, and nonfarm private as opposed to farm, sector workers receive some relative pecuniary compensation for their adverse working conditions. Thus, the assumption that average gains may compensate for a certain level of vulnerability was therefore verified for workers with vulnerability intensities greater than or equal to 0.96 and only relatively confirmed in the formal and nonfarm private sectors. We also found evidence of compensations for managerial and supervisory duties or rewarding responsibility at work. Years of schooling, cumulated labour market experience and access to microcredit appeared to be important in determining private sector income, more especially in the informal and farm sectors. It was equally observed that the number of younger children aged between 0-4 years in a household adversely affects household income, especially in the formal and nonfarm private sectors.

Moreover, our results corroborated the view that employment vulnerability has a considerable, if not highest, diluting effect on market income in developing countries, especially among household heads in informal and farm sectors where labour is highly unskilled. Employment vulnerability, years of schooling, labour market experience, holding a managerial position, access to microcredit, and residing in an urban area were found to be inequality increasing among private sector workers in Cameroon. The within-sector component overly accounted for observed private sector household income inequality and the bulk of the within-sector income inequality was registered in the informal and farm employment sectors. Essentially, in the farm/nonfarm employment sectors, the between-sector contribution was non-negligible; being more considerable in the dimension of inequality with vulnerability than in that without vulnerability. We found that the highest welfare shares and elasticities of welfare with respect to growth in the mean value of income components are recorded with human capital and decent employment endowments. We established that an extra effort to boost decent employment that is distributed proportionately among private

sector workers will improve private sector social welfare and reduce overall private sector inequality. The informal, farm and nonfarm employment sectors are very prominent in enhancing private sector welfare and reducing inequality.

From our findings, the following package of evidence-based policy recommendations was suggested:

(1) Improving working conditions among private sector workers would go a long way to complement their income, especially for those in the informal and farm sectors of employment. This endeavour put side by side with education and capacity building programmes for the poor, while ensuring access to microcredit may also restructure the income gaps among private sector workers. Specialized institutions such as the regional delegations for labour and social security, trade unions as well as regional delegations of employment and professional training can coordinate and re-organise regional employment in the private sector in Cameroon to offer the best protection against the common features of employment vulnerability. These institutions are able to create the necessary conditions so that working households and employment agencies can function smoothly; they can ensure that working household heads in the private sector are treated fairly and meaningfully in terms of employment contracts, working hours per week, remuneration status and affiliation to a social security network (example National Insurance Social Fund - NISF).

Given the underprivileged position of rural dwellers and female household heads in the labour market, the National Employment Fund (NEF) and the Rural and Urban Youth Support Programme (U-PAJER) should increase their outreach in terms of micro-activities, junior enterprises and training (for instance business development, health care administration, food services, managers, hotel and catering). Moreover, civil society organisations, trade unions and employers can improve their own efforts to reduce vulnerable employment. Trade union strategies for increasing membership amongst vulnerable workers, assessing the current availability of employment advice provision, and considering how good employers can better share practice and promote change with and amongst others are to be encouraged and geared towards the most vulnerable. This initiative could endeavour to reach the worse affected rural areas of the country and treat women and young girls disproportionately with respect to their male counterparts; this is even more relevant for those in informal and farming activities, for better results and healthier coverage. Training in income generating activities, in the

management of micro-financial institutions and capacity upgrading of those already in private employment is a way forward. This training and capacity upgrading may be piloted through a public-private partnership (PPP); funded and operated through a partnership of government and one or more private sector companies or organisations.

(2) Signatory of more sector-specific targets or conventions to improve working conditions should be encouraged. Conventions like that signed in 2006 between the Cameroon government and the ILO to improve working conditions of private security agents, though not very effective, is a good initiative that should be extended to other private sub-sectors, especially farm and informal sectors. All these institutional efforts to improve working conditions among private sector workers may have a significant indirect effect on their incomes. All institutions and conventions that militate to improve working conditions of private sector workers in Cameroon are encouraged to scale-up their outreach to large numbers of vulnerable workers in informal and farming activities. The government of Cameroon should invest in a system of education that reduces the number of dropouts at primary and secondary levels; this is probably a system of education that meets the demands of the labour market, especially among households in the informal and agricultural sectors.

(3) However, improved credit access and training programmes for private sector workers would greatly complement their income, more especially for those in informal and farm sectors of employment. Struggles to reduce employment vulnerability should be accompanied by agricultural training programmes to enhance agricultural productivity in the farm sector of employment and reduce poverty therein. This way, regional-based agricultural development programmes like the South-West Development Authority (SOWEDA) in the Southwest Region and the North-West Development Authority (MIDENO) in the Northwest Region may be replicated in other regions of Cameroon. In addition, agricultural partnerships like the recent one between the government of Cameroon and the Food and Agricultural Organisation (FAO) in May 2011 to put in place a viable seed system that can meet the aspirations of public authorities to boost agricultural production and ensure food sufficiency in the country, are to be encouraged. This partnership is through a support project for capacity building on the control and certification of seedlings.

(4) The quality of economic growth, in terms of decent jobs, should be at the forefront of current policy initiatives in Cameroon to boost shared growth. Efforts to encourage private

sector development through the creation of new industries and promotion of a good business environment are worthy vehicles for growth and decent employment. The Cameroon government should endeavour to create an overall enabling environment for private sector employment creation, especially for small and medium enterprises (SMEs). This is achievable through the dismantling of institutional constraints to private sector development and the development of SMEs in Cameroon, especially institutional constraints related to the business environment, access to markets, basic infrastructure (for instance water, electricity, telecommunications and roads) and access to funding and loans.

These policy options, if adopted and of course implemented, are likely to reduce the job vulnerability of private sector workers in Cameroon and further complement their incomes while reducing income inequality and poverty among workers in this sector. To crown it all, it remains clear that a greater positive impact on private sector household income inequality and poverty can only be achieved with the combination of decent employment, human capital and financial capital boosting measures with measures to ensure that the privileged and the less privileged in the private sector are treated fairly in terms of access to these endowments. In particular, measures to improve decent employment should be accompanied by those that boost employment creation in the private sector in Cameroon. This is important because the vulnerable might gain more from equal opportunity policies on working conditions, and may also suffer more from economic contraction in private enterprises.

Résumé Etendu

Cette thèse évalue les implications de la qualité de l'emploi (la vulnérabilité et la décence) sur la distribution du revenu des ménages du secteur privé et sur leur bien-être social, tout en contrôlant l'influence des autres facteurs qui expliquent le revenu. Les données utilisées sont issues de la troisième enquête camerounaise auprès des ménages (ECAM 2007). Spécifiquement, cette thèse développe un cadre conceptuel qui réconcilie les concepts évoqués plus haut; construit et étudie la distribution des indicateurs de la qualité de l'emploi; détermine l'effet de la vulnérabilité de l'emploi sur le revenu des employés du secteur privé en vérifiant la théorie de l''indemnisation des différentiels de salaire; étudie les déterminants de l'inégalité des revenus dans le secteur privé; évalue les parts des 'sources estimées' du revenu et des secteurs d'emploi dans le bien-être social ainsi que leurs impacts sur le bien-être social.

Dans ce contexte, cette thèse construit d'abord des indicateurs de la qualité de l'emploi en utilisant l'Analyse en Correspondance Multiple (ACM); ensuite, elle emploie l'approche économétrique de Contrôle de Fonction pour examiner l'effet de la vulnérabilité de l'emploi sur le revenu de ménage du secteur privé. Cette approche contrôle l'endogénéité et l'hétérogénéité de la vulnérabilité de l'emploi. Elle utilise une méthode de décomposition développée par Wan (2004), pour attribuer des poids à la vulnérabilité de l'emploi et d'autres 'sources estimées' du revenu dans l'explication de l'inégalité du revenu dans le secteur privé. La thèse emprunte de nouveau l'approche développée dans Araar (2006a) et Baye (2008) pour examiner les composantes intra- et inter-secteur de l'inégalité (avec et sans vulnérabilité); et finalement, elle adopte l'approche de Mukhopadhaya (2001a; 2001b) pour examiner les parts des 'composantes estimées' du revenu dans le bien-être social et évalue l'impact de la croissance de la valeur moyenne de ces composantes sur le bien-être social. Elle étend cette analyse en examinant les parts de chaque secteur d'emploi dans le bien-être social et en mesurant l'impact de la croissance du revenu moyen de chaque secteur d'emploi sur le bien-être social.

Cette thèse a été motivée par un certain nombre de faits :

(1) La proportion d'emplois vulnérables connait une augmentation régulière en Afrique en général et en Afrique sub-saharienne en particulier (ILO, 2011). Les politiques liées au marché du travail dans la plupart des pays à bas revenus ne s'intéressent traditionnellement

qu'aux problèmes de création d'emploi. Or, il est probable que le problème dans les pays à bas revenus comme le Cameroun soit plus celui de la qualité de l'emploi que celui de la création d'emploi. Ceci peut être la raison justifiant le taux sans cesse croissant de la pauvreté parmi les individus actifs dans ce pays. Certes, il y a une certaine reconnaissance de l'aspect qualité de l'emploi dans le DSCE 2009. Mais il reste que dans l'initiative de produire de meilleurs résultats, une analyse approfondie de la situation de la vulnérabilité/décence de l'emploi au Cameroun afin d'identifier les secteurs d'emploi et les sous-groupes socio-économiques les plus vulnérables est cruciale.

(2) Nous nous sommes particulièrement intéressés à la question de savoir comment la qualité de l'emploi peut affecter des indicateurs économiques comme la pauvreté, l'inégalité de revenu et le bien-être social au Cameroun. Cet intérêt s'inscrit en droite ligne des projections du Rapport Mondial pour le Développement 2013 (WDR 2013) et de l'objectif de l'organisation internationale du travail - OIT (ILO, 2007) qui est celui d'apprécier les impacts de la qualité de l'emploi sur le développement. Ainsi, nous avons pensé que pour garantir les objectifs de croissance, d'emploi décent et de réduction de la pauvreté décrits dans le DSCE 2009 au Cameroun, nous devrions : (i) faire une description de la configuration de la qualité de l'emploi (la vulnérabilité/décence) au Cameroun par secteurs et par sous-groupes; (ii) mieux comprendre le rôle de la vulnérabilité de l'emploi dans l'explication du revenu des ménages; (iii) indiquer la contribution de la vulnérabilité de l'emploi à l'explication de l'inégalité du revenu des ménages; (iv) et identifier le rôle du secteur d'emploi, de l'indicateur de décence d'emploi et des autres sources de revenu dans l'amélioration du bien-être social (en termes d'efficacité et d'équité) pour le ciblage des politiques.

Dans cette perspective, notre thèse est organisée en sept chapitres: le *Chapitre 1* présente l'introduction générale. Le *Chapitre 2* présente le cadre conceptuel qui édifie les liens entre la qualité de l'emploi, la distribution du revenu et le bien-être social. Le *Chapitre 3* construit des indicateurs de la qualité de l'emploi et analyse leur distribution par secteurs d'emploi, par localisation, par genre et par quintiles de dépense au Cameroun. Le *Chapitre 4* évalue le rôle de la vulnérabilité de l'emploi dans la détermination des revenus dans le secteur privé au Cameroun, tout en contrôlant les autres sources de revenu. Le *Chapitre 5* examine les contributions des 'sources estimées' du revenu dans l'explication de l'inégalité de revenu au Cameroun. Le *Chapitre 6* réconcilie l'efficacité et l'équité dans l'analyse du bien-être social

des 'composantes estimées' du revenu et des secteurs d'emploi et le *Chapitre 7* présente la conclusion générale.

Précisément, nous construisons un indicateur de vulnérabilité de l'emploi en utilisant un certain nombre de variables qui caractérisent les conditions de travail. L'analyse utilise l'approche de l'ACM pour construire cet indicateur étant donné la nature qualitative des variables qui caractérisent la vulnérabilité de l'emploi. Pour examiner le rôle de la vulnérabilité de l'emploi dans la détermination du revenu du secteur privé, cette thèse adopte l'approche économétrique de Contrôle de Fonction qui nettoie les paramètres estimés des problèmes d'endogeneité et d'hétérogénéité non-observée de la vulnérabilité de l'emploi. Les résultats économétriques sont accompagnés d'une distribution jointe de la vulnérabilité de l'emploi et du revenu mensuel par tête du ménage. Pour mesurer les contributions des 'sources estimées' du revenu dans l'explication de l'inégalité du revenu dans le secteur privé, ce travail utilise l'approche de la décomposition des régressions basées sur les déterminants du revenu. Cette approche exécute sa décomposition de telle manière que la variation du revenu, mesuré par exemple par un indicateur d'inégalité, est décomposée en différents déterminants du revenu. De plus, cette approche génère des contributions marginales, basées sur l'approche de la valeur de Shapley, pour chaque source d'inégalité de revenu. Ce travail emploie en plus l'approche développée dans Araar (2006a) et Baye (2008) pour examiner les contributions intra- et inter-secteurs dans l'explication de l'inégalité de revenu (avec et sans vulnérabilité d'emploi).

Finalement, nous évaluons les impacts de la croissance de la valeur moyenne de chaque composante du revenu et de celle de chaque secteur d'emploi sur le bien-être social des employés du secteur privé en s'inspirant des approches développées par Mukhopadhaya (2001a ; 2001b). Ces approches déterminent si la croissance de la valeur moyenne de chaque 'composante estimée' du revenu augmente le bien-être social ou le réduit et si la croissance du revenu dans les secteurs d'emploi produit des impacts différents sur le bien-être social. Dans ce cadre, les sources de revenu sont combinées en six composantes majeures : la dotation d'emploi décent direct; la dotation en capital humain; la dotation en capital financier; les données démographiques du ménage; la dotation d'emploi décent indirect; et les autres sources de revenu. L'analyse du bien-être social nous a permis de réconcilier notre thèse dans un même cadre ; c'est-à-dire de rassembler la distribution du revenu des ménages, des

'sources estimées' du revenu et des secteurs d'emploi dans un même cadre d'étude basé sur l'analyse du bien-être social.

Les résultats montrent que les facteurs tels que le bulletin de paie et la sécurité sociale ont la plus grande part dans la construction de l'indicateur de la qualité de l'emploi. Ils sont suivis par les facteurs tels que 'congés payés', 'stabilité de la rémunération' et 'indemnité de logement'. En outre, les parts du statut de travail, de la satisfaction au travail et du contrat de travail sont aussi importantes. En termes de vulnérabilité d'emploi, l'analyse indique clairement que le phénomène est beaucoup plus présent dans le secteur privé que dans le secteur public. Dans le secteur privé, nous observons la prédominance nette de la vulnérabilité de l'emploi dans le secteur informel par rapport au secteur formel ainsi que la prédominance nette du phénomène dans le secteur agricole par rapport au secteur non agricole. La vulnérabilité de l'emploi est plus répandue en zone rurale qu'en zone urbaine. Nous observons simplement une faible prédominance de la vulnérabilité de l'emploi chez les chefs de ménage femme que chez leur homologue homme. L'analyse confirme aussi une prédominance nette de la vulnérabilité de l'emploi chez les pauvres que chez les riches.

Les résultats économétriques indiquent que la vulnérabilité de l'emploi a généralement un effet néfaste sur les revenus dans le secteur privé au Cameroun. Cependant, nous nous rendons compte qu'au-delà d'un niveau de vulnérabilité donné (niveau supérieur ou égale à 0.96), les travailleurs du secteur privé reçoivent des compensations pécuniaires pour leurs conditions de travail défavorables, mais non significatives. Nous constatons que les travailleurs du secteur formel, par opposition à leurs homologues du secteur informel, ainsi que les travailleurs du secteur privé non agricole par opposition à leurs homologues du secteur agricole, reçoivent une certaine compensation pécuniaire relative à leurs conditions de travail défavorables. Ainsi, l'hypothèse selon laquelle les gains moyens peuvent compenser un certain niveau de vulnérabilité de l'emploi est vérifiée chez les travailleurs dont l'intensité de vulnérabilité est supérieure ou égale à 0.96 et relativement confirmée dans les secteurs privés formel et non agricole. Les résultats montrent l'évidence des compensations pour les tâches managériales et surveillances. Les années d'études, l'expérience sur le marché du travail et l'accès au microcrédit jouent un rôle important dans la détermination des revenus du secteur privé, et plus particulièrement dans les secteurs informel et agricole. L'observation des résultats permet également de constater que le nombre d'enfants dans les ménages âgés

entre 0 et 4 ans affecte négativement le revenu des ménages, particulièrement celui des ménages des secteurs privés formel et non agricole.

Concernant l'inégalité dans la distribution des revenus, on constate que la vulnérabilité de l'emploi, le nombre d'années d'études, l'expérience sur le marché du travail, le niveau de responsabilité managériale, l'accès au microcrédit et le fait de résider en zone urbaine augmentent l'inégalité de revenu chez les travailleurs du secteur privé au Cameroun. On observe que la composante intra-secteur explique fortement l'inégalité du revenu chez les ménages du secteur privé et la plus grande partie de cette inégalité intra-secteur est enregistrée dans les secteurs informel et agricole. De même, dans les secteurs d'emploi agricole et non-agricole, la composante inter-secteur est non-négligeable; elle est plus importante dans la dimension de l'inégalité avec vulnérabilité que dans celle sans vulnérabilité. Nous constatons que les parts dans le bien-être social de la dotation en capital humain et du degré de décence de l'emploi sont les plus élevés et que leurs élasticités par rapport au bien-être social sont également les plus importantes. Nous avons établi qu'une augmentation proportionnelle du niveau de décence de l'emploi parmi les travailleurs du secteur privé améliorera le bien-être social et réduira l'inégalité du revenu dans ce secteur. Les secteurs d'emploi informel, agricole et non agricole sont très primordiaux dans l'amélioration du bien-être social du secteur privé et la réduction des inégalités de revenu.

Au regard des résultats, les recommandations de politiques suivantes peuvent être suggérées:

(1) Une amélioration des conditions de travail dans le secteur privé devrait améliorer le revenu des travailleurs, particulièrement pour ceux relevant des secteurs informel et agricole. Une telle mesure couplée à des programmes d'éducation et de formation des pauvres ainsi que leur accès au microcrédit, pourrait aussi réduire les écarts de revenu parmi les travailleurs du secteur privé. Les institutions spécialisées comme les délégations régionales du travail et de la sécurité sociale, les syndicats, ainsi que les délégations régionales de l'emploi et de la formation professionnelle devraient coordonner et réorganiser l'emploi régional dans le secteur privé afin d'offrir une meilleure protection contre les caractéristiques communes de la vulnérabilité de l'emploi. Ces institutions devraient mettre en place les conditions nécessaires pour que les travailleurs et les agences d'emploi puissent fonctionner en harmonie; elles devraient s'assurer que les travailleurs du secteur privé sont traités avec impartialité et de manière convenable en ce qui concerne les contrats de travail, les heures de travail

hebdomadaire, les conditions de rémunération salariales et l'affiliation à un réseau de sécurité sociale (a l'exemple de la Caisse Nationale de la Prévoyance Sociale - CNPS).

Étant donné la position défavorable des habitants des zones rurales et des chefs de ménage femme sur le marché du travail, le Fonds National de l'Emploi (FNE) et le Programme d'Appui à la Jeunesse Rurale et Urbaine (PAJER-U) devraient étendre leurs activités de formation (par exemple le développement commercial, l'administration de services médicaux, des services alimentaires, des managers, l'hôtellerie et restauration) et de financement de micro-activités et d'entreprises juniors sur toute l'étendue du territoire. De plus, les organisations de la société civile, les syndicats et les employeurs devraient améliorer leurs propres efforts pour réduire le nombre des emplois vulnérables. Les stratégies des syndicats destinées à accroitre l'adhésion des travailleurs vulnérables, à améliorer la formation et l'éducation des adhérents et à encourager les employeurs à partager les bonnes pratiques avec les autres, doivent être encouragées et adaptées aux plus vulnérables. Ces initiatives devraient être davantage orientées vers les zones rurales et les femmes qui sont en général plus vulnérables que les zones urbaines et les hommes respectivement. De telles initiatives seraient plus pertinentes pour les travailleurs des secteurs informel et agricole. La formation dans les activités génératrices de revenu, la gestion des institutions de micro-finance et la mise à niveau des travailleurs du secteur privé est à encourager. Cette formation et cette mise à niveau peuvent être effectuées à travers des collaborations entre le gouvernement et les organisations du secteur privé dans le cadre des Partenariats Public-Privé (PPP).

(2) La signature de conventions de partenariat entre les institutions nationales et internationales dans des secteurs spécifiques pour améliorer les conditions de travail devrait être encouragée. Les conventions comme celle de 2006 signée entre le gouvernement du Cameroun et l'OIT pour améliorer les conditions de travail des agents de sécurité privés, quoique peu efficace, est une bonne initiative qui devrait être étendue à d'autres secteurs d'activité, particulièrement les secteurs agricoles et informels. L'effet indirect sur les revenus de tous ces efforts institutionnels destinés à améliorer les conditions de travail dans le secteur privé peut être significatif. Toutes les institutions et les conventions qui militent en faveur de l'amélioration des conditions de travail dans le secteur privé au Cameroun sont encouragées à s'étendre leurs champs d'influence aux travailleurs vulnérables du secteur informel et agricole. Le gouvernement du Cameroun devrait investir dans un système d'enseignement qui réduit le taux d'abandon scolaire tant au niveau du primaire qu'au niveau du secondaire; ceci

est probablement un système d'enseignement qui satisfait les besoins du marché du travail, particulièrement parmi les ménages des secteurs informel et agricole.

(3) Les programmes de formation pour les travailleurs du secteur privé et l'amélioration des conditions d'accès au crédit peuvent significativement améliorer les revenus, plus particulièrement les revenus des travailleurs du secteur informel et du secteur agricole. Les efforts pour réduire la vulnérabilité de l'emploi dans le secteur agricole devraient être accompagnés des programmes de formation agricole afin d'améliorer la productivité dans ce secteur. Ainsi, les programmes de développement agricole régionaux comme la South-West Development Authority (SOWEDA) dans la région du Sud-ouest et la North-West Development Authority (MIDENO) dans la région du Nord-ouest devraient être des exemples à suivre pour d'autres régions du Cameroun. De plus, les partenariats agricoles comme celui signé en Mai 2011 entre le gouvernement du Cameroun et l'Organisation des Nations Unies pour l'Alimentation et Agriculture (FAO) afin de mettre en place un système de semence viable permettant d'atteindre les objectifs des autorités publiques en matière d'augmentation de la production agricole et d'atteinte de l'autosuffisance alimentaire dans le pays doivent être encouragés.

(4) La qualité de la croissance économique, évaluée en termes d'emplois décent, devrait être au cœur des politiques publiques actuelles au Cameroun pour une redistribution équitable des fruits de la croissance. Le gouvernement du Cameroun devrait essayer de mettre en place un environnement facilitant la création d'emploi dans le secteur privé, particulièrement en ce qui concerne les petites et moyennes entreprises (PME). Ceci passe par le démantèlement des contraintes institutionnelles au développement du secteur privé et des PME au Cameroun. Il s'agit particulièrement des contraintes institutionnelles liées au climat des affaires, à l'accès aux marchés, aux infrastructures de base (eau, électricité, télécommunications et routes, etc.) et à l'accès aux financements.

Si ces recommandations de politiques économiques, sont adoptées et bien sûr mises en œuvre par les autorités, elles vont probablement réduire le niveau de vulnérabilité de l'emploi, améliorer le revenu des travailleurs, réduire la pauvreté et les inégalités de revenu chez les travailleurs dans le secteur privé au Cameroun. Il reste clair qu'un impact positif plus élevé sur l'inégalité de revenu et sur la pauvreté des ménages dans le secteur privé peut être atteint grâce à la combinaison des mesures destinées à booster l'accès aux emplois décents, au

capital humain et financier d'une part, et grâce aux mesures destinées à garantir un accès équitable des travailleurs du secteur privé à un emploi décent, au capital humain et financier d'autre part. En Particulier, les mesures destinées à améliorer la qualité de l'emploi doivent être accompagnées par celles qui boostent la création d'emploi dans le secteur privé au Cameroun. Ceci est d'autant plus important que ce sont les personnes vulnérables qui gagneraient le plus de la mise en œuvre de politiques équitables relatives aux conditions de travail et ce sont également elles qui subiraient le plus les conséquences de la contraction de l'activité au sein des entreprises.

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List of Acronymes

CIRPEE : Centre Inter-Universitaires sur le Risque, les Politiques Economique et l'Emploi

CODESRIA: Council for the Development of Social Science Research in Africa

CofFEE: Centre of Full Employment and Equity

CoVE: Commission on Vulnerable Employment

CNPS : Caisse Nationale de Prévoyance Sociale

DSCN : Direction de la Statistique et de la Comptabilité Nationale

FCFA: African Financial Community Franc

GAD: Gender and Development

GESP: Growth and Employment Strategy Paper

HIPC: Highly Indebted Poor Country Initiative

ICLS: International Conference of Labour Statisticians

ICT : Information and Communication Technology

MDG: Millennium Development Goal

MINPLAT : Ministère de Plan et de l'Aménagement du Territoire

NCSPD: National Civic Service for Participation in Development

NEF: National Employment Fund

OECD: Organisation for Economic Co-operation

PNVRA : Programme National de Vulgarisation et Recherche Agricole

PPP: Public-private partnership

PRSP: Poverty Reduction Strategy Paper

SAP: Structural Adjustment Programme

SEMRY : Société d'Expansion et de Modernisation de la Riziculture

SSA: Sub-Saharan Africa

UNDP: United Nations Development Programme

U-PAJER: Rural and Urban Youth Support Programme

USAID: United States Agency for International Development.

UNU/WIDER: United Nations University/World Institute for Development Economics Research

WDR: World Development Report

WID: Women in Development

CHAPTER 1

General Introduction

1.1. Introduction

If one were asked to cite one problem that constitutes a challenge to world leaders, development practitioners, civil society, politicians, and governments alike, it would likely be the stubborn persistence of vulnerable jobs and poverty in many parts of the developing world. Puzzles with respect to jobs are back on the policy agenda in a gigantic way. The World Bank is proposing to move jobs to the centre stage for its 2013 World Development Report (WDR)[1]. The ILO (2009) has created a "Decent work agenda" which includes creating jobs, guaranteeing rights at work, extending social protection and promoting social dialogue. This agenda posits that decent work is central to increasing productivity, avoiding disputes at work, building cohesive societies, and reducing social inequalities. A recent report, *Global Employment Trends 2011,* by the ILO (2011) draws attention to a crucial indicator that gauges the extent to which workers in a given country or region are engaged in wage employment or in rather less-organized forms of employment. According to this report (ILO, 2011)[2], the "vulnerable employment" indicator is characterized by low pay, lack of adequate social protection and difficult working conditions in which workers' fundamental rights may be undermined.

In addition, the Commission on Vulnerable Employment (CoVE) is established in the United Kingdom (UK) because unsafe, low paid and insecure work is causing misery for millions of workers. According to this Commission, the time is now right for a major investigation of the causes of, and solutions to, vulnerable employment. This thesis fits Cameroon into current global theoretical thinking on employment quality (decency and vulnerability) and places her a step ahead of other developing countries in terms of empirical analysis on this issue and its relationship with economic outcomes.

[1] See Appendix 1.1 for the consideration of jobs as a "hinge" of development.
[2] It is also seen as the sum of own-account workers and unpaid family workers

Vulnerable jobs that fail to provide job security are on the increase all over the world, especially in developing countries. According to an estimate of the ILO (2008a), five out of ten workers are in vulnerable employment; thus about half of all the world's workers are in vulnerable employment situations; this situation is mitigated by countries like the UK and United States (US) where only one out of five workers is in a vulnerable job. A briefing statement by this same institution (ILO, 2008a) on the occasion of its report points out that, especially in developing countries, there are many people working in the informal sector for their own account, which means that they are exposed to a high risk of poverty, dangerous working conditions and a lack of security. Importantly, we should bear in mind that this situation persists despite an economic boom in many countries (ILO, 2011).

The ILO (2011) estimates global vulnerable employment rate at 52.8%. According to this report, the highest shares of vulnerable employment are in South Asia (78.5 % of total employment in 2009), Sub-Saharan Africa (75.8 %) and South-East Asia and the Pacific (61.8 %). Worthy of note, the highest gender and sector disparities in employment quality, in terms of decency and vulnerability, are also recorded in these regions. East Asia and Central and South-Eastern Europe as well as the US have witnessed the largest reductions in vulnerable employment rates over the last decade, though all regions have seen at least moderate reductions. These global concerns are indications that focusing solely on employment itself may not be relevant enough for understanding the problems of poverty. Thus, measures to boost economic growth should factor-in policy initiatives that will reduce vulnerable employment or improve decent employment.

This is indication that labour market policies should be at the centre of macroeconomic policies to ensure that economic growth is inclusive and that development ameliorates decent work or reduces vulnerable jobs. Notwithstanding, it is vital to note that a country like Ghana has succeeded in dramatically reducing poverty between 1991 and 2005 by creating lots of bad jobs (Awoonor, 2012). These jobs were bad by the ILO's standard in that they paid poorly, had no security, were not unionised (unlike those in South Africa) and provided a very volatile income stream. However, they were still very good at reducing poverty as they were still an improvement on what was previously available to the poor. But in an arena like that of Cameroon, where unemployment[3] rate between 2005 and 2010 decreased by nearly 1 (one)

[3] According to the ILO, an active person is considered as unemployed if he has no job or has not worked for at least one hour over the 7 days preceding the survey and is seeking a job and is ready to work immediately.

point, from 4.4% to 3.8% and where unemployment is essentially first-insertion unemployment, affecting mostly the youths and higher education graduates (National Institute Statistics, 2011), this may not be the case. Moreover, a country where global underemployment[4] is estimated at 71.9% (National Institute Statistics, 2011) amid 72.5% with no written work contracts and almost 70% placed under unsteady income schemes (Government of Cameroon, 2007), we can all, *a priori*, speculate that Cameroon may not require the 'bad jobs strategy' to furnish socio-economic disparities and reduce poverty. However, a good understanding of the configuration of employment quality in Cameroon and its effects on income distribution and social welfare may tell the story better.

In this perspective, ensuring that those already in employment (with only 3.8% unemployed in 2010, National Institute Statistics, 2011) obtain some fair treatment in terms of job security, fringe benefits and remuneration should be the focus if we are to come up with better tools for reducing poverty. In this perspective, measures to check employment quality (reduce vulnerability or improve decency) are likely to play a central role in curbing social ills like poverty and income inequality; as employment vulnerability and other labour market imperfections underlie the deprivation status of individuals/household heads. By vulnerability, we mean how hard it is for individuals to manage the risks or cope with the losses and costs associated with the occurrence of risky events or situations. This way, employment quality can be seen, among other things, in terms of contract insecurity (unstable remuneration and no written contract), adverse working conditions and, more generally, the worker's high level of exposure to risks concerning her job. Note that, for the ILO (2008a), vulnerable jobs in all their many shapes and forms, are the opposite of decent work. Employment vulnerability and other labour market imperfections, like segmentation[5], may prevent the poor from appropriately benefiting from a growth process.

Growing interest of studies on labour markets in sub-Saharan African is focused on the institutional segmentation between formal and informal sectors based on statistical or tax registration criteria and keeping written accounts (Maloney, 2004 and Bocquier et al. 2010). It is however vital to highlight that though this distinction is important, it serves no purpose

[4] Global underemployment concerns the unemployed active people according to the ILO's definition and the employed active people who are in visible or invisible underemployment. Visible underemployment concerns the people who involuntarily work less than 40 hours per week. Invisible underemployment concerns the workers who earn less than the guaranteed monthly minimum wage (28, 500 CFA francs), though work the required hours every week (40 hours a week).

[5] See Abessolo (2001) for an analysis of segmentation in Cameroon.

when it comes to tracking individual's or household head's working conditions, especially employment quality among these individuals employed in formal and informal or nonfarm and farm sectors. Worthy to note, firm or business vulnerability criteria (activity sectors, business size and institutional sectors) are not used in this study since they reflect interfirm dualism rather than interindividual or interhousehold-head dualism. According to Bocquier et al. (2010), vulnerable workers can be found in all sorts of formal and informal private firms, but also in administrations and public and semi-public corporations, and a good many vulnerable workers work in the formal and informal private sector. This is indication that employment vulnerability is more wide spread among private sector workers. This study does not just cease the conclusion of Bocquier et al. (2010), but endeavours to specifically investigate the prevalence of employment vulnerability among household heads in employment sectors in Cameroon and its relationship with major economic outcomes (for instance income distribution and social welfare).

The coming of the 21st century is marked with growing interest on employment quality and its relationship with major economic outcomes. The World Bank's (2000) report highlights that job instability is a major concern among poor workers and is a leading cause and expression of poverty. One of the crucial targets of the ILO (2007) is assessing the association of employment vulnerability with major economic outcomes. Essentially, the Government of Cameroon (2009) has formulated the Growth and Employment Strategy Paper (GESP) to promote growth and decent employment; placing decent employment at the centre of poverty reduction. Corroborating this, Touna Mama (2008), highlights that the progression of poverty in towns in Cameroon is underscored, among other things, by precarious employment and unemployment. These observations depict a theoretical awareness of the implications of employment quality on income distribution and poverty. Empirical analyses of the influence of employment quality on income distribution and social welfare may serve as crucial inputs into the process of implementing the GESP and to ensure that the projected annual average growth of 5.5% between 2010 and 2020, if achieved, would be accompanied by significant improvement in working conditions and poverty reduction in Cameroon.

Recent undertakings have built employment vulnerability indicators and studied their links with earned income, based on the theory of compensating differentials (Fernandez and Nordman, 2009 and Bocquier et al. 2010). The theory of compensating differentials whose precepts date back to Adam Smith, states that workers may receive pecuniary compensations

commensurate with the strenuous or hazardous nature of their tasks or adverse working conditions. Studies in the developed countries have observed that physically hazardous and highly strenuous jobs are often better paid than less strenuous or hazardous jobs (Poggi, 2007 and Fernandez and Nordman, 2009). However, evidence on the link between employment vulnerability and earned income is still fragmented, especially in developing countries. Country-specific knowledge on how employment vulnerability affects income is still at large.

Hinging on the theory of compensating wage differentials, and applying it to both working conditions and more broadly on employment vulnerability, Bocquier et al. (2010) have attempted to link employment vulnerability to income in seven economic capitals[6] of West Africa. They found that the average impact of vulnerability on income is generally negative for an average level of vulnerability. They also observed that in the formal private sector of the West African countries, losses of income due to vulnerability are lower for high levels of vulnerability, but do not translate into gains. Though this study complements sub-Saharan African empirical literature with respect to employment vulnerability, it has some weaknesses.

The study only focuses on economic capitals, thus not suitable for nation-wide policy undertakings on employment vulnerability and its link with income. Equally, the study only captures initial indicator variables present in all the economic capitals, thus leaving out relevant initial indicator variables relative to fringe benefits. In this regard, country-specific analysis of employment vulnerability and its links with earned income that factor-in these omitted initial indicators and draws on national surveys may give way for nation-wide policy undertakings. Moreover, no past study, to our knowledge, has attempted to link employment vulnerability to income inequality nor has taken the step to evaluate social welfare of regressed-income sources, including employment quality.

The most important goals of the labour and employment ministers of the G8[7] were summed up in their conclusions in May 2007, one of which was the broadening and strengthening of social protection in a world of globalisation. Three areas of action were at the centre of their

[6] Abidjan, Bamako, Cotonou, Dakar, Lome, Niamey, and Ouagadougou

[7] The G8 is an informal association of the biggest industrial powers; it nonetheless initiates important developments in global policy. The group's members are Germany, France, Great Britain, Italy, Japan, Canada, Russia and USA. The European Commission is also invited to the group's summit. Although only 13 per cent of world's population lives in the G8 countries, these states collectively produce 65 per cent of the world's gross national product.

three-day consultations: strategies for more and better employment in the industrial countries, the broadening and strengthening of social protection in the developing and emerging countries as well as corporate social responsibility (CSR)[8]. These are all causes that the trade union movements, even in developing countries, have long espoused in their efforts to promote decent work and to turn the tide against increasing vulnerable employment. Cameroon in particular has manifestly revived great willingness to reduce poverty and to turn the tide against increasing employment vulnerability. This policy revival is traceable in her economic policy episodes.

Cameroon, a resource-based and a diversified commodity-based economy enjoyed impressive growth rates for more than two decades up to the mid 1980s. This economic performance was associated to growth of agricultural output, agricultural exports (oil, coffee, cocoa, and cotton being the principal exports) and the exploitation of the country's petroleum reserves from the latter half of the 1970s. Agricultural exports alone accounted on average 52 % of total export value (Government of Cameroon, 2003). However, this period of economic joy did not by-pass the economic cycles.

This attractive period of positive economic performance collapsed with the coming of the economic crisis from the second half of the 1980s. This collapse involved both oil and other exports. The retreat in economic activity accelerated in 1986/87 with a negative growth rate of 4.5% (National Institute of Statistics, 1993). The terms of trade deteriorated by 60%, between 1985 and 1988, resulting to a loss of 15.7% of real output in 1987 and this got worse to about 18% in 1994 (Ndamsa and Baye, 2011). The causes of this economic reversal, attributable to both internal and external factors, are well documented in Baye (2006a).

This ailing economic situation pushed the government of Cameroon in September 1988 to adopt the Structural Adjustment Program (SAP); supported by the World Bank and IMF. This programme was tailored towards expenditure-reducing measures: liquidating non-profit making and privatising some marginal profit making public enterprises; reducing public expenditure; freezing salary increment of the public sector workers; decreasing public and semi public sector workers from early 1990 and implementing salary cuts in January and November 1993 (Baye, 2006a). The decrease of public and semi public workers may have

[8] CSR means responsible corporate behaviour towards employees and shareholders, business associates, the environment and the society.

only helped to increase unemployment and expose many victims to take-on vulnerable jobs in the private sector.

The consequences of the SAP on the economy of Cameroon were not enough to reverse the declining trend, as economic indicators deteriorated continuously and incomes fell steadily, leading to a 40% decrease in per capita consumption between 1992 and 1993. Faced with budgetary short-falls, balance of payments problem and eroding living conditions of the citizenry, the government of Cameroon in 1994 joined members of the Franc Zone to devalue the CFA Franc by 50% against the FF[9]. This devaluation had both expenditure-reducing and expenditure-switching effects: improve the exportation of local goods, increase fiscal revenue and reallocate resources from non-tradable sectors to tradable sectors.

Subsequent to the devaluation of the CFA Franc in 1994 and the successful implementation of the three-year medium-term Economic and Financial Program under the support of the IMF and World Bank to span the period 1997-2000, Cameroon registered noticeable improvements in macroeconomic stability; a basis for sustained economic growth. Cameroon realised a sustained growth rate of 4.5 percent between 1996 and 2001. Cameroon in October 2000 was admitted to the Decision Point of the Highly Indebted Poor Countries (HIPC) initiative after carefully respecting conditions crafted by the donor community.

Thereon, Cameroon aware of the need for a development framework for coordinating all its economic and social strategies to reduce poverty and improve other dimensions of human development (for instance education, health, and security), prepared and presented in 2003 its Poverty Reduction Strategy Paper (PRSP). This integrated effort permitted Cameroon to attain in April 2006 the Completion Point of the HIPC Initiative. The Completion Point helped relief Cameroon from a substantial part of its external debt (bilateral and multilateral) and consequently helped better the country's relations with its partners.

Though the fair achievements of the PRSP are undeniable, but it had no specific focus on the creation of employment opportunities as a means to guarantee a fair redistribution of the fruits of growth. The PRSP did not consider the challenge of growth and creation of decent employment opportunities as being at the centre of its actions in favour of poverty reduction.

[9] Note that FF means French franc and FCFA means African Financial Community Franc

These may be some reasons of the underperformance of this strategy paper. Moreover, though the PRSP permitted the country to maintain its macroeconomic stability and a positive growth rate up to the year 2008, this positive growth profile still appears to fall below the level required for a considerable retreat in poverty. Thus, to pair-up with the contemporary global policy of reducing vulnerability or improving decency at work, the government of Cameroon formulated the Growth and Employment Strategy Paper (GESP) in 2009, with the participation of the civil society, private sector and other development partners, to promote growth and decent employment, that is, reduce vulnerable employment. This paper places the challenge of growth and creation of decent employment opportunities at the centre of its actions to reduce poverty. The visions of the GESP are reassuring, but interest on the importance of decent employment and other income sources in social welfare analysis may be more useful. Though an extensive literature exists on the analysis of inequality and the evolution of poverty separately, little is still gathered on analyses that blend both efficiency and inequality.

The analysis of poverty profiles and their intertemporal decompositions in Cameroon (Baye, 2006a, 2006b, National Institute of Statistics, 2002) and those of inequality levels and changes (Bhattacharaya and Mahalanobis, 1967; Donaldson and Waymark, 1980; Baye and Fambon, 2002; Baye, 2008) though vital are limited as concerns blending the two concepts. Economic literature identifies a framework that is helpful in blending both efficiency and inequality considerations (Dagum, 1993; Mukhopadhaya, 2001a; Baluch and Razi, 2007; Baye, 2011). These studies use social welfare analysis for this purpose. However, no study so far has attempted to assess the responsiveness of social welfare to growth in decent employment, human capital and financial capital, though important for policy prioritisation.

1.2. Statement of the Problem

The WDR 2013 of the World Bank aims to articulate a vision that cuts across sectors, addressing the dynamic links between growth strategies and jobs. It also aspires to provide analytical tools to consider policies and programs from a jobs perspective. The WDR 2013 projects to check how some jobs do more for development than others, because they reduce poverty and inequality, strengthen production chains and clusters, or help build trust and shared values. This thesis is pretty futuristic, as it works in line with the recommended research projections of the World Bank for 2013.

The ILO (2007) in the first chapter of its key indicators of the labour market (KILM) lays particular emphasis on showing how indicators can highlight important issues that are associated with major economic outcomes. One of the three "key issues" is assessing vulnerable employment[10]. This study pairs-up with this research guide to provide evidence for Cameroon. The World Bank's (2000) report highlights a characteristic of employment vulnerability - job instability, as the leading cause and expression of poverty. According to the ILO, the unemployment rate in Sub-Saharan Africa increased to 8.5 % in 2009, representing an additional three (3) million of unemployed. Furthermore, the proportion of vulnerable jobs increased from 77.4 % in 2007 to 82.6 % in 2009, implying an additional 28 million vulnerable jobs in Africa. Though this rate witnessed a decline in 2010 (75.8 %), it is still considered very high (ILO, 2011). This way, the problem in Africa is more that of employment quality than just employment. Thus, analyses to better inform stakeholders on the configuration of employment decency/vulnerability across employment sectors and sub-groups are vital.

In low income countries like Cameroon, most vulnerable households are likely to be working in the private sector. According to the Government of Cameroon (2007), for instance, about 86.7% of households working in the private sectors are placed on an unsteady income scheme. Conversely, only 4.3% of households in public sectors/international organisations have unsteady incomes. In addition, close to 89.3% of household heads working in the private sector have no written work contracts, as opposed to only about 1% in the public sectors/international organisations. Moreover, only 2.5% of households employed in public sectors/international organisations live below the poverty line as opposed to close to 96.6% for those in private sectors. Our study examines the situation of employment vulnerability/decency in Cameroon in order to identify the most vulnerable employment sectors and suggest routes out of their vulnerability. This study is expected to provide key inputs into the process of implementing the 2009 GESP in the direction of promoting growth and decent employment, which appears to be the main route to pro-poor or shared growth.

The GESP puts growth and decent employment at the centre of its actions to reduce poverty. This way, its aims are firstly to promote growth and income distribution to the most

[10] The ILO defines employment vulnerability as the risk of lacking full, decent and productive employment. First 'key issue' is: "*Decent employment and the Millennium Development Goals (MDGs): Description and analysis of a new target*"; and the third is : "*Beyond the employment/unemployment dichotomy: Measuring the quality of employment in low income countries*".

vulnerable segments of the population. Secondly, to ensure that economic growth translate into employment creation, poverty reduction and into tangible improvements in living conditions of the population (Government of Cameroon, 2009). But to effectively guarantee these objectives, efforts should be made to: (1) properly construct and study an indicator of employment vulnerability or decency and to identify the most vulnerable sectors and sub-groups in the population; (2) better understand the role of employment vulnerability among other determinants of household income; (3) to point out the contribution of employment vulnerability in accounting for household income inequality; and (4) to identify the role of employment sectors, decent employment as well as other income sources in enhancing social welfare (in terms of efficiency and equity) for policy targeting. Among other things, this thesis attempts to grapple with these issues.

Empirical evidence on the association of vulnerability and major economic outcomes such as earned income and income inequality is still highly fragmented, especially for SSA. In the developed countries, it has been observed that physically hazardous and highly strenuous jobs are often better paid than less strenuous or hazardous jobs (see Poggi, 2007; Fernandez and Nordman, 2009). Bocquier et al. (2010) construct a private sector employment vulnerability index and establish its links with income in seven economic capitals of West Africa. His work, though filling a gap in the SSA empirical literature on employment vulnerability, is only limited to economic capital cities, hence not suitable for broad-based policies. Empirical knowledge on employment vulnerability at the country-level in SSA is therefore still unsystematic. As value added, this thesis uses the 2007 Cameroon household consumption survey (CHCS-III) to fill these gaps. Moreover, our study accounts for some additional variables (for instance job related fringe benefits like housing allowance), absent in previous efforts, in constructing the vulnerability index and goes further to establish its links with household earned income and income inequality.

Decomposition of household income inequality may shed light on both its structure and dynamics. Inequality decomposition examines the contribution to inequality of particular characteristics and is important to assess the role of each characteristic to overall inequality. Inequality decomposition analyses were pioneered by Bourguignon (1979), Cowell (1980) and Shorrocks (1982, 1984). Literature review on income inequality decomposition permits us to briefly disentangle four main categories of inequality decomposition. The first category decomposes income inequality into population sub-group components such as gender, age,

religion, place of residence, or region. The second category of inequality decomposition examines the different components of income/expenditure in accounting for an observed level of income/expenditure inequality. The third category combines the first and the second category to obtain the simultaneous decomposition method of inequality indices. The fourth category employs the regression-based decomposition of inequality.

Inequality decomposition analyses in Cameroon have mainly considered the first three categories of this decomposition. The decomposition of income inequality into population sub-group components such as gender, age, religion, place of residence, or region (Chameni, 2005; Baye, 2008; Essama-Nsah 2010). The decomposition of inequality into income/expenditure sources (Miamo and Chameni, 2009; Fambon and Tamba, 2010) and the simultaneous decomposition (bi-decomposition) of inequality that hinges on both sub-groups and income/expenditure sources (Shorrocks, 1999; Lerman, 1999; Mussard, 2004; and Chameni, 2008). These three categories of inequality decomposition, though vital in indicating overall tendencies, fail to inform policy makers on the role of some individual and labour market characteristics (such as education, potential labour market experience, seniority in the main job, and working conditions) in explaining inequality in a multivariate context.

Fields and Yoo (2000) and Morduch and Sicular (2002) introduce a new integrated regression-based decomposition approach that uses estimated income flows from variables in an income generating equation to decompose a measure of total income inequality. This method provides a rich opportunity to assess the importance of regressed variables like education, potential labour market experience and employment vulnerability in explaining total inequality. Wan (2002; 2004) then updates this decomposition to consider the role of the constant and the residual in explaining income inequality. Alayande (2003) has applied this approach in Nigeria and Epo et al. (2010 and 2012) have applied the updated approach by Wan (2004) in Cameroon, but replication of this architecture is worthy to bring in labour market issues into the story. Moreover, this architecture is yet to be employed to examine the contribution of labour market related issues, like employment vulnerability for instance, in explaining household income inequality.

Though so far our approaches (econometric, regression-based decomposition just to mention a few) provide knowledge on household income and income inequality, expressed knowledge on how household income (efficiency) and income inequality (equity) can be blended is

beyond these frameworks. Moreover, most analysis of poverty and inequality in Cameroon are basically undertaken under separate frameworks which render the qualification of the welfare situation of households somehow difficult as evidence is fragmented (Baye, 2011). The only study that has attempted to blend efficiency and equity considerations in the same framework using Cameroon data is Baye (2011). However, Baye (2011) as well as previous endeavours in this direction (Dagum, 1993; Mukhopadhaya, 2001a; 2001b; 2002; Baluch and Razi, 2007) are limited as they only consider income or expenditure in analysing social welfare and completely sideline the determinants of income in such analysis. To fill this gap, we use the information contained in income generating equations to account for total social welfare among private sector households. Such an endeavour will provide policymakers with income factors cum policies that can be given priority, especially in the situation of tight budgetary resources.

1.3. Research Questions

From the above discussion, a key question arises: **What are the implications of employment quality for private sector household income distribution and social welfare in Cameroon?**
The specific questions are:

- What is the configuration of employment vulnerability and its complement across employment sectors, sub-groups and expenditure quintiles in Cameroon?
- What are the proximate determinants of private sector household income in Cameroon, overall and by employment sectors?
- What are the proximate sources of private sector household income inequality in Cameroon?
- What are the social welfare shares and impacts of decent employment relative to other regressed-income sources and sectors of employment?

1.4. Research Objectives

The main objective of the thesis is **to assess the implications of employment quality for private sector household income distribution and social welfare in Cameroon.**
The specific objectives are:

- To construct and study the configuration of indicators of employment quality in Cameroon;
- To identify the major determinants of private sector household income in Cameroon, overall and by employment sectors;
- To evaluate the relative importance of employment vulnerability in explaining measured private sector income inequality in Cameroon;
- To study the private sector social welfare shares and impacts of employment decency among other regressed-income sources in Cameroon; and
- To identify policy options on the basis of the findings.

1.5. Research Hypotheses

This thesis is guided by a number of hypotheses, holding other factors constant:

- Employment vulnerability is more widespread in the private sector, informal, farm, and rural sectors than in the public, formal, nonfarm and urban sectors, respectively;
- Employment vulnerability correlates inversely with private sector household income distribution;
- Employment vulnerability is inequality augmenting;
- Within-sector components of measured inequality overwhelm the between-sector components;
- Efficiency considerations are more important than equity considerations in determining social welfare; and
- Employment sectors with higher income shares are not necessarily those with higher welfare impacts.

1.6. Scientific and Policy Relevance

Scientific Contribution

The main contribution, among others, of this study is the investigation of the causes and consequences of employment vulnerability at the country-specific level in Sub-Sahara Africa using coherent econometric approaches. Some steps have been taken in this direction in the developed world in recent years (see Poggi, 2007 and Fernandez and Nordman, 2009). In Sub-Sahara Africa, the only attempt to empirically provide evidence on employment

vulnerability and income is on a cross-country basis (see Bocquier et al. 2010). In this respect, our research will be among the first to empirically deal with employment vulnerability and its effects on household income at the country-level across employment sectors in Sub-Sahara Africa.

From a methodological perspective, the question of linking employment vulnerability and household income raises a number of econometric issues that our research will attempt to address. There exists a sample selection problem, as some private sector workers were observed and some were not observed in the sample, and a likelihood of employment vulnerability being endogenous in the income equation. We use the Heckman approach (Statacorp., 2001) to check for selection bias, the IV approach to address potential endogeneity and the control function approach to address potential heterogeneity of unobserved variables with inputs into the income function (see Mwabu, 2009 and Baye, 2010). This study also suggests a new instrument for vulnerability, institutional coverage, as value addition.

Empirical studies on employment vulnerability and income have paid much attention to investigating the determinants of employment vulnerability and linking it to income. Typically, such studies have extended analyses to cover the effect of vulnerability across sub-groups (see Poggi, 2007; Fernandez and Nordman, 2009; and Bocqueir et al, 2010). After considering these for Cameroon as in past studies, we will extend the regression analysis by learning about the relative contribution of regressed sources in accounting for household income inequality. This extension (that is, the regression-based decomposition), which is highly innovative is just beginning to gain prominence in Sub-Sahara Africa and worth replicating to better enhance our understanding of the inequality implications of labour market related variables. For a recent application of the regressed-based inequality decomposition using Cameroon's household survey data, see Epo et al. (2010 and 2012). But this architecture is yet to be employed to examine the contribution of labour market related factors in explaining private sector income inequality in Cameroon. In this perspective, our proposed study examines the contribution of variables such as years of education, potential labour market experience and its square, seniority in the main job, and employment vulnerability in explaining private sector income inequality. The study also isolates the within- and between-sector components in accounting for measured private sector inequality

with and without vulnerability across farm/non-farm[11] and informal/formal private employment sectors.

The relevance of the regression-based decomposition in informing us on the contribution of regressed inequality sources is incontestable, but clear knowledge on the social welfare outcomes of a change in each regressed-income source (for instance, changes in human capital endowments or decent employment) is yet to be integrated in this framework. Moreover, no study, to our knowledge, has attempted to blend efficiency and inequality along regressed-income sources and employment sectors in the same framework in Cameroon. Thus, hinging on the frameworks proposed in Podder (1993) and Mukhopadhaya (2001a; 2001b; 2002), this thesis further examines the relative importance of efficiency and equity in social welfare analysis of regressed-income sources and private employment sectors.

Policy Relevance

A large number of employed workers are stuck in hazardous and risky jobs or jobs with adverse working conditions in Cameroon. Many have difficulties finding stable employment. Some self-employed or own-account people earn low incomes and have no social security coverage. Hence, our attempt to inform the stakeholders involved with the GESP on the configuration of employment vulnerability across employment sectors, location, gender, and expenditure quintiles is vital for policy priority and targeting. In this context, this knowledge will allow the authorities to know the most vulnerable employment sectors and sub-groups in Cameroon; permitting them to identify the most vulnerable sectors and groups in the economy for public policy making and targeting.

In the context of a tight public budget, informed knowledge on who is more vulnerable in the labour market is itself a relevant policy question. The results of this thesis will heighten the current debate to promote decent employment in Cameroon. These results will permit the government of Cameroon to redesign targeting strategies to confront the most vulnerable groups, given the often limited resources. Knowing the determinants of employment vulnerability or decency in Cameroon fairly pairs-up with the 2009 Growth and Employment Strategy Paper to promote growth and decent employment.

[11] With non-farm in this study, we mean non-farm private sector

In addition, the supplementation of the regression analysis to give weights to human capital variables and employment vulnerability in accounting for private sector household income inequality is vital for policy action. The regression-based decomposition will permit us assign contributions to each of our regressed sources in explaining private sector household income inequality in Cameroon. Based on findings from this study, policy makers will be endowed with variable(s)-cum-policies that contribute most in explaining private sector household income and income inequality in Cameroon.

The regression based-decomposition analysis encompasses both quantitative and qualitative policy orientations. This approach does not only give explanatory power to the policy variables, but it also constitutes an important qualitative tool in deciding which explanatory variable-cum-policy is most important and which is less important in accounting for income inequality. The results of this study will surely be relevant in informing policies that promote decent employment, improve household income and reduce income inequality in Cameroon. Given the usual budgetary constraints, results from this study will permit decision makers to be able to prioritise actions in the policy menu.

The extension of the regression-based decomposition may help inform policy makers better on regressed variables-cum-policies as well as employment sectors which have inequality reducing or equity enhancing effects. Consideration of both the income and income-source dimensions in the analysis of social welfare is also vital for policy design. Such a consideration would permit both policy analysts and policy makers to better understand some of the theoretical and empirical needs of blending efficiency and equity in social welfare analysis of income sources in Cameroon. Findings from this study may help policy makers to design targeted policies which are expected to affect both efficiency and equity in Cameroon.

Results from this study are expected to inform stakeholders concerned with the GESP to ascertain inputs for targeting policy interventions. In this regard, the projected annual average growth of 5.5% between 2010 and 2020, if achieved, would be accompanied by significant improvements in working conditions and poverty reduction. Insights from this thesis would shape policy interventions of stakeholders concerned with the Growth and Employment Strategy Paper to ensure that as Cameroon emerges by the year 2035, it does so with the employment situation of individuals/households therein. Essentially, fears that the country's growth and decent employment objectives, as crafted in the GESP, may ignore the less

privileged and vulnerable sectors or sub-groups find insurance in this thesis, though implementation remains beyond its scope. Finally, this work will complement the current global concerns on employment quality for Cameroon, by assessing one of the most current and crucial goal of labour and employment highlighted by the International Labour Office (ILO, 2008a and ILO, 2011), World Bank (World Bank, 2000), WDR 2013 and G8.

1.7. Brief outline of the Methodology and Presentation of Data

Brief outline of the Methodology

In order to provide a clear understanding of the configuration of employment vulnerability in Cameroon and its role in determining private sector household per capita income and income inequality, our study in it first phase constructs an employment vulnerability indicator using the multiple correspondence analysis (MCA) approach. It further employs a range of econometric approaches: ordinary least squares (OLS), instrumental variable (IV), the control function and the Heckman approaches (Statacorp., 2001) to investigate the impact of employment vulnerability on private sector household per capita income and across employment sectors in Cameroon. Subsequently, a regression-based decomposition approach is used to examine the contributions of regressed sources in explaining private sector income inequality in Cameroon (Wan, 2002; 2004). A Shapley Value decomposition is then employed to account for the within- and between-sector components of regressed income-source inequalities (Araar, 2006a and Baye, 2008), with and without employment vulnerability. Finally, we resort to the framework proposed by Podder (1993) and Mukhopadhaya (2001a; 2001b; 2002) to investigate the relative importance of efficiency and equity in social welfare analysis along regressed-income sources as well as employment sectors.

Brief presentation of the Data

We employ the Cameroon household consumption survey, CHCS III conducted in 2007 by the National Institute of Statistics (NIS), which provides information on labour market employment sectors and labour market variables relevant for the study. The CHCS III was conducted between May and July 2007; and comprised 11391 households that were actually interviewed. About 9219 of these household heads were actively employed in the private sector (that is, those in agricultural exploitation – farms, plantations or animal breeding – and

those in nonfarm activities; associative enterprises – syndicates, cooperatives and NGO – as well as household chores). Essentially, among these farm and nonfarm workers, some are in informal employment while others in formal employment. The Government of Cameroon (2007) defines the informal sector on the basis of administrative registration, maintenance of accounts and size of the establishment. The informal sector thus covers those sectors which are not registered or/and do not keep accounts or/and small indecent businesses. Close to 1102 of these household heads are actively occupied in public/parapublic and international organisations. Importantly, 165 of them are unemployed according to the International Labour Office[12], 93 are discouraged unemployed[13] and 812 are inactive in the labour market. For the CHCS III, Cameroon can be divided into 22 strata: Douala; Yaoundé; and 10 semi-urban and 10 rural areas. This dataset is obtainable from the National Institute of Statistics.

The dependent variable for our study is per capita monthly income, surrogated by per capita expenditures per month. The potential endogenous variable is employment vulnerability constructed from contractual insecurity, job dissatisfaction, social insecurity, underemployment, unstable remuneration, casual labour, membership of a trade union/association, unpaid leaves and housing allowance. Exogenous included variables are education (years); experience (years of work) and its square; seniority in the main job (dummy); number of younger children (cluster level); Number of married household heads (cluster level), gender (dummy); and location (dummy). Instruments for the endogenous input - employment vulnerability, are: density of institutions per region and attachment to traditional believes (cluster level). Other variables include: sectors of employment (farm/nonfarm, and formal/informal).

The objectives and methodology, as aforementioned also complement in guiding the scope of this thesis. Thus, this study in no way attempts to provide evidence of vulnerability to job losses in the event of a major economic downturn. The primary focus of this study is the employment vulnerability/decency of the worker or household head and not of the firm. Thus activity sector, business and institutional sectors which are all units of production are not used. The test of the theory of compensating wage differential is therefore based on job

[12] According to the ILO, an active person is considered as unemployed if he has got no job or has not worked for at least an hour over the 7 days preceding the survey and is seeking a job and is ready to work immediately.
[13] Discouraged unemployed refers to those who although not having sought a job during the reference period, remain available if they were proposed one.

characteristics or employment status variables of the household head (or worker) and not on firm characteristics. This study does not attempt to carry out an analysis of pro-poor growth or in any way considers linking the concept of employment quality to pro-poor growth. In addition, the study does not attempt in any way to carry out analysis on the theories of labour market institutions and regulations.

1.8. Organisation of the Thesis

After this general introduction, the rest of the thesis is organised in six chapters: **Chapter 2** provides a conceptual framework that constructs linkages between employment quality, income distribution, and social welfare. **Chapter 3** constructs employment quality indicators and assesses their configuration across employment sectors, location, gender, and expenditure quintiles in Cameroon. **Chapter 4** assesses the role of employment vulnerability, while controlling for other correlates, in determining private sector earned income in Cameroon. **Chapter 5** evaluates the contributions of regressed-income sources in accounting for measured private sector income inequality in Cameroon. **Chapter 6** blends efficiency and equity in the analysis of social welfare of regressed-income sources and employment sectors and **Chapter 7** presents the general conclusion. Thus, chapters 3 to 6 are empirical in nature. In each of these empirical chapters the organisation is made up of the following sections: introduction, literature review, theoretical framework, methodology, data presentation, empirical analysis and concluding remarks.

CHAPTER 2

Employment Quality, Income Distribution and Social Welfare: A Conceptual Framework

2.1. Introduction

The pattern and sources of income or income growth as well as the manner in which the benefits of growth are distributed are important from the point of view of achieving poverty reduction. The labour market may play a key role in that context. Indeed, countries that achieved high rates of economic growth alongside high rates of decent employment growth are likely those who succeeded in achieving significant poverty reductions. According to the ILO (2011), economic growth that stagnates progress in reducing vulnerable employment downgrades progress in reducing working poverty among the economically active. Consolidating this view, the National Institute of Statistics (2011) posits that any strong and sustainable growth that does not generate decent jobs (or reduce vulnerable jobs) is not of satisfactory quality as it might induce wage inequalities and social strife. According to the World Development Report 2013 of the World Bank, some jobs do more for development than others, because they reduce poverty and inequality, strengthen production chains and clusters, or help build trust and shared values. Thus, progress in improving earned income, reducing income inequality and promoting poverty reduction that fail to consider the deterioration of the labour market, especially in terms of employment quality, may be rather disappointing.

However, in developing countries not every household head in the labour market benefits from strong labour market performances; large numbers of household heads are stuck in low paid jobs, many have difficulties finding stable employment, and some are not covered by laws on basic employment standards such as social security coverage, paid leaves, or written contracts. These workers are vulnerable. Condemning this situation, the British Commission on Vulnerable Employment has established that unsafe, low paid and insecure work is causing misery for millions of workers. The purpose of this chapter is to explore the different aspects of the concept of employment vulnerability and construct a framework that establishes its

linkages to household income and income inequality. We then simultaneously link efficiency (mean income) and equity (income equality) in the analysis of social welfare and allows for the analysis of trade-off between the two.

We construct an employment vulnerability index and study its links with household income. Our interpretation of the linkage between employment vulnerability and household income hinges on the theory of compensating wage differentials. This theory, formalized in the 1980s[14] (see Brown, 1980; Rosen, 1986; and Murphy and Topel, 1987) states that workers classified as vulnerable may be better paid than more stable, steady workers considered less vulnerable. Evidence from developed countries supports this theory (Poggi, 2007; Fernandez and Nordman, 2009) which may still be very much unsystematic in developing countries where labour is highly unskilled and unspecialized. In a developing country, this situation is likely to constitute a source of deprivation for households. Our analysis subsequently employs employment vulnerability among other determinants of household income to explain income inequality in the private sector as a whole besides identifying the within- and between-components of measured inequality. Viewing inequality, among others, as unequal access to capabilities (such as education, experience, access to credit, labour status, decent employment), we use the information contained in the income-generating equation to account for the inequality of household income. We measure how employment vulnerability besides other determinants of private sector income accounts for overall private sector income inequality.

There is growing consensus that the initial level of income inequality within an economy considerably determines the poverty reduction outcomes of a growth process (Ravallion, 1997 and 2001). Higher levels of initial inequalities in access to education, labour market experience, credit access, seniority in the main job (job position) and labour status (decent employment) may dissipate markedly the poverty outcomes of growth. Assessing the responsiveness of poverty to inequality change with a micro-framework (Araar and Duclos, 2010 and Epo, 2012) is a mere accounting exercise, but considering a framework that simultaneously handles efficiency and equality and allows for the analysis of trade-off between the two may be more policy useful. We assess income growth and inequality in the

[14] The precepts of this theory date back to Smith (1776) who 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 all the pros and cons of a job.

same framework, provided by the analysis of social welfare, which allows for a better appreciation of the welfare situation of household heads or workers. This analysis will inform policy makers and analysts on the role of decent/vulnerable employment and other income sources as well as employment sectors in inequality reduction or welfare enhancement for policy prioritisation.

The rest of this chapter is organised as follows: Section 2.2 dwells on the concept of employment quality; Section 2.3 considers the concept of income inequality; Section 2.4 throws light on the concept of social welfare; Section 2.5 considers the linkages between employment quality, income distribution and social welfare; and Section 2.6 deduces the hypotheses of our study. Importantly, each of the concepts is treated by considering its definition and measurement as well as its theoretical and historical evolution.

2.2. The Concept of Employment Quality (Vulnerability and Decency)

The labour market in the developing countries, to some extent, is characterized by fairly educated 'knowledge workers' whose skills are in demand. However, not all household heads or workers are in a position to capture the benefits of economic growth. A considerable proportion of the labour force works for low pay, without representation, and with poor prospects of improving their conditions of work. These workers are exposed, as their participation in the labour market leaves their wellbeing at risk. Essentially, vulnerable workers find it difficult to access work that provides a decent income and working conditions that meet societal norms. In the following sub-sections we attempt to throw more light on the concept of employment vulnerability.

2.2.1. Definition and Measurement of Employment Quality

It may be worthy to spring from employment before turning to employment vulnerability, given their lineage. The notion of decent work recommends the existence of employment opportunities for all who are available for and seeking work. Thus, an important element of decent work is the extent to which a country's population is employed (ILO, 2007). Employment rate is defined as the proportion of a country's working-age population that is employed. Therefore, household employment rate is simply the proportion of a household's working-age members who are employed. The employed members comprise of all those

persons in a household above a certain age (usually 15) who perform any work at all during the reference period, for payment or profit, or for payment in kind. Also involved are those people who were temporarily absent from work because of illness or injury, holiday or vacation, strike or lockout, educational or training leave, or because of the temporary suspension of activity at their place of work. The international labour organisation (ILO) resolution adds that unpaid family workers should be counted as employed if they do this work for at least one hour.

This indicator is shown as KILM 2 in the ILO key indicators of the labour market (see Appendix 2.1A). This indicator is very useful as it provides information on the ability of a country to create employment, but it still needs to be considered in conjunction with other labour indicators in order to allow an overall picture of the employment situation in a country or region or household. This indicator could be high for reasons that are not positive, as young people may not have the opportunity to continue their full-time education and may be forced to rather take up employment. Equally, as individuals or household heads declared to be employed may be working under very unfair job conditions (for instance, workers with no contractual security, job satisfaction, employment stability, trade union membership, and job related fringe benefits). Thus, it may be more enriching to look beyond employment per se; to consider the category of employed individuals or household heads with either vulnerable or decent status in the labour market.

Economic literature on the concept of employment vulnerability includes a myriad of definitions of this notion. The work of Wilson and Ramphele (1989) defines it as the risk of destitution, famine or death. Cheli and Lemmi (1995) propose a fuzzy and relative approach to vulnerability, which enables them to define an "exposure to the risk of poverty" notion. For Dubois and Rousseau (2001), vulnerability is a person's own structure of "capabilities" that enables that person to replace (or not) one capability with another in the event of an exogenous shock. In this perspective, the loss of a job would therefore have a greater impact on an individual with less leeway to work in different occupations and a low level of economic and social capital or networks. Pagès (2003) has highlighted a notion of vulnerability in employment that regroups different forms of underemployment as the lack of socioeconomic security at work; associated more with institutional variables and their time-related factors."

The ILO (2008a) defines employment vulnerability as the risk of lacking full, decent and productive employment. This report characterizes vulnerable employment with respect to temporary work, part-time work, job security, low pay, fringe benefits and chances of promotion. Concurrently, the ILO (2011) also characterized it by low pay, lack of adequate social protection and difficult working conditions. However, attempts to repackage these elements into an employment vulnerability indicator are still largely fragmented. In this thesis, we refer to the notion similar to that developed by Cheli and Lemmi (1995), Qizilbash (2006) and used by Bocquier and al. (2010) to build employment quality indicators.

Employment vulnerability in this study is an employed household head's own structure of "capabilities" that enables that household head to manage the risks or cope with the losses and costs associated with the occurrence of risky events. This way, unemployment, birth and other household shocks will affect disproportionately a household head with less leeway or low level of social capital. Hinging on Pagès (2003), ILO (2008a & 2011) and Bocquier et al. (2010), employment quality in this study is analysed with respect to institutional variables (employment contracts; compliance with the labour code in terms of social security, vacation, hours work); time-related factors (casual and unstable employment); job satisfaction; remuneration stability; union membership; and job-related fringe benefit (housing allowance). These multi-dimensions of employment quality are further motivated to develop an indicator of employment vulnerability among household heads involved with employment sectors in Cameroon.

2.2.2. Theoretical and Historical Evolution of the Concept of Employment Quality

One can hardly deny the fact that employment vulnerability or decency is not born nowadays. Employment quality has observed significant evolutions in its conceptualisation and analysis that relates it to some economic outcomes (for instance income or poverty and income inequality).

The precepts of the concept of employment vulnerability date back to the classical economists. Smith (1776) 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 all the pros and cons of a job. The five principal circumstances 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 reposed in those who exercise them; and fifthly, the probability or improbability of success in them (Book I, Chap. X, part I). It is clear that though Smith's (1776) primary focus was pecuniary compensations, he ignited the idea of poor working conditions.

Swerving from Smith (1776), the expression 'vulnerable or decent employment' is used in recent years to sum up the aspirations of people in their working lives. These aspirations are for job opportunities and sufficient incomes; rights at work, representation and a voice at the workplace; family stability and personal development; and fairness and gender equality. Ultimately, decent work reflects the concerns of the three pillars of the ILO – governments, workers, and employers – that give it its special tripartite identity.

The idea of 'decent work' was first articulated in 1999 by the ILO Director-General in his report to the 87th Session of the International Labour Conference. He described decent work as "opportunities for women and men to obtain decent and productive work in conditions of freedom, equity, security and human dignity. The concept of decent work is captured in four strategic objectives: rights at work, which are grounded in fundamental principles and international labour standards; employment and income opportunities; social protection and social security; and social dialogue and tripartism (governments, workers, and employers).

Ongoing efforts highlight the need to assess progress made towards the idea of 'decent work' as articulated in 1999 by the international labour office. Making use of a comprehensive set of indicators, the ILO (2007) lays emphasis on: (1) assessing decent employment and the Millennium Development Goals (MDGs): description and analysis of a new target; (2) assessing vulnerable employment: The role of status and sector indicators; and, (3) measuring the quality of employment in low income countries", in terms of decency and vulnerability. Efforts in this direction are apparent in ILO (2008a) and ILO (2011) who characterize employment vulnerability with respect to temporary work, part-time work, job security, low pay, fringe benefits and chances of promotion.

However, other endeavours have attempted to examine the level of vulnerability to job losses in the event of an economic shock. Drawing from the work of Baum and Mitchell (2009), the

Centre of Full Employment and Equity (CofFEE) and the Griffith University's Urban Research Program (URP) undertook a spatial approach to employment vulnerability. They published in 2009 their *Employment Vulnerability Index* (EVI) (also called the job loss potential index) which provides a national ranking of suburbs according to the level of vulnerability to job losses in the event of a major economic downturn (Mitchell and Flanagan, 2009). The approach used three indicators of the types of jobs at most risk: (1) the proportion of people employed in construction, mining, manufacturing, retail, accommodation and tourism, financial services and real estate; (2) the proportion of employed people without post school qualifications; and (3) the proportion of people working part-time. This vulnerability index took into account both suburb and individual characteristics and intended to promote debates concerning the spatial consequences of the deterioration of the labour market.

Renewed interest now recommends the assessment of decent/vulnerable employment with an emphasis on showing how they can highlight vital issues that are associated with economic outcomes. Certainly, this concern is not a thing of today. Some evolution concerns are tractable around the relationship of adverse working conditions with earned-income; on the basis of compensating wage differentials. This theory, compensating wage differentials, was first introduced by Adam Smith in the 18th century (Smith, 1776). This theory was later formalised, empirically, in the 70s and 80s with the works of Duncan (1976), Duncan and Stafford (1977), Brown (1980), Rosen (1986), Murphy and Topel (1987) just to name a few.

The 1990s ushered in with a generation of studies stressing on industry-level variables to overthrow the evidence of compensating differentials; stressing the non-competitive aspects of wage formation (Dorman and Hagstrom, 1998; Hwang et al., 1998). With the wind of the 21st century, one has witnessed a bourgeoning interest on the theory of compensating wage differentials with the works of Poggi (2007), Fernandez and Nordman (2009) and Bocquier et al. (2010). However, empirical knowledge on the famous theory of compensating wage differentials in Sub-Sahara Africa is still fragmented and particularly absent in Cameroon.

The traces of employment vulnerability with income inequality date back to the 70s with the famous report of Phelps-Brown (1977). In view of the relative freedom enjoyed by workers in their choice of job, the setting of differentials is in part focused to provide incentives similar to those in a market economy. Phelps-Brown's (1977) report underlines that income differentials were set with regard to incentives to invest in human capital, to enter occupations

with unpleasant conditions (or occupations with vulnerable status), to bear responsibility, to work hard on the job, and to move to industries or areas selected for an expansion of employment. This evidence also witnessed theoretical support in the 90s by Sloman (1991). Unfortunately, the empirical relationship between employment vulnerability and income inequality is still largely untested, especially in Sub-Sahara Africa.

2.3. The Concept of Income Inequality

Typically, the distribution of income is a dominant element in the overall distribution. Income differentials reflect variations in hours of work and in hourly rates (which may in part reflect differences in shift length). Income differentials in market economies are generally taken to reflect differentials in education, training and skills captured in the theory of human capital. Other theories have also attempted to elucidate income inequality: *the inheritance theory* puts inherited endowments at the centre of income inequalities and treats other factors as secondary; the *public income distribution and the distributive justice theory* place more emphasis on public policies and normative beliefs of individuals; and the *life-cycle income hypothesis* stresses on age as a major factor of income inequality while other factors are secondary. All these factors contribute to explain income inequalities by age, sex, marital and occupational status, sectors and location.

2.3.1. Definition and Measurement of Income Inequality

The meaning of the concept of income inequality cuts across several disciplines including economics, sociology and political science and even within economics its definition differs across philosophies and ideologies. Some theories compare two parts of the income distribution, others focus on the distribution as a whole and some acknowledge multi-dimensions of inequality. Income inequality is a measurement of the distribution of income that highlights the gap between individuals or households making most of the income in a given country and those making very little. In like manner, income inequality is the state of an economy in which the shares of total income earned by the rich and poor are highly unequal. Other authors consider income inequality as an indicator of how material resources are distributed across society (Wilkinson and Pickett, 2009). However, Amartye Sen presupposes that there are several dimensions of inequality apart from income; such as, education, wealth,

skill, opportunity, health and infrastructure or job status in his quest to answer the fundamental question, 'inequality of what?' He then defines it as an unequal distribution of attributes apportioned to a welfare indicator of a population (Sen, 1997).

For Sen (1997), it is the dispersion of the distribution of education, skill, income, opportunity, health and other attributes that qualifies the welfare status of a population. Basing on the standard neoclassical approach, income distribution is interpreted in two main ways: the functional distribution of income reflecting the distribution of income among factors and the size distribution of income focusing on the distribution of income among persons or households. Advancing from this multidimensional character, authors like List (1999) then capture the multidimensional inequality measure by using different dimensions of the distribution of goods or attributes across people. Like its definition, its measurement has also undergone marked variations.

Early endeavours like Schutz (1951) measure income inequality statistically as the deviation from the diagonal line in a graph of cumulative proportions of the population against the cumulative proportion of incomes of the population. Where, the diagonal line is the line of equality in the distribution of income and the deviation from this line is the Lorenz Curve. The more it curves away from the diagonal line of equality the greater the income inequality. Advent to the Lorenz Curve, several scalar measures of income inequality came-up as from the 1970s. These years also witnessed the setting-up of major standards for good measures of inequality.

Economic literature from the closing of the 70s proposes several measures to characterise inequality in the distribution of living standards (see, Sen, 1973; Theil, 1979; Kakwani, 1980; Fields, 1980; Shorrocks, 1984; Glewwe, 1986; Litchfield, 1999). For these authors, any good measure of inequality must satisfy at least six axiomatic conditions: (1) mean independence; (2) population size independence; (3) symmetry; (4) Pigou-Dalton transfer sensitiviy; (5) decomposability; and (6) Statistical testability. The Mean independence condition states that multiplying all incomes by a constant, k, leaves the measure of inequality unchanged. The population-size independence condition supposes that increasing or decreasing the population by the same amount across all income classes does not affect the measure of inequality. The Pigou-Dalton transfer sensitivity condition holds that an income transfer from a richer to a poorer person brings about a decrease in the measure of inequality without reversing the

direction of well-being. The symmetry condition requires that the inequality measure be independent of any characteristic of households other than the well-being indicator whose distribution is being measured. The decomposability condition takes three forms: group decomposability, source decomposability and decomposability of shared household income. Statistical testability holds that one should be able to test for the significance of changes in the index over time.

The inequality measures that satisfy these criteria are the *general entropy (GE)* class (Theil's T, Theil's L and the mean log deviation measure), and the *Atkinson measure* (see, Cowell and Kuga, 1981 and Shorrocks, 1984). The values of GE measures vary between zero and infinity, with zero representing an equal distribution and higher values representing higher levels of inequality. The Atkinson measure has a weighting parameter which measures the level of aversion to inequality. Added to the above measures is the *Gini index* that satisfies all the basic axioms of an appropriate measure of inequality except the decomposability axiom. The Gini index is the most widely used measure and is based on the Lorenz curve with values varying between 0 (representing perfect equality) and 1 (representing perfect inequality). However, as indicated in Litchfield (1999) there are ways of decomposing the Gini by group but the component terms of inequality are not always intuitively or mathematically appealing.

For some authors, income inequality is only present when the share of total income accruing to the rich is far higher than that accruing to the poor. Fields (2007) considers the concept of income inequality as a vague concept and conceives it in relative terms as income ratios rather than income differences. He argues that income inequality measures and inequality do not mean the same thing. For him, therefore, standard inequality measures like the Lorenz Curve and Gini coefficient should not be at the centre of income distribution analysis or policy but rather the concern should be the ratio of high incomes to low incomes.

The *decile dispersion ratio*, defined as the expenditure (or income) of the richest decile divided by that of the poorest decile, is popular but a very crude measure of inequality. A *Pen's Parade* graph can be useful in showing how incomes, and income distribution, change over time. Pen's Parade is a form of quantile graph; on the horizontal axis, every person is lined up from poorest to richest, while the vertical axis shows the level of expenditure (or income) per capita. *Microsimulation exercises* are increasingly being used to identify the

sources of changes in income distribution, and to identify changes resulting from changes in prices, in endowments, in occupational choice, and in demographic factors.

2.3.2. Historical and Theoretical Evolution of the Conceptualisation of Inequality

Most of the common inequality measures highlighted above can be used to assess major contributors to inequality. More generally, household income is determined by household and personal characteristics such as, education, gender, and occupation, as well as geographic factors including urban and regional location. Overall inequality may be due to differences in such characteristics. In economic literature, there is a longstanding evolution of the decomposability criteria of income inequality and analysis of the effects of inequality.

Decomposition of income inequality may inform researchers and other stakeholders on both its structure and dynamics. The decomposability criterion of income inequality investigates the contribution to inequality of particular characteristics and is important to assess the role of each characteristic to overall inequality. Inequality decomposition analyses were pioneered by Bourguignon (1979), Cowell (1980) and Shorrocks (1982, 1984). The evolution of the decomposition of income inequality allows us to broadly disentangle four main phases of inequality decomposition (population sub-group components, income components, simultaneous decomposition and regression-based decomposition).

The first phase erected in the late 70s and early 80s, decomposes income inequality into population sub-group components such as gender, age, religion, place of residence, or region. This phase is particularly pioneered by the works of Bourguignon (1979), Cowell (1980) and Shorrocks (1980, 1984). In the course of the 1980s, the second phase comes with the works of authors like Pyatt et al. (1980) and Shorrocks (1982) to examine the different components of income/expenditure in accounting for an observed level of income/expenditure inequality. This way, the level of total income/expenditure inequality is determined and then decomposed into the different components of income/expenditure (for instance expenditure components may include food, housing, health, or transport expenditures and income components may include farm, nonfarm incomes or other categories of income sources). Authors that have piloted this decomposability criteria include for example, Pyatt et al. (1980), Shorrocks (1982, 1999), and Chantreuil and Trannoy (1999). To resolve the problem of the residual or interaction term faced by some conventional decomposition techniques, Shorrocks (1999)

proposes a unique theoretical framework driven by the Shapley Value that eliminates the residual or interaction term. This framework is commonly called Shapley-Shorrocks source decomposition.

In recent years, a third phase attempts to combine the first and the second phases to obtain the simultaneous decomposition method of inequality indices. With this approach, the contributions of the various population sub-groups and the income/expenditure sources to total income/expenditure inequality are independent of the inequality index used (see Mussard, 2004 and Chameni, 2008). The above three phases decompose income/expenditure inequality into population sub-groups and income/expenditure sources, but fail to inform policy makers on the role of some individual and labour market characteristics (such as education, potential labour market experience, seniority in the main job, and working conditions) in an income generating equation in explaining income inequality in a multivariate context. The fourth phase of income inequality decomposition clearly frames-up well in providing a solution to this problem.

The fourth phase, emerging in the 21st century, introduces a new integrated regression-based approach for decomposing income inequality indices developed by Fields and Yoo (2000) and Morduch and Sicular (2002). Their approach is an extension of the decomposition technique proposed by Shorrocks (1982, 1984 and 1999). They use estimated income flows from variables in an income generating equation (transformation of income limited at semi-log specification or the standard linear income equation) to decompose a measure of total income inequality. This method provides a rich opportunity to assess the importance of regressed variables like education, potential labour market experience, seniority in the main job, and employment vulnerability in explaining total inequality. The regression-based decomposition as introduced by Fields and Yoo (2000) and Morduch and Sicular (2002) fails to consider the contribution of the constant and the residual terms and lays restrictions on the transformation of the dependent variable (see Wan, 2002). Wan (2004) then updates this decomposition to consider the role of the constant and the residual in explaining income inequality using this approach; which according to him constitutes vital information in the decomposition approach.

Nonetheless, other authors present the regression-based decomposition approach in the form of percentage-weights, where the contribution of each factor is evaluated as a percentage of

R^2 (Fields 2002 & 2004). These authors attribute the variance and log-variance of the dependent variable, as a measure of inequality, to the explanatory factors and allow R^2 to be the fraction of the variance that is explained by all the explanatory factors taken together. Besides the problems with the log-variance (see, Sen, 1973 and Foster and OK, 1999), the decomposition of the R^2 is heavily criticised on the basis that; R^2 is the fraction of income that is explained by all explanatory variables and not necessarily the fraction of inequality explained by these variables. These problems are resolved by applying the regression-based approach combined with the natural rule of decomposition by Shorrocks (1999) or the before-after approach recommended by Cancain and Reed (1998), to allow the contributions of the independent variables to sum up to total inequality (see Wan, 2004 and Epo et al., 2010).

The analysis of inequality has evolved to constitute an important focus for researchers, governments and other stakeholders concerned with issues of redistribution. Its analysis has evolved from the mere measuring of inequality to evaluating its consequences on economic, social and political dimensions. This renewed interest is particularly vital when one predicts the consequences of inequality in terms of poverty reduction, growth, social injustice, social vulnerability and socio-political instability. Until the 1970s most economists argued that inequality was conducive to faster growth. Classical economics, and Kaldor (1955) (an economist strongly influenced by Keynes's approach to macroeconomics[15]), saw this as happening via higher savings rates. Kuznets suggested that urbanization, being a proxy for a shift from agricultural to industrial production, implied increasing inequality as a "cause" of early development (Kuznets, 1955).

However, in the mid 90s, theory and evidence began to emerge that inequality might cause slower growth, at least in developing countries. The original evidence, as highlighted in Persson and Tabellini (1994) and Alesina and Rodrik (1994), was supported by a political economy explanation: very unequal distributions produced pressures on governments from "median voters" to redistribute, leading to high tax disincentives and distortions that slowed growth. Aghion et al. (1999) confirmed the evidence by showing that inequality can negatively affect economic performance - defined as economic growth - through political constraints, limited investment decisions, hindered development of capabilities and social

[15] John Maynard Keynes, in his major work, The General Theory of Employment, Interest and Money (1936), rejected the classical assumption that markets would clear; considering the governments as having the role to smoothing out market fluctuations and disequilibria.

strife. Clarke (1996) strengthened the evidence by controlling for more possible causes of growth, but refuted the explanation, showing that the inequality-to-growth link was not weaker (indeed somewhat stronger) in nondemocracies, where the political economy pressures from median voters were presumably less.

Barro (1999) has produced the most information-rich and robust analysis of the effects of inequality on growth to date. He confirms a clear negative impact for countries with low mean income. He identifies a further effect of high Ginis in raising fertility - in turn known to cause subsequent slower growth (and less equal distribution) in developing countries, more so where income is lower or fertility higher (Barro 1999 and Eastwood and Lipton 2001). Barro finds no impact of inequality on distribution over the entire range of countries and periods - and a favourable impact in developed countries - but in poor countries the negative impact seems clear, not very small, and robust to the inclusion of many other variables believed to account for economic growth.

Though concerns of the poverty impact of growth date back to the 70s with the pro-distribution arguments by Chenery and Ahluwalia (1974) and the first WDR argument that development efforts should be aimed at the twin objectives of rapid growth and poverty reduction (World Bank, 1978), renewed effort to check its (that is, pro-poor growth) determinants is observed from the early 1990s. The crucial role of inequality is hotly debated at the closing of the 1990s with the path making contributions of Ravallion (1997), Chen and Ravallion (2000) and Ravallion (2001). Much of the observed increase in inequality in developing countries is due to rising regional inequality. Particularly in Sub-Saharan Africa, pro-poor growth may be undermined by high location and gender inequality in education, access to resources at the farm level, and nonfarm employment. There is overwhelming evidence now that these inequalities not only hurt the less privileged social groups, but also reduce overall economic growth and increase poverty. Ravallion (1997), Chen and Ravallion (2000) and Ravallion (2001) suggest a negative impact of initial inequality (measured by the gap between richest and poorest quintiles as a proportion of the mean) in retarding the impact of growth on relative poverty. As observed in Ravallion (2004), with higher levels of initial income inequality, the growth-poverty elasticities are not significantly different from zero.

In recent years, an emerging literature has theorized, quantified and investigated in depth the economic causes of conflict in developing countries and its impact on socio-economic

development. A good number of efforts have centred on the "greed versus grievance" thesis proposed by Collier and Hoeffler (2004). Binswanger et al. (1993) and Schock (1996) show that inequalities in the distribution of various assets (land, income, wealth and other assets) have been associated with episodes of socio-political instability in several countries. Elbadawi (1999), Dollar et al. (2000) and Esteban and Schneider (2008) have investigated the impact of group inequalities and ethnic divides on conflicts. For these authors, when internal conflict is caused by inequalities between-groups and the persistence of social divides along economic, social or political outcomes, redistributive policies may become an effective form of preventing the occurrence of conflict or a means of diffusing existing ones.

2.4. The Concept of Social Welfare

Given the amount of wealth created in the past century, the crucial concern for the world is not how to produce goods to feed everyone, but to ensure that those in most need get their share of the world's riches or how to make a "bigger pie" more evenly split – this is an idea that combines income growth and income distribution. According to Klasen (2007), many countries in Sub-Saharan Africa and a good number in Asia and Latin America are less hopeful regarding the attainment of MDG1 of halving absolute poverty by 201516. In most of these countries, the growth they have experienced have only had marginal impacts on poverty. Even in countries like China and India that are projected to meet MDG1 due to high growth, rising inequality has sharply reduced the poverty impact of that growth; making the poverty reduction rates much unacceptable (Klasen, 2007). It is also important to recognise that even when economic growth occurs, households or individuals in the society do not benefit equally from this growth, due to higher deprivation suffered by the marginalised sectors of the society. Thus, considering a framework that blends equity (equality), efficiency (mean income) in social welfare analysis and allows for a trade-off between them may be more policy enriching.

2.4.1. Definition and Measurement of Social Welfare

Social welfare refers to the overall welfare of a given society (for instance the private sector households). On the basis of very strong assumptions, social welfare can be specified as the

[16] See Appendix 2.1B for a complete listing of the MDGs.

summation of the welfare of all the individuals in the society. Welfare may be measured either cardinally in terms of "utilities" or dollars or CFA franc, or measured ordinally in terms of Pareto efficiency. The cardinal method is only used in pure theory today because of aggregation problems that make the meaning of the method doubtful, except on widely challenged underlying assumptions. In applied welfare economics, such as in cost-benefit analysis, money-value estimates are often used, particularly where income-distribution effects are factored into the analysis or seem unlikely to undercut the analysis.

There are two mainstream approaches to welfare economics: the early Neoclassical approach and the New welfare economics approach. The early Neoclassical approach was developed by Sidgwick (1874), Edgeworth (1881), Marshall (1890), and Pigou (1920). It assumes that: utility is cardinal, that is, scale-measurable by observation or judgment; preferences are exogenously given and stable; additional consumption provides smaller and smaller increases in utility (diminishing marginal utility); and that all individuals have interpersonally comparable utility functions (an assumption that Edgeworth avoided in his formulations). On the basis of these assumptions, it is possible to construct a social welfare function simply by summing all the individual utility functions.

The New Welfare Economics approach is based on the work of Pareto (1906), Hicks (1939), and Kaldor (1939) and Scitovsky (1941). It explicitly recognizes the differences between the efficiency aspect of the discipline and the distribution aspect and treats them differently. Questions of efficiency are assessed with criteria such as Pareto efficiency and the Kaldor-Hicks compensation tests, while questions of income distribution are covered in social welfare function specification. Scitovosky derived a third version to the 'Compensation Principle' in his work titled: "A note on the Welfare Proposition in Economics" and called the Scitovsky Paradox or Reversal Test.

A social welfare function is a real-valued function that ranks conceivable social states (alternative complete descriptions of the society) from lowest to highest. Inputs of the function include any variables considered to affect the economic welfare of a society (Sen, 1970). In using welfare measures of persons in the society as inputs, the social welfare function is individualistic in form. One use of a social welfare function is to represent prospective patterns of collective choice as to alternative social states.

Literature identifies two types of social welfare measures. Social welfare is either measured cardinally in terms of monetary units (say CFA franc or Dollar) or ordinal in terms of Pareto efficiency. The ordinal approach is made up of the Lorenz Dominance and Generalised Lorenz Dominance approaches (Atkinson, 1970) whereas the cardinal approach is the measurement of social welfare using the Sen social welfare function (Sen-SWF). The Sen-SWF is expressed as the product of mean income (efficiency) multiplied by one minus the inequality (inequity), as captured by the Gini coefficient (Sen, 1974; 1979). Foster's welfare function is expressed as product of mean income multiplied by the exponential of the Theil's inequality measure (Foster, 1996). Mukhopadahya (2001b) has rendered the Sen-SWF more general and flexible for policy purposes by incorporating a trade-off parameter between equity and efficiency. Our work adopts the framework proposed in Mukhopadahya (2001b) because it allows the trade-off between efficiency and inequity, vital for policy targeting. Notwithstanding, the social welfare function has undergone marked evolution in its conceptualization or specification.

2.4.2. Theoretical and Historical Evolution of the Concept of Social Welfare

In the late 1930s, Bergson (1938) introduced the social welfare function. His aim was to state vividly the value judgments required to derive the conditions of maximum economic welfare set out by earlier writers, including Marshall (1890); Pigou (1920); and Pareto (1906). The function was real-valued, differentiable and was specified to describe the society as a whole. Arguments of the function included the quantities of different commodities produced and consumed and of resources used in producing different commodities, including labor. The necessary general conditions implied that at the maximum value of the function: (i) the marginal "monetary worth" of welfare is equal for each individual and for each commodity; (ii) the marginal "diswelfare" of each "monetary worth" of labor is equal for each commodity produced of each labor supplier; and (iii) the marginal "monetary" cost of each unit of resources is equal to the marginal value productivity for each commodity.

In this perspective, Bergson showed how welfare economics could describe a standard of economic efficiency despite dispensing with interpersonally-comparable cardinal utility. Bergson described an "economic welfare increase" (later called a Pareto improvement) as at least one individual moving to a more preferred position with everyone else indifferent. The

social welfare function could then be specified in a substantively individualistic sense to derive Pareto efficiency (optimality).

Samuelson (1949) himself stressed the flexibility of the social welfare function to characterize any one ethical belief, Pareto-bound or not, consistent with: a complete and transitive ranking (an ethically "better", "worse", or "indifferent" ranking) of all social alternatives and one set out of an infinity of welfare indices and cardinal indicators to characterize the belief. He also presented a coherent verbal and mathematical exposition of the social welfare function with minimal use of Lagrangean multipliers and without the difficult notation of differentials used by Bergson throughout. As Samuelson (1983, p. 22) notes, Bergson clarified how production and consumption efficiency conditions are distinct from the interpersonal ethical values of the social welfare function.

Samuelson (1949) further sharpened that distinction by specifying the Welfare function and the Possibility function. These functions have as arguments the set of utility functions for every individual or household in the society. Each function can (and commonly does) incorporate Pareto efficiency. The Possibility function also depends on technology and resource constraints. It is written in implicit form, reflecting the feasible locus of utility combinations imposed by the constraints and allowed by Pareto efficiency. At a given point on the Possibility function, if the utility of all but one person is determined, the remaining person's utility is determined. The Welfare function ranks different hypothetical sets of utility for every individual or household in the society from ethically lowest on up (with ties permitted), that is, it makes interpersonal comparisons of utility. Welfare maximization then consists of maximizing the welfare function subject to the possibility function as a constraint. The same welfare maximization conditions emerge as in Bergson's analysis.

Note that, for a two-person society, there is a graphical representation of such welfare maximization at the first figure of Bergson–Samuelson social welfare functions. Relative to consumer theory for an individual as to two commodities consumed, there are the following parallels: (i) the respective hypothetical utilities of the two persons in two-dimensional utility space is equivalent to the respective quantities of commodities for the two-dimensional commodity space of the indifference-curve surface; (ii) the welfare function is similar to the indifference-curve map; (iii) the possibility function is analogous to the budget constraint; and (iv) two-person welfare maximization at the tangency of the highest welfare function curve on

the possibility function is similar to the tangency of the highest indifference curve on the budget constraint.

Arrow (1963) generalizes the Bergson's analysis. In his version of a social welfare function (Arrow Social Welfare Function), also called a '*constitution*', he maps a set of individual orderings (ordinal utility functions) for every individual or household head in the society to a social ordering, a rule for ranking alternative social states (say passing an enforceable law or not, ceteris paribus). Arrow finds that nothing of behavioral significance is lost by dropping the requirement of social orderings that are real-valued (and thus cardinal) in favor of orderings, which are merely complete and transitive, such as a standard indifference-curve map. His earlier analysis mapped any set of individual orderings to one social ordering, whatever it was. This social ordering selected the top-ranked feasible alternative from the economic environment as to resource constraints. Arrow proposed to examine mapping different sets of individual orderings to possibly different social orderings. Here the social ordering would depend on the set of individual orderings, rather than being imposed (invariant to them). Interestingly, hinging on a course of theory from Adam Smith and Jeremy Bentham on, Arrow proved the General Possibility Theorem; identifying that it is impossible to have a social welfare function that satisfies a certain set of "apparently reasonable" conditions.

In the above perspectives, a social welfare function provides a kind of social preference based on only individual utility functions. Moreover, standard social welfare functions (SWFs) basically satisfy the efficiency criterion. In addition, Classical economists typically employed the ordinal measure of social welfare in terms of Pareto efficiency; according to which social welfare is overwhelmingly driven by efficiency considerations than equity considerations. This theoretical inclination reflects the fourth main hypothesis tested in this thesis. On the basis of the social welfare measure in terms of Pareto efficiency, a situation is optimal only if no individuals (or sectors) can be made better off without making someone else or other sectors worse off.

However, it is vital to underline that this ideal optimal situation can only be achieved if four criteria are made (Peace, 1983): (i) the marginal rates of substitution in consumption are

identical for all consumers[17]; (ii) the marginal rate of transformation in production is identical for all products[18]; (iii) the marginal resource cost is equal to the marginal revenue product for all production processes[19]; and (iv) the marginal rates of substitution in consumption are equal to the marginal rates of transformation in production. Most economists admit that market and government failures, asymmetric information as well as externalities or social cost may cause inefficiencies. Irrespective of the theoretical and analytical values of the Pareto criterion, it is limited as it provides no knowledge on the choice between alternatives. This choice constraint is of major concern since in any given society, economic policy will obviously always make some individuals or sectors better off while making some others worse off. This constitutes a serious restriction that Kaldor (1939) and Hicks (1939) underscored. For them, any change usually makes some people better off in welfare while making others worse off.

The new welfare economics, pioneered by Kaldor and Hicks, in an attempt to address this restriction and complement the Pareto principle have developed compensation tests to determine whether an activity is moving the economy towards Pareto efficiency. Following the Kaldor criterion, an activity will contribute to Pareto optimality if the maximum amount the gainers are prepared to pay is greater than the minimum amount that the losers are prepared to accept (Kaldor, 1939). For the Hicks criterion, on activity will contribute to Pareto optimality if the maximum amount the losers are prepared to offer to the gainers in order to prevent the change is less than the minimum amount the gainers are prepared to accept as a bride to forgo the change.

It is clear that the Kaldor compensation criterion springs from the gainers' point of view, while the Hicks compensation criterion is from the losers' point of view. Essentially, we gather here that if both criteria are met, both the losers and gainers will agree that the proposed activity will move the economy toward Pareto optimality; as the benefits can adequately compensate the losers. This state of affair is referred to as Kaldor-Hicks efficiency or the Scitovsky criterion. However, it may possible that in a situation of increasing inequality, more and more compensation will flow from the relatively rich individuals (or sectors) in the economy to compensate for the loss of the relatively poor individuals (or

[17] This occurs when no consumer can be made better off without making others worse off.
[18] This is feasible when it is impossible to increase the production of any good without reducing the production of other goods.
[19] This occurs when marginal physical product of a factor must be the same for all firms producing a good.

sectors). This cast some doubt on the sufficiency of the Pareto efficiency for welfare measures.

In addition, there are countless combinations of consumption and production equilibria that yield Pareto optimal results. Moreover, each optimum represents a different income distribution in the society and some may generate very high income inequalities. This leaves us with the unanswered question of which Pareto optimum is most desirable? This way, Pareto efficiency which completely ignores inequality is a necessary but not a sufficient condition for social welfare. The SWF involves value judgements about inter-personal utility; it shows the relative importance of household heads or individuals that are in the society or economy.

In this perspective, utilitarian welfare function adds-up the utility of each individual in order to obtain society's overall welfare. With this measure, all household heads or individuals are treated the same, regardless of their initial level of utility. Importantly, one additional unit of utility for an abject poor household is not regarded to be of any greater value than an extra unit of utility for a very rich household. In the contrary, the Max-Min criterion or Rawlsian utility function supposes that welfare is maximised when the utility of those society members that have the least is greatest (Stiglitz, 2000, p.102). For the Rawlsian criterion, no economic activity will generate social welfare enhancement if it does not improve the position of the society member that is worse off. We can all see the manifest unfairness of this criterion in favour of the poor or less privileged in an economy.

Another stream of studies has specified SWFs that are intermediate between these two extremes. These intermediate SWFs generally show that as inequality increases, a larger improvement in the utility of relatively rich individuals (or sectors) is needed to compensate for the loss in utility of the relatively poor individuals. This observation again points the need to consider a framework that mediates between efficiency and inequality. In addition, hinging on the theory of relative deprivation, individuals and household heads do not always evaluate their levels of welfare only with respect to their absolute levels of income or consumption. They often compare themselves with others and in such a scenario, for any given level of income in a country, high inequality has a direct negative impact on welfare. Thus, the efficiency and equity criteria should simultaneously be invoked to ensure a full appreciation of the welfare situation of a country or a given population.

The concepts of efficiency and equity are tracked by a non-utilitarian form of the Bergson (1938)-Samuelson (1949) SWF. Sen (1974, 1979) has also introduced a SWF expressed as the product of mean income multiplied by one minus the inequality, as captured by the Gini coefficient. Foster (1996) proposed to use one of Atkinson's Indexes, which is an entropy measure. Following the relation between Atkinsons entropy measure and the Theil index, Foster's welfare function is computed as product of mean income multiplied by the exponential of the Theil's inequality measure. This welfare function marks the income, which a randomly selected person is most likely to have. Mukhopadahya (2001b) has rendered the Sen-SWF more general and flexible by incorporating a trade-off parameter between equity and efficiency for policy purposes. His framework is more adaptable to policy choices or alternatives and decomposable via the coefficient of concentration as suggested by Podder (1993). We adopt this framework because it allows us to reconcile household income, income inequality, regressed-income sources, and the employment sectors under consideration into a single framework. This way, the framework of the generalised Sen-SWF, proposed by Mukhopadahya (2001a; 2001b), implemented in the penultimate chapter acts as a closure to the entire thesis.

2.5. Linkages between Employment Quality, Income Distribution and Social Welfare

This section attempts to unveil the sub-linkages between employment vulnerability and income; employment vulnerability and income inequality; and inequality and poverty growth, in order to consolidate the linkages between employment vulnerability, income inequality and poverty growth in a more generalising conceptual framework. This section will allow us to generate testable hypotheses for our analysis.

2.5.1. Employment Vulnerability and Income

It is important to highlight that the link between employment vulnerability and income or earnings is as old as Smith Adam's famous publication on "An Inquiry into the Nature and Causes of the Wealth of Nations". Specifically, the idea of equalizing or compensating wage differentials was first introduced by Smith (1776, Book I, chapter X, part I). Smith (1776) 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 all the pros and cons of a

job. According to him, the five principal circumstances[20] make up for a small pecuniary gain in some employments, and counter-balance a great one in others.

The idea that is driven by the five main circumstances underscored that workers may receive pecuniary compensation commensurate with the strenuous or hazardous nature of their tasks or adverse working conditions. However, growing empirical literature on the evidence of the theory of compensating wage differentials only found strength in the 1970s. Early studies on the internal wage policies of firms acknowledged the presence of equalizing differences (Doeringer and Piore, 1971, p. 66-68 and Reynolds, 1974, p. 210). Lucas (1972) found evidence of significant compensation for repetitive work and somewhat smaller compensation for jobs with adverse working conditions (hazards and extreme temperature). For him, jobs requiring physical strength appeared to command lower wages. Duncan (1976) and Duncan and Stafford (1977) also found substantial compensating differentials for some job characteristics (freedom to control hours worked, employment and income stability, and safe working conditions). Smith (1973) concluded that the probability of job-related fatal injuries (or job-related death) may be fully reflected in wage rates.

However, in the 1970s, some efforts to test this theory found no evidence of compensation for jobs with adverse working conditions. Bluestone (1974), Quin (1975), and Hamermesh (1977) all found no evidence of wage compensation for jobs requiring physical strength (hazards or extreme temperature). These are clear traces of conflicting results on this subject in the literature and constitute an attack on this competitive market mechanism; compensating wage differentials for jobs with harsh or adverse conditions. Overthrowing these claims, Brown (1980) suggested that among the studies that fail to find equalizing differences, the most common explanation is the omission of important worker abilities; biasing the coefficients of the job characteristics, a suggestion that he later rejected.

The theory of compensating differentials witnessed her formalisation in the 1980s with the works of Brown (1980), Rosen (1986), and Murphy and Topel (1987). These authors stressed on adverse working conditions from a broader perspective, including physical demands, noise, or dirtiness, by using hedonic wage equations. The hypothesis that the inconsistent support for the theory of equalizing differences that characterized previous studies was due to

[20] See sub-section 2.2.2 for a discussion on the five circumstances.

omission of important dimensions of worker quality was not supported by work of Brown (1980).

Concerns in the 1990s and early 2000s have witnessed another generation of studies, hinging on industry-level variables to counteract the evidence of compensating-difference, stressing the importance of non-competitive dimensions of wage formation. Dorman and Hagstrom (1998) stress that the non-competitive aspects of wage formation are very important in terms of compensating wage differentials. Their estimated wage equation included a number of industry-level controls (such as profitability and capital/labour ratio) or, alternatively, a full set of dummies attached to industries. They found that the inclusion of industry-level controls largely wipes out the compensating wage differentials that have been observed in the literature. This pattern is consistent with the dominance of non-competitive wage formation in the labour market. Hwang et al. (1998) and Lang and Majumdar (2003) also acknowledge that working conditions may not be reflected in wages. However, more recent years are increasingly marked by a resurgent of efforts to test this competitive dimension of wage formation.

In recent research endeavours, for example, job stress (French and Dunlap, 1998), flexible working hours (Gariety and Shaffer, 2001), shift work (Lanfranchi et al., 2002), and perception of job instability, measured by product market volatility (Magnani, 2002), among other factors, have been investigated. Most of these studies suffered the problem of omitted-variable bias, and the coefficients of various adverse job characteristics were often wrongly-signed and insignificant in the wage equations (Bockerman et al., 2004). In an effort to curb this omitted-variable bias, growing interests on the theory of compensating wage differentials attempt to combine the characteristics of the workers with those of their jobs in the form of an index or indicator before studying the evidence of compensating-difference. These plausible efforts, to a considerable extent, factor-in elements of competitive and non-competitive wage formation.

In this perspective, the work of Fernandez and Nordman (2009), use individual job characteristics to construct the composite index of vulnerability and investigate its link with income. Like Poggi (2007), Fernandez and Nordman (2009) observe that, in developed countries, physically hazardous and highly strenuous jobs are often better paid than less strenuous or hazardous jobs. But efforts in this light are still heavily fragmented, especially

for developing countries. Essentially, attempts that factor-in job-related fringe benefits (for instance, health and housing allowances) in this construct are still unsystematic.

Pivoting on the above premise, Bocquier et al. (2010) construct the private sector vulnerability index and establish its links with income in seven economic capitals of West Africa. They find that the average impact of vulnerability on private sector income is generally negative for an average level of vulnerability. This result is testable for the case of Cameroon. The work of Bocquier et al. (2010), though filling a gap in the SSA empirical literature on employment vulnerability, covers only economic capital cities, hence not suitable for broad-based policies; and uses only variables and sectors which are similar in the seven cities under review. Country-specific analyses of this linkage, employment vulnerability and income-earned, are still rare and constitute gateway to specific knowledge on this compensation mechanism.

2.5.2. Employment Vulnerability and Income Inequality

The central place that Ricardo[21] accorded the subject of income distribution in the 19th century Political Economy is appropriate also in the 21st century Socio-Economics. In the last 15 (fifteen) years, there has been a resurgence of interest driven partly by developments in economic theory and somewhat by major developments in the interpersonal income distribution within many developed countries (Atkinson, 1997). This is because high level of income inequality produces an unfavourable environment for economic growth and development. It has been argued that in the absence of strong foreign markets, the domestic inter-sectoral linkages and policy environment required for rapid economic growth cannot be provided where inequality and poverty persist (Aigbokhan, 1999; Clarke et al., 2003).

The postulate of Kuznets (1955) on the relationship that exists between development and income inequality stimulated development economists to find the major sources of income inequality (Adam and He, 1995). Efforts were directed to determining the contributions of socio-economic variables to income inequality. Human capital and labour market related variables continuously play a key role in determining how the benefits of growth are redistributed and hence income inequality. The job tenure, gender, years of education and

[21] David Ricardo, on The Principles of Political Economy and Taxation, London: John Murray, 1817 (Third edition 1821)

occupation explain the level of income inequality, while education, industry, occupation and potential experience account for change in income inequality (Fields and Yoo, 2000).

In line with this view, Alayande (2003) observes that primary and post-secondary educational attainments are important in reducing income inequality, while the number of unemployed persons in the household contributes positively to income inequality. The above views underline the critical importance of education, job tenure, gender and occupation in explaining the level of inequality as well as the role of education, occupation and labour market experience in accounting for inequality trends. Corroborating this observation for Cameroon, Epo et al. (2010) and Epo (2012) highlight the central role of education and working in the formal sector in accounting for income inequality. However, empirical studies that check differences in job utility/disutility (unpleasant, arduous or dangerous jobs or working conditions) as a cause of income inequality are still rare; this not only in Cameroon, but in the SSA region.

Most efforts at investigating the determinants of income inequality have highlighted the importance of employment sectors, residence, employment sector income and labour market performances (employment rate, hours of work, participation rate and productivity) in accounting for observed income inequality. Some attempts argue that working and earning in the non-farm employment sector is crucial in determining urban income inequality (Ipinnaiye, 2001; Oyakale et al., 2009). Complementing with rural sector evidence, Matlon (1979) and Adebayo (2002) find that in rural areas agricultural income (farm-income) contributes the most to overall income inequality. Farm and non-farm incomes are more important than the rental incomes and their vital roles depend on the area of residence. Comprehensively, Kakwani et al. (2006) argues that productivity is the most important factor contributing to a reduction in inequality. They also underline that other labour market characteristics such as labour market participation rate, the employment rate and hours of work per employed person also contribute to a large reduction in income inequality.

Efforts to account for the contributions of between-group and within-group inequalities to overall inequality may possibly highlight policy targets for stakeholders. Elbers et al. (2003) observe that the share of within-community inequality in overall inequality is higher. Similarly, Baye (2008) finds that the contribution of the within-group inequality to inequality trends is dominant to that of the between-group inequality. These results acknowledge the

consideration that the redistribution of income and non-income dimensions should be heightened within-zones rather than between-zones, in a situation of constrained resources. But sound wisdom may require an optimal-mix of within- and between-group strategies in curbing overall inequality.

While descriptions of labour market characteristics and inequality conditions, as above, are useful inputs to policy and program formulation, it is equally useful and important to examine the employment vulnerability of workers, which is often dependent on the job-risks that workers face. Theoretically, unpleasant, arduous and dangerous jobs, other things being equal, will need to pay higher incomes; which according to Sloman (1991, p.330-331) will cause income inequality. The projected World Development Report 2013 by the World Bank confirms this theoretical link by suggesting that employment status is correlated with trust and with civic engagement, which implies a possible impact on social cohesion[22]. Thus, employment vulnerability, tracked by adverse working conditions, is expected to increase income inequality; this is a hypothesis tested here. Households often experience adverse work conditions, either as part of their specific job conditions or of the sectors where they work. Some households may even engage in risky activities to increase the chance of substantial income rises (Poggi, 2007 and Fernandez and Nordman, 2009), but these risky activities typically yield low average returns, especially in developing countries (Bocquier et al., 2010), further locking them into poverty.

2.5.3. Equity and Efficiency of Employment Decency: Social Welfare Perspective

The relationship between inequality, poverty and growth is still undergoing diagnosis. In a recent paper, the World Bank's Chief Economist Francois Bourguignon shows that poverty can be reduced by increasing income (growth) or a better distribution (inequality). For him, a 1% decrease in poverty can be achieved via a certain growth rate (the poverty-elasticity growth rate) or by a certain decrease in inequality (the poverty-inequality elasticity). Essentially, an increase in income is not necessarily a contradiction to a reduction in inequality (Bourguignon, 2004). It is therefore evident from Bourguignon's "triangle" that with a given growth rate, a higher decrease in poverty would be achieved if inequality falls. Cornia (2004) reinforces this evidence by arguing that those countries with rising inequalities

[22] See Appendix 1.1A for the representation of jobs as the "hinge" of development.

experienced a decrease in poverty of 1.3%, while those countries with smaller disparities achieved a reduction in poverty of 9.8%. This is indication that policy implications should not only focus on growth alone to reduce poverty, but should focus on inequality and growth simultaneously. This observation finds inputs here with the analysis of social welfare represented as a function of equity and efficiency.

In this regard, we address the measurement of social welfare received by households on the basis of mean income (efficiency) and income distribution (equity), employing the generalised social welfare decomposition framework. Leaning on the premise that most endeavours in the literature limit analysis of social welfare on income/expenditure (Mukhopadhaya, 2001b) and completely ignore the determinants of income, we devise an analytical approach that uses the information contained in income generating equations to account for total social welfare in a society. Thus, we attempt to decompose social welfare as a weighted sum of individual welfare of decent employment and other regressed-income sources. This will provide us with knowledge on the share of decent employment and other correlates in social welfare of private sector households as well as the impact of growth in decent employment on social welfare of private sector households. We adopt the framework developed in Mukhopadhaya (2001a; 2001b) for this purpose. This framework, as will be developed in the one but last chapter (chapter 6), embraces the entire thesis.

2.6. Derivation of Hypotheses

This systematic construction of the sub-linkages between employment vulnerability and income; employment vulnerability and income inequality; and equity and efficiency of employment quality, allows us to distil, constructively, some of the testable hypotheses.

The ILO defines employment vulnerability as the risk of lacking full, decent and productive employment. In addition, given that the "vulnerable employment" indicator is characterized by low pay, lack of adequate social protection and difficult working conditions (ILO, 2011), we expect workers in less organised employment sectors (say some private sector) in the economy to be more vulnerable than those in more organised sectors (for example the public sector). This theoretical observation drives our hypothesis, H1. It is worthy to recall that our interpretation of the link between employment vulnerability and household income draws on the theory of compensating wage differentials; which states that workers may receive

pecuniary compensations commensurate with their adverse workings conditions. This type of situation is likely to hold in developed countries where labour is highly specialized. In developing countries this situation is most likely to weigh negatively on labourers, given the high rates of unskilled and unspecialised labour. This way, our working hypothesis is that, other things being equal, workers classified as vulnerable may be poorly paid than more stable, steady workers classified as decent or non-vulnerable (H2).

Theoretically, unpleasant, arduous and dangerous jobs, other factors held constant, will need to pay higher incomes; which according to Sloman (1991) will cause income inequality. Thus, some workers may even engage in risky activities or adverse working conditions to increase the chance of substantial income rises (Poggi, 2007 and Fernandez and Nordman, 2009). Even in developing countries where this situation is most likely to weigh negatively on labour income; it still constitutes a source of income inequality. Thus, employment vulnerability, tracked by adverse working conditions, is expected to increase income inequality (H3).

Many economists acknowledge productivity improvements as a route out of poverty (for instance Kakwani et al., 2006). Some studies have empirically explained overall income inequality in terms of the within- and between-sector contributions and have observed that a change in income inequality is dully attributable to the within-sector component (that is, to specific-sector effects such as productivity) (Araar, 2006a and Baye, 2008). Theoretically, individuals are likely to move out of poverty by improving productivity (attributable to sector-specific effects, that is, within-sector component) or moving into a job that permits them to earn an income (that is, between-sector component). Theory suggests that increases in productivity can influence the society more broadly, by improving living standards and creating income, and that productivity increases are central to the process of generating economic growth. In this regard, the within-component, affiliated to productivity improvements, should overly contribute to measured income inequality in the private sector (H4).

Following the inclination on efficiency consideration of classical welfare economists and given that a pioneering endeavour in social welfare, like Pareto optimality is a notion of efficiency and makes no statement about equality; we suppose that efficiency consideration overshadows equity consideration in private sector social welfare (H5). Equally, hinging on

Rawlsian theory of social welfare, we expect employment sectors with higher income shares not to necessarily dominate those with lower income shares in terms of social welfare enhancement (H6).

Thus, this thesis tests the following hypotheses:

- Employment vulnerability is more widespread in the private sector, informal, farm, and rural sectors than in the public, formal, nonfarm and urban sectors, respectively (H1);
- Employment vulnerability correlates inversely with private sector household income distribution (H2);
- Employment vulnerability is inequality augmenting (H3);
- Within-sector components of measured inequality overwhelm the between-sector components (H4);
- Efficiency considerations are more important than equity considerations in determining social welfare (H5); and
- Employment sectors with higher income shares are not necessarily those with higher welfare impacts.

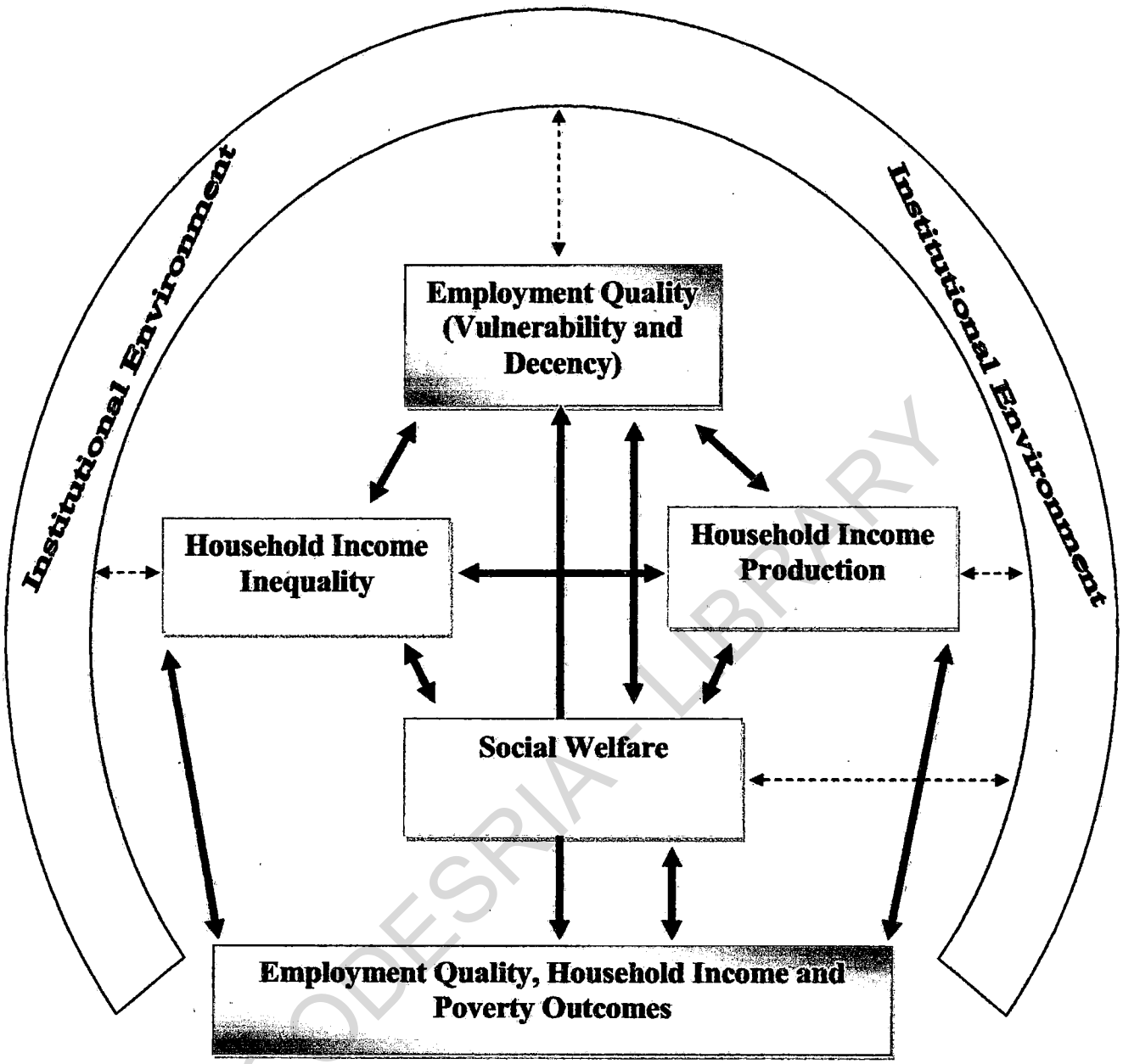
Figure 2.1 consolidates the sub-linkages between employment vulnerability and income; employment vulnerability and income inequality; and equity and efficiency of employment quality - in an attempt to show the essentiality of employment quality in shaping income distribution and social welfare. Importantly, it underlines the centrality of employment quality in determining the income distribution and social welfare outcomes of development efforts. This figure also acknowledges the undeniable role of the institutional climate (formal and informal institutions) in determining employment quality, income distribution and social welfare. Formal institutions capture the rules that are readily observable through written documents or rules that are determined and executed through formal position, such as authority or ownership. This way, formal institutions include explicit incentives, contractual terms, and firm boundaries which are sanctioned through formal positions. Informal institutions, in turn, are rules based on implicit understandings, being in most part socially derived and therefore not accessible through written documents or necessarily sanctioned through formal position (North, 1990). Thus, informal institutions include social norms, routines, and political processes. The institutional climate can stimulate policy authorities to decision making and institutional changes like openness to trade and financial liberalisation,

specialisation in trade, or structural adjustment changes or business climate (infrastructure, governance just to mention a few) as well as exchange rate policies.

For Lopez (2004) openness to trade, financial liberalisation and a smaller state actually lead to higher growth and an increase in income disparities. In this context, the poor households may not receive any of the benefits of these changes in the institutional climate. The labour market effects of economic reform (for instance reforms to reduce vulnerable employment or improve decent employment) and structural adjustment depend in the short run on the stabilisation effects of macroeconomic policies and exchange rate policies (Kanbur and Mazumdar, 1994 and Agenor, 1996). Some authors have shown that the intensity of capital controls, the exchange rate, the type of exports, and the volume of trade affect the long-run distribution of income (Acemoglu and Ventura, 2002; Calderon and Chong, 2001) . The Hecksher-Ohlin hypothesis also acknowledges the link between trade and wage inequality. Thus the institutional climate can affect household income distribution and shape social welfare. The institutional climate should work hand in hand with other development efforts to address people's social, economic, civic and employment rights.

However, ceteris paribus: our main argument behind this simplified conceptual framework is that, given an objective-driven policy environment, struggles to enhance social welfare and efforts to reduce income inequalities between the rich and poor private sector household workers can find important bearings from understanding their nexuses with employment quality and other regressed-income sources. Thus, theoretically, a situation of employment vulnerability may not be healthy for private sector household income distribution; as it may dampen earned income among private sector workers and also worsen income inequalities among them. Equally, efforts that give more concern in addressing inequalities within employment sectors, compared to those addressing between sector inequalities, may produce overwhelming effects on overall private sector inequality. In addition, it is probable that efficiency considerations are more potent than equity considerations in determining social welfare. However, contemporary development efforts can always consider a policy-mix of the two (efficiency considerations and equity considerations), to ensure that the proceeds of a growth process reach the vulnerable and the less privileged in the society. Thus, efforts to reduce poverty among private sector workers should go together with those to promote decent employment or reduce vulnerable employment. Figure 2.1 summarises these theoretical linkages.

Figure 2.1: Private Employment Quality, Income Distribution and Social Welfare nexus



Key

The nexus between concepts and institutional environment

The nexus between concepts and major outcomes

Source: Constructed by author

Note: major outcomes: employment quality, household income and poverty outcomes.

2.7. Concluding Remarks

This chapter endeavoured to conceptually link employment quality, income distribution and poverty. These concepts (employment quality, income distribution and social welfare) are enlightened, in terms of their definitions – measurements – evolutions, in sections 2.2, 2.3 and 2.4 respectively. Section 2.5 explored their sub linkages to guide efforts towards a more simplified flow diagram aimed at informing development policy anchored on decent employment/vulnerable employment and other regressed-income sources. This framework drives the construction of the thesis. Human capital and working conditions underlie the income capacity of household heads differently, depending on the employment sector in which they work. Thus, these variables may serve as inputs into the inequality function of households. The framework also blends household income (efficiency) and income equality (equity) in the analysis of the social welfare contributions of regressed-income components.

In addition to chapters 1, 2 and 7 which are respectively the general introduction, the conceptual framework and the general conclusion, Chapters 3 to 6 are empirical chapters. Each of the empirical chapters answer a specific research question and constituted of an introduction, literature review, theoretical framework, methodology, empirical results and concluding remarks as well as policy implications. In particular, Chapter 3 examines the distribution and dominance of employment vulnerability and its complement across employment sectors and other sub-groups in Cameroon; Chapter 4 investigates the role of employment vulnerability among other determinants of private sector household income in Cameroon; Chapter 5 assesses the contributions of regressed-income sources in accounting for measured private sector inequality in Cameroon; and Chapter 6 reconciles efficiency and equity of employment quality in the analysis of social welfare. Chapter 6 therefore addresses all the concepts and regressed-income sources as well as the employment sectors used in this thesis in a single framework.

CHAPTER 3

Stochastic Dominance Analyses of Employment Quality Indicators by Sectors of Employment in Cameroon

3.1. Introduction

There can be very little doubt on the contention that the current global economic crisis of our time will lead to considerable economic and social hardship with the worse affected being individuals or household heads with vulnerable status in the labour market. Household heads or workers in the primary, secondary and tertiary sectors with low skills, no social cover and those employed in casual or part-time positions will probably witness their worse. Employment, certainly, is a barrier against abject poverty, but being fairly or meaningfully employed in the labour market may constitute a breakthrough against this ill. Consolidating this view, Assiga-Ateba (2010, p. 54-55) posits that Cameroon's problem is more of underemployment than employment. Even the GESP acknowledges that if growth, albeit strong and sustainable, does not generate decent jobs (or reduce vulnerable jobs); it would not be of satisfactory quality as it might induce wage inequalities and social strife (National Institute of Statistics, 2011). Most workers, especially private sector workers, in sub-Saharan Africa in general and Cameroon in particular work in highly insecure conditions; these workers are vulnerable.

It is worthy to note that vulnerable employment in all its shapes and forms is the opposite of decent employment (ILO, 2008a). Thus, a careful analysis of one is just a reflection of the other; the other way round. Recall that vulnerability refers to how difficult it is for household heads to manage the risks or cope with the losses and costs associated with the occurrence of risky events. Thus, the vulnerability of a household head can be seen, inter alia, in terms of contract insecurity, no union membership, unstable remuneration and more broadly, the household head's high degree of exposure to risks concerning her job, as intimated earlier. Vulnerable/decent household heads can be found in all segments of employment including formal/informal, farm/nonfarm private sectors as well as public and semi-public enterprises.

Private sector workers in Cameroon are probably more prone to vulnerability and deprivation than their public sector counterparts. For instance, according to the Government of Cameroon (2007) about 89.8% of household heads working in the informal non-farm sector, 99.1% of those in informal farm activities and 22.6% of those in the formal-private sector are placed on an unsteady income scheme. In the contrary, only 3.5% and 9.2% of household heads in public sector/international organisations respectively have unsteady incomes. In addition, only 7% of household heads working in the informal non-farm sectors, 2.2% of those in informal farm activities and 65% of those working in the formal-private sector have written work contracts, whereas close to 93% and 89% of those in public sector/international organisations respectively have written work contracts. Moreover, poverty in Cameroon is more prominent among households working in the private sector, as only 2.5% of households employed in public sector/international organisations live below the poverty line as opposed to closely 96.6% for those in formal-private and informal private sectors.

However, studies on the intensity of employment vulnerability and decency among household heads, especially in this seemingly worse affected private sector are still unavailable in Cameroon. This chapter attempts to complement this lack by studying employment quality among household heads involved in employment sectors in Cameroon. This chapter focuses on household head or individual vulnerability criteria (institutional variables like employment contracts or compliance with labour code and their time-related factors such as casual or unstable employment alongside household job related characteristics) rather than firm or business vulnerability criteria[23], which reflect inter-firm dualism and not inter-household head or inter-worker dualism. Building on institutional variables such as time-related factors and other individual job related characteristics inspired from Pagès (2003), Pagès (2005) and Bocquier et al. (2010) obtainable from CHCS III, this chapter attempts to provide answers to the following research question: What is the configuration of employment vulnerability and its complement across employment sectors, sub-groups and expenditure quintiles in Cameroon?

Country-level analysis of employment vulnerability in SSA is still scanty. Bocquier et al. (2010), in an attempt to fill this gap in SSA, use unfortunately data from the 1-2-3 surveys which only track concerns in economic capital cities, thus not suitable for nationwide policies.

[23] Firm vulnerability criteria is captured by variables like firm size, sector of activity and firm-level institutional factors

Equally, his analysis uses only variables and sectors which are similar in the 7 (seven) cities under review. This chapter draws from CHCS III that covers the whole nation to address the following specific research questions:

- What is the distribution and dominance of employment vulnerability and its complement across employment sectors and location in Cameroon?
- Does employment vulnerability (or its complement) vary across expenditure quintiles?
- What advice can the stakeholders concerned with the GESP draw from this analysis?

The main objective of this chapter is to construct and study the configuration of indicators of employment quality in Cameroon. This objective is decomposed into the following specific objectives:

- To construct an employment vulnerability index for household heads and check its distribution and dominance across employment sectors in Cameroon;
- To assess the variation of employment vulnerability and its complement across location, gender and expenditure quintiles; and
- To draw policies that can assist the country's current engagement to improve decent employment enshrined in the GESP.

These objectives are guided by the following verifiable hypotheses:

- Employment vulnerability is more of a private than a public sector problem in Cameroon;
- Workers in the informal sector and those in farming are more likely to suffer from vulnerable employment than their formal- and nonfarm-private sector counterparts, respectively;
- Female workers in the private sector are more vulnerable in employment than their male counterparts;
- Private sector workers in rural areas dominate those in urban areas in terms of employment vulnerability; and
- Poor household heads are more likely to be vulnerable than the nonpoor.

In what follows, Section 3.2 reviews the literature; Section 3.3 discusses the theoretical framework; Section 3.4 dwells on the methodology; Section 3.5 presents the data and justifies the indicators of employment vulnerability used; Section 3.6 presents the empirical findings; and Section 3.7 outlines the conclusion of the chapter.

3.2. Literature Review

Economic literature on employment vulnerability includes a variant of definitions of this notion. The work of Wilson and Ramphele (1989) define it as the risk of destitution, famine or death. The concept of vulnerability gained prominence subsequent to Sen's (1992 and 1999) capability approach. In an effort to render the capability approach operational, Cheli and Lemmi (1995) develop a fuzzy and relative approach to vulnerability. Worthy to note, Miamo (2012) has employed the fuzzy approach on Cameroon data to define an "exposure to the risk of poverty" notion. Qizilbash (2003; 2006) used a vulnerability concept that identifies an individual's distance from a definite, unambiguous state of poverty. The closer the individual is to being definitely poor, the greater his vulnerability. In Dubois and Rousseau (2001), vulnerability is a person's own structure of "capabilities" that enables that person to replace (or not) one capability with another in the event of an exogenous shock. In this sense, the loss of a job would affect disproportionately an individual with less leeway to work in different occupations and a low level of economic and social capital. Reinforcing this, Pagès (2003) associates vulnerability in employment to different forms of underemployment as the lack of socioeconomic security at work associated more with institutional variables (employment contracts, compliance with labour code, etc.) and their time-related factors (casual and unstable employment)."

Pagès (2005) emphasises the importance of considering the dynamic aspect of vulnerability. He investigates the impacts of employment situation on the workers' capacities and behaviour (that is, the skills-employment causality is reversed). The author measures the dynamic facet of vulnerability at work in terms of labour mobility and employment integration. For instance, his study considers instability in employment defined by a change of job without an improvement or with a drop in status in the last five years. Our data does not allow us to track this dynamic facet of vulnerability at work, that is, labour mobility and employment integration. Pagès (2005) equally created a social security variable, but however, unstable remuneration or no written contract or social security variable (for instance National Social

Insurance Fund – NSIF) used in this study, should be enough to reflect the worker's social insecurity.

Using data on the employment characteristics of Australia's metropolitan suburbs, Baum and Mitchell (2009) study three key indicators of jobs at most risk: (1) The proportion of people employed in construction, mining, manufacturing, retail, accommodation and tourism, financial services and real estate; (2) the proportion of employed people without post school qualification; and (3) the proportion of people working part-time) to provide an index of potential job loss based on a new labour market indicator called employment vulnerability index (EVI). The above observations indicate that the meaning of any employment vulnerability index or intensity in the literature should be drawn from the indicators underpinning its construction.

Fernandez and Nordman (2009) and Dickerson and Green (2002, p. 26) apply factor analysis on 35 (thirty five) activities to come-up with some 9 (nine) well-defined bundles called "generic skills indexes". For example they constructed generic indexes of: customer handling (job requires counselling, advising and caring for customers, dealing with people, selling a product or service); physical (job requires physical stamina and strength); planning (job requires planning others' activities, thinking ahead, organise your time and planning own activities); manual activities (job requires using hands or fingers, knowing how to use tools and machinery, knowledge of products and services); literacy (job requires reading long documents, reading written information, reading short documents, writing long documents and writing short documents). The other generic indexes are Team work, numeracy, precision and problem solving.

The ILO (2008a) considers employment vulnerability as the risk of lacking full, decent and productive employment. This report characterizes vulnerable employment with respect to temporary work, part-time work, job security, low pay, fringe benefits and chances of promotion. The ILO's (2010) report on Global Employment Trend 2010 characterises workers in vulnerable employment as the sum of own-account workers and contributing family workers. According to this report, these workers are less likely to have formal work arrangements, and are therefore more likely to lack decent working conditions, adequate social security, adequate or stable earnings and 'voice' through effective representation by trade unions and similar organizations. Concurrently, the ILO (2011) also characterized it by

low pay, lack of adequate social protection, lack of representation, and difficult working conditions. However, attempts to repackage these elements into an employment vulnerability indicator are still quite fragmented, especially for low income countries. To the best of our knowledge, no attempt has been made to combine the characteristics of the workers with those of their jobs in the form of an index or indicator of employment vulnerability relative to institutional variables (employment contracts, compliance with labour code, and so on) and their time-related factors (casual and unstable employment)

Following from Cheli and Lemmi (1995), Pagès (2003), Pagès (2005) and, Fernandez and Nordman (2009), Bocquier et al. (2010) develop indicators of employment vulnerability to construct the private sector employment vulnerability index. The indicator regrouped the following initial indicators: contractual insecurity, independent workers with no employees, adverse working conditions in terms of place or premises of work, casual labour, unstable remuneration, visible underemployment, instability in employment defined by a change of job without an improvement, unwanted job defined as a job which the worker is dissatisfied. Though their study complements Sub-Saharan Africa empirical literature with respect to job vulnerability, some weaknesses do exist. First, the study only considers indicator variables in urban areas, hence employment vulnerability intensity or index is not suitable for nation-wide policy. Second, their employment vulnerability index only track variables present in all the economic capital cities considered, thus leaving important variables relative to fringe payments unnoticed. Lastly, the computerisation procedure of their index is a mere sum of the eight defined criteria for each worker, which may not be appropriate. Moreover, empirical studies that track the concept of employment vulnerability using Cameroon data are simply not available. This chapter uses the CHCS III that reflects the whole nation and tracks in addition variables relative to fringe benefits. It also employs a more appropriate indicator approach to systematically address the weaknesses in Bocquier et al. (2010).

3.3. Theoretical Framework

The above literature on employment vulnerability has identified a myriad of definitions of this concept (Wilson and Ramphele, 1989; Cheli and Lemni, 1995; Qizilbash, 2003 and 2006; Dubois and Rousseau, 2001; Pagès, 2003 and 2005; Fernandez and Nordman, 2009). Recall that employment vulnerability is analysed with respect to institutional variables (employment contracts; compliance with the labour code in terms of social security, vacation, hours work);

time-related factors (casual and unstable employment); job satisfaction; remuneration stability; union membership; and job-related fringe benefits. These factors are consistent with the recent prescriptions of the ILO (2010; 2011). These multi-dimensions of employment vulnerability are repackaged to develop an indicator of employment vulnerability among household heads working in employment sectors in Cameroon.

3.4. Methodology

3.4.1. Construction of the Employment Vulnerability/Decency Indicator

To build our employment vulnerability indicator or index, we use a number of employment status variables for the worker's main and second jobs, which permit us to characterise vulnerability in the main job. Recall that our attention is focused on inter-worker dualism and this way activity sector, business and institutional sectors which are all units of production are not used; as they capture inter-firm dualism instead. This is the case because our primary focus is the vulnerability of the worker and not of the firm. Our composite index is built using 11 (eleven) categorical/dichotomous variables, inspired from Pagès (2003; 2005), Bocquier et al. (2010), and ILO's (2011) report on Global Employment Trends 2011 to tract different aspects of employment vulnerability.

The analysis of employment vulnerability aims to appreciate the quality of employment of household heads. In this regard, an indicator of employment vulnerability for Cameroon household heads is constructed. The main methodological approaches for aggregation employed in the literature are the entropy approach and the inertia approach. The former is inspired from the field of dynamic mechanics and the latter from static mechanics. The inertia approach is based on the techniques of multi-dimensional analysis and draws mainly on the following factor analysis techniques: the principal component analysis (PCA), the generalized canonical analysis (GCA) and the multiple correspondence analysis (MCA). Specifically, standard PCA can only be applied if all the variables are numeric (that is, the variables are either quantitative or continuous) and the relationship between variables are assumed to be linear (Gifi, 1990; Kamanou, 2005; Njong and Ningaye, 2008). The variables used to track the multifaceted nature of employment vulnerability are in a qualitative form, categorical and can be codified in a binary form and measured at ordinal level. Since the ordinal variables do

not have an origin or a unit of measurement, the variance-covariance structure of these variables that the standard PCA relies on and explains will have no concrete meaning[24].

The factor analysis technique to be used in this chapter is the MCA since all the initial employment vulnerability indicators from our data are in a qualitative form and can be codified as binary. In this perspective, the main areas taken into account are contractual security, job satisfaction, employment stability, trade union membership, job related benefits and allowances which track institutional-level and worker-level aspects of employment in Cameroon. Note that some authors have used MCA approach in Cameroon to construct composite indices in the domains of poverty (Foko et al., 2007; Ningaye and Ndjanyou, 2007; Njong and Ningaye, 2008; Manga and Epo, 2010); health service satisfaction (Kamgnia Dia et al., 2008); inequality (Araar, 2009); and education/health (Epo and Baye, 2011). However, our study is the first to apply this multidimensional approach to construct an indicator of vulnerable employment in Cameroon.

Employing the MCA[25], the functional form of the composite indicator of employment vulnerability is simply the average weights of categories, which are themselves the average of standardized scores. The MCA technique allows us to select pertinent variables which will serve to construct our indicator. The main selection criteria generally used is the First Axis Ordering Consistency (FAOC) principle. The variable respecting the FAOC property with the MCA in this study are those that obey the rule according to which employment vulnerability of employed household heads improves (or decent employment deteriorates) along the first factorial axis[26]. Suppose i designates a household head and C_i the value of the composite indicator for household i, the functional form as developed by Asselin (2002) and used by Ki et al. (2005) and Kamgnia Dia et al. (2008) is given by:

$$C_i = \frac{\sum_{k=1}^{K} \sum_{jk=1}^{JK} w_{jk}^{k} i_{jk}^{k}}{K} \qquad (3.1)$$

Where

K = number of category indicators;

[24] It is worthy to note that an alternative of the standard PCA recently described by Kolenikov and Angeles (2004) called the polychoric PCA allows us to assume that a latent continuous variable underlies each binary or ordinal variable. The polychoric PCA improves the standard PCA.

[25] See Appendix 3.1A for the specificities of the MCA framework.

[26] Note that the modalities of each variable retained for analysis could be ordered either from a low level of the phenomenon studied to a high level or from a high level to a low level (National Institute of Statistics, 2010).

Jk = the number of categories of indicator k;
W = weight (score of the first standardized axis of category Jk); and
I = binary variable 0/1, corresponding to the category Jk.

This chapter has as primary objective to investigate the situation of employment vulnerability among household heads involved in employment sectors in Cameroon and to check its variability across employment sectors. This framework predicts an indicator interpreted in terms of vulnerable/decent[27] employment from the initial indicators discussed to set the basis for our analysis in this chapter. The analysis of the indicator will be done with respect to its distribution and dominance across employment sectors, location and gender.

3.4.2. Stochastic Dominance Approach

The stochastic dominance approach is very essential to establish a careful ordinal comparison between two distributions or two periods for a given social order or welfare indicator. According to Araar (2006b, p. 2), the stochastic dominance for a given social order is not based on a pre-determined functional form, but instead on some desirable properties or axioms that the corresponding indicator or class of indices should obey[28].

Thus, in the quest to know whether a relation of stochastic dominance holds between two distributions, the distributions are first characterized by their cumulative distribution functions (CDFs). For a given set of vulnerabilities, the value of the CDF at vulnerability v is the proportion of vulnerabilities in the set that are not greater than v. In this perspective, denoting employment vulnerability by a random variable V, the value of the CDF of the distribution of V at v is the probability that V should be less than or equal to v. This is expressed as follows:

$$P(V \leq v) = F(v) \tag{3.2}$$

Where $F(v)$ is the value of CDF at vulnerability v.

[27] The "decent employment indicator" here is simply the complement of the constructed employment vulnerability indicator.
[28] See Appendix 3.1A for some key rules to consistently check stochastic dominance with discrete data.

Lets now consider two distributions, A and B (A may stand for farm while B nonfarm or A may stand for informal and B formal employment sector), characterized respectively by CDFs F_A and F_B. The distribution B dominates distribution A stochastically at first order if, for any vulnerability v, $F_A(v) \geq F_B(v)$. This write-up often appears as though it is the wrong way round, but a moment's reflection shows that it is correct as stated (Davidson and Duclos, 2000). This inequality simply means that the proportion of household heads in distribution A with vulnerabilities less than or equal to v is not smaller than the proportion of such households heads in distribution B. More neatly, there is at least as high a proportion of non-vulnerable household heads in A as in B, if non-vulnerability means a vulnerability smaller than v. Importantly, the dominant distribution here refers to the one that generates more employment vulnerability.

Importantly, if B dominates A at first-order, note that whatever vulnerability level we may consider, there is always more vulnerability in B than in A. Thus, we affirm that A is the dominated distribution. In the nutshell, if B dominates A at second-order stochastic dominance, the decision maker considers distribution A better over B in cognizance of risk aversion and v is weakly decreasing. Higher orders of stochastic dominance can also be defined. For this, repeated integrals of the CDF of each distribution are defined. This study concentrates on first-order stochastic dominance, since we are primarily interested on whether a given employment sector B dominates another A in terms of employment vulnerability, irrespective of what v is, as long as it is weakly decreasing. Suppose $D^1(v)$ is the CDF of the distribution under study (equation 3.2), we may write:

$$D^1(v) = F(v),\ D^{s+1}(v) = \int_0^v D^s(r)dr \qquad (3.3)$$

Where $s = 1,2,3 \ldots$ stands for the orders of dominance; r is the set of values for employment vulnerability. Worthy of note, the lowest value of employment vulnerability in the pooled distribution is zero (since employment vulnerability ranges from 0 to 100), thus the usage of the lower limit of zero.

From equation (3.3), it is easy to define the repeated integrals for any order s : $D^2(v)$ is the integral of D^1 from 0 to v given by:

$$D^2(v) = \int_0^v D^1(r)dr \text{ , with } s = 1 \quad (3.4)$$

Equation 3.4 defines the first-order of stochastic dominance. We can thus say distribution B dominates A at order $s = 1$ if $D_B^2(v) \leq D_A^2(v)$ for all arguments v (that is, for any given level of employment vulnerability). Remark that one can also define $D^3(v)$ which is the integral of D^2 from 0 to v given by $D^3(v) = \int_0^v D^2(r)dr$, $s = 2$ (second-order dominance). Higher orders can be obtained in the same way. From these discussions and definitions, we can all bear witness that first-order stochastic dominance implies dominance at all orders higher than the first. This observation corroborates that of Davidson and Duclos (2000), thus further justifying the concentration of this study on the first-order stochastic dominance.

However, theoretical debates sometimes attempt to distinguish weak from strong stochastic dominance. The above notations (for instance, $D_B^2(v) \leq D_A^2(v)$) are of weak dominance. In the case of strong dominance, it is required that the inequality should be strict for at least one value of the argument v (for example, $D_B^2(v) < D_A^2(v)$). Unfortunately, in empirical investigations, the distinction is not vital, since no statistical test can detect a significant difference between weak and strong inequalities (Davidson and Duclos, 2000). In this regard, some empirical investigations make use of the concept of restricted stochastic dominance. With restricted stochastic dominance, the relevant inequality is expected to hold over some restricted range of the argument v rather than for all possible values. For employment vulnerability, one may be particularly interested on dominance over a range of higher values of the vulnerability indicator (since employment vulnerability increases over the range 0 to 100).

Following from equation (3.3), Davidson and Duclos (2000) and Araar (2006b), one can check the stochastic dominance for the order s, by comparing between dominance curves that take the following form:

$$D^s(r) = \frac{1}{(s-1)!}\int_{v_{min}}^{v_{max}} (r-v)_+^s \, dF(v) \quad (3.5)$$

Where $(r-v)_+=(r-v)$ if $r>v$ and zero otherwise and v_{min} and v_{max} are the minimum and maximum values of the vulnerability indicator respectively.

We can realize that this curve (equation 3.5) is simply a monotonic transformation of the Foster, Greer and Thorbeck (FGT) curve (Davidson and Duclos, 2000 and Araar, 2006b). Recall that stochastic dominance in this study refers to the distribution that generates more employment vulnerability. In this study, we check the stochastic dominance between two distributions or employment sector; for instance, farm as opposed to nonfarm, formal as opposed to informal, rural as opposed to urban and female subgroup as opposed to their male counterparts. Lastly, also note that this approach can also be used to show how the level of employment vulnerability varies across the range 0-100.

3.5. Data used and Justification of the Indicators of Employment Vulnerability/Decency

3.5.1. Data Presentation

This chapter draws mainly from the Cameroon household consumption surveys, CHCS III conducted in 2007 by the National Institute of Statistics (NIS). The CHCS III survey was conducted between May and July 2007; and comprised 11391 households that were actually interviewed. This data set divides the country into 22 strata: Douala; Yaoundé; and 10 semi-urban and 10 rural areas. Out of this total of 11391 households interviewed, 9219 are actively employed in private sector activities, 1102 are working in public, para-public and international organisations, and the remaining 1070 are unemployed, discouraged unemployed and inactive. This data set provides a number of employment status indicators for the household head's (main and second job), which better add up the multifaceted or multidimensional nature of employment vulnerability in the main job.

3.5.2. Justification of the Indicators of Employment Vulnerability/Decency

Table 3.1 summarises the variables/modalities of the employment vulnerability/decency indicator. The category variables: employment contract, underemployment, remuneration, and labour status that appreciate the vulnerability/decency of employment respect the FAOC property according to which employment vulnerability of employed household heads improves along the first factorial axis. Employment contract tracks the informal/insecure

nature of the employment contract[29] and underemployment reflects insufficient (less than 35 hours per week) hours of work per week due to economic and social factors. Remuneration and labour status track casual and unstable nature of payment and employment (Table 3.1). Thus, even if a job is protected by the social security system, the casual nature of the employment is indication that this protection is not guaranteed over time and the risk of visible underemployment with such jobs is high. In this perspective, casual labour is a source of vulnerability. Household heads with unstable remuneration are vulnerable, as they cannot predict what their situation will be in the coming days or weeks. Besides these category variables, we also have dichotomous variables that can help appreciate the vulnerability of employment.

Table 3.1: Indicator Variables/Modalities

Variables	Variables
Employment contract	*Piece rate*
Open-ended (written)	*Commissions/benefits*
Fixed term (written)	*Inkind /no payment*
Verbal agreement	**Labour status**
No contract	*Permanent regular*
Payslip	*Permanent seasonal*
Possess a payslip	*Indifferent*[30]
No payslip	*Temporary undefined/ defined*
Social security	**Housing allowance**
Affiliated to NSIF	*Receive housing allowance*
Not affiliated to NSIF	*Do not Receive housing allowance*
Job satisfaction	**Paid leaves**
Training matches job	*Perceive paid leaves*
Training does not match job	*Do not perceive paid leaves*
Underemployment	**Union membership**
Less hours fixed by employer	*Member of a trade union/association*
Indifferent	*Not a member of a trade union/association*
Less hours due to economic situation	
Less hours due to health problems and domestic work	
Remuneration	
Fixed salary	
Daily/hourly pay	
Indifferent	

Source: Constructed by author

[29] According to the 1992 Cameroon labour code, an employment contract is an agreement by which a worker undertakes to put his services under the authority and management of an employer against remuneration.
[30] The sub-category "indifferent" captures all those household heads who did not provide an answer (missing) and/or those who answered "don't know" or nsp (ne sait pas)

The first dichotomous variable 'payslip' is important since it allows a person in the event of job loss to convince a prospective employer of his former remuneration status. According to the Government of Cameroon (2007), more than 75.8% of employed household heads have no payslips as opposed to only 24% have payslips. The second variable 'social security' allows us to track those affiliated to any social security system or not (for instance National Social Insurance Fund - NSIF[31]). Household heads who are affiliated to NSIF enjoy some privileges with respect to their counterparts who are not affiliated; those affiliated to the NSIF receive family allowances that assist them in maintaining and keeping their households. Though a greater proportion of employed persons affiliated to the NSIF receive only family allowance (87.7%), the remaining proportion enjoy pension and professional risk services (work accidents and professional illness) besides family allowance (Government of Cameroon, 2007).

The third variable coined job satisfaction allows us to track household heads whose training/expertise matches with their main jobs and otherwise. These jobs, which we can call "unwanted jobs", are mostly worked due to constraints and are hence mismatched with the household heads expertise, skills and references. A household head may be dissatisfied with her job because she is overqualified for it, so working this type of a job may thus indicate a subsistence job or a "stopgap job" accepted in the hope of immediate gains.

Fourthly, we have non-membership of a trade union/association which is essential in protecting and promoting the rights of workers. According to section 3 of the 1992 Cameroon Labour Code[32], trade unions/employees' associations only protect and promote the rights of their members, so working household heads in the employment sectors who do not make part of these unions/associations are likely to be vulnerable. Such workers are more likely to suffer unfair discrimination or sanction from their employers or enterprises.

Next, we have unpaid leaves as a criterion of vulnerability (Pagés, 2003). This is an institutional variable related to the lack of compliance with the 1992 Cameroon labour code. We only limit our exercise to the annual paid special leave of absence granted to working

[31] CNPS is the French acronym, meaning Caisse Nationale de Prévoyance Sociale
[32] Cameroon Labour Code, Law No. 92/007 of 14 August 1992

household heads on the occasion of family events directly concerning their own home.[33] This situation of non-compliance is rare in the public sector but very prominent in the private sector. It may be seen as a criterion that exposes a household head working in the private sector to risks of an income loss or decrease, hence making the household head vulnerable.

Another facet of vulnerability that also relates to the lack of compliance with the 1992 Cameroon labour code is housing allowance given by enterprises to support their employees. Section 66, paragraph 2 of the 1992 Cameroon Labour Code states that if no housing is provided, the employer shall be bound to pay the worker concerned a housing allowance. About 81% of employed household heads receive no housing allowance compared to about 19% with housing allowance (Government of Cameroon, 2007). Lack of housing allowance is very common among private sector workers (97.5%) compared to their public sector counterparts (2.5%). We then define the employment quality of a household head or worker based on the ten afore-defined criteria. Detail analyses of the construction of our indicator of employment vulnerability are made explicit in the sections that follow.

3.6. Empirical Analysis

3.6.1. Analysis of the Synthetic Employment Vulnerability Indicator and its Complement

Under this sub-section, we through light on the employment quality indicator in terms of the scores of the initial factors, the descriptive insights of the indicator, and the decomposition analysis of the indicator with respect to employment sectors and subgroups.

3.6.1.1. Explained Inertia, Factor Scores and the Normalised Indicator

Table 3.2 presents the explained inertia by the factor axes. From Table 3.2, it follows that the first factor axis that represents almost 29% of total inertia (quantity of information)[34] is the one that describes better employment quality of household heads. It overwhelmingly accounts (29%) of the total variability interpreted in terms of 'vulnerability and decency' with respect to employment appreciation variables in Table 3.1.

[33] Section 89, paragraph 4 of the 1992 Cameroon labour code allows a maximum of 10 days per year of paid special leave.

[34] Note that the adjusted inertia approach, proposed by Benzecri (1979), to measure the quantity of information brought by an axis can only be used for an axis, α, with principal inertia (eigenvalue) $\lambda_\alpha \leq {}^1/_K$ (Nenadic and Greenacre, 2007 – p.7).

Table 3.2: Explained Inertia by the Factor Axis

	Principal Inertia	Percentage	Cumulated percentage
Factorial axis 1	0.57	28.5	28.5
Factorial axis 2	0.23	11.3	39.8
Total inertia	2.00		

Source: Constructed by author

The scores of the initial indicators coded in 0/1 obtained with the MCA and the contributions of the various categories are presented in Table 3.3. This table host the initial scores on the first axis as well as the squared correlations or squared cosines which represent the quality of representation of each initial indicator. Any initial indicator with squared cosine close to zero is deemed not to be well represented by the axis and any indicator close to one is said to be well represented by the axis. Table 3.3 also submits the number of observations with their corresponding percentages. The relative contribution of a modality/category in forming an axis is the proportion of inertia of the axis explained by the modality/category. The relative contributions of the various categories in forming the first factorial axis were further made more readable in a pie diagram.

Table 3.3: Scores, Contributions and Squared Cosines of MCA on the Initial Indicators of Employment Quality

	Initial scores on the First axis	Squared correlations	Contributions	Numbers of observations	Percentage
Employment contract			**6.43**		
Open-ended (written)	2.147	0.292	4.59	1,302	11.43
Fixed term (written)	1.223	0.047	0.79	749	6.58
Verbal agreement	-0.104	0.009	0.13	1,024	8.99
No contract	-0.346	0.249	0.92	8,316	73.01
Payslip			**15.77**		
Possess a payslip	2.573	0.907	12.75	2,752	24.16
No payslip	-0.619	0.907	3.02	8,639	75.84
Social security			**15.36**		
Affiliated to NSIF	2.653	0.881	12.60	2,548	22.37
Not affiliated to NSIF	-0.584	0.881	2.76	8,843	77.63
Job satisfaction			**7.36**		
Training matches job	1.216	0.425	4.86	4,503	39.53
Training does not match job	-0.615	0.425	2.50	6,888	60.47
Under-employment			**1.18**		
Less hours fixed by employer	1.226	0.012	0.26	224	1.97
Indifferent	0.102	0.034	0.13	9,607	84.34

Less hours due to economic situation	-0.708	0.007	0.13	305	2.68
Less hours due to health problems and domestic work	-0.779	0.044	0.66	1,255	11.02
Remuneration			**14.98**		
Fixed salary	1.697	0.336	4.86	2,378	20.88
Daily/hourly pay	3.115	0.406	6.57	1,080	9.48
Indifferent	-0.173	0.001	0.00	157	1.38
Piece rate	-0.290	0.008	0.13	319	2.80
Commissions/benefits	-0.677	0.678	3.29	7,324	64.30
In-kind and no payment	-0.606	0.007	0.13	133	1.17
Labour status			**8.8**		
Permanent regular	0.066	0.004	0.13	7,116	62.47
Permanent seasonal	2.967	0.389	6.30	1,106	9.71
Indifferent	-0.774	0.155	1.84	2,318	20.35
Temporary undefined/defined	-0.212	0.021	0.53	851	7.47
Housing allowance			**14.45**		
Receive housing allowance	2.834	0.828	12.22	2,171	19.06
Do not Receive housing allowance	-0.513	0.828	2.23	9,22	80.94
Paid leaves			**15.31**		
Perceive paid leaves	2.697	0.891	12.75	2,469	21.68
Do not perceive paid leaves	-0.580	0. 891	2.56	8,922	78.32
Union membership			**0.26**		
Member of a trade union/association	0.194	0.019	0.13	5,351	46.98
Not a member of a trade union/association	-0.169	0.019	0.13	6,04	53.02

Source: Constructed by author with help of STATA 10 using CHCS III

It is vital to note that a composite indicator, predicted from the coordinates (initial scores) of the primary indicators on this axis, indicates a quantitative measure of the employment quality of household heads involved in employment sectors in Cameroon. In this perspective, the value of the indicator of employment quality for a household head i is obtained by the formulation in equation (3.1).

The gross indicator C_i (equation 3.1) obtained may have positive values for some household heads and negative for others. With this gross indicator, small values indicate high employment vulnerability and higher values depict less vulnerability. However, the negative values with the gross indicator may render interpretations difficult. Thus, the following expression allows us to deduce an indicator with positive values $\widetilde{C}_i$ (UNDP, 2004 and Kamgnia et al. 2008):

$$\widetilde{C_i} = 100.(r\max(C) - C_i)/(r\max(C) - r\min(C)) \quad (3.2)^{35}$$

The normalised indicator $\widetilde{C_i}$ classifies household heads in terms of increasing employment vulnerability (or decreasing employment decency), with values ranging from 0 to 100. An indicator with positive values permits us to effectuate analysis such as dominance tests. It is worthy to underscore that the indicator constructed summaries the appreciation of employment quality among household heads involved in employment sectors in Cameroon. Recall that the gross indicator has small values for vulnerable household heads and high values for those less vulnerable, while the normalised indicator is high for more vulnerable household heads and small for less vulnerable or more decent.

3.6.1.2. Descriptive Analysis of the Indicator and its Complement

Tables 3.4 and 3.5 below summarise the descriptive statistics of the gross indicator, normalised indicator (employment vulnerability) and its complement (employment decency).

Table 3.4: Summary Descriptive Statistics of the Employment Vulnerability Indicator

	Mean	Median	Standard deviation	Minimum	Maximum	Length
Vulnerability indicator	76.45	91.32	31.42	0	100	100
Decency indicator	23.55	8.68	31.42	0	100	100

Source: Constructed by author

Table 3.5: Quantiles of Employment Vulnerability and its Complement

	Quantiles						
	5	10	25	50	75	90	95
Vulnerability indicator	2.98	9.08	64.94	91.32	93.88	96.33	96.50
Decency indicator	3.50	3.67	6.12	8.68	35.06	90.92	97.02

Source: Constructed by author

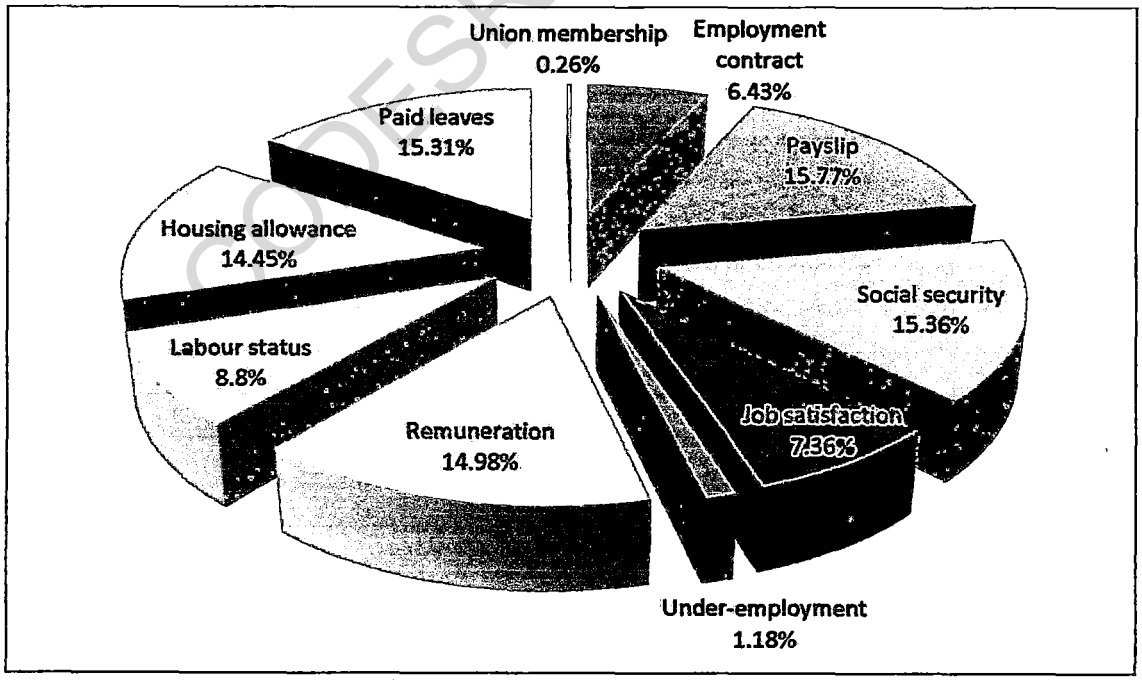
Table 3.4 indicates that on average almost 76.5% of household heads or workers in Cameroon are vulnerable opposed to 23.5% who hold decent employment status. This rate, 76.5%, falls slightly above the average rate of 75.8% for the Sub-Saharan Africa region and well over

[35] Note that $r$max and $r$min simply mean absolute maximum and minimum respectively.

61.8% for the South-East Asia and the Pacific (ILO, 2011). Our sample of household heads can be regrouped into two equal groups at 91.32%, which is higher than the mean. Table 3.5 presents the quantiles of the employment vulnerability indicator and its complement. However, it remains relevant that some categories may have contributed more than others in forming this indicator.

Figure 3.1 presents the percentage contributions of the initial indicators to the construction of the first factorial axis. It follows from this figure that the initial indicators: payslip and social security made the highest contributions followed by paid leaves, remuneration stability and housing allowance. However, the substantial contributions made by labour status, job satisfaction and employment contract cannot be left unnoticed. Under-employment and union membership made the smallest contributions, with union membership being the least. This analysis will assist policy targeting, as it provides policy makers with the knowledge of some key indicators that can be given priority in the struggle to promote decent employment in Cameroon. Nevertheless, policy implications can be better enhanced with the help of sector-specific knowledge on the distribution and dominance of employment vulnerability across sub-groups. Thus, the following section attempts to provide a decomposed analysis of employment vulnerability/decency in Cameroon.

Figure 3.1: Contributions of Initial Indicators



Source: Constructed by author with the help of Excel 2007

3.6.1.3. Analysis of the Sensitivity of the Indicator

The analysis of the sensitivity of the vulnerability indicator (Table 3.6) is based on an additional variable which does not make part of those used in the construction of the indicator, but which is correlated with employment vulnerability of household heads.

Table 3.6: Percentage of Vulnerable Household Heads following the Quintile of Vulnerability

Variable/modality	Quintile of Vulnerability				
	1	2	3	4	5
Working a second job					
In the informal sector	60.6	51.3	51.1	43.3	30

Source: Constructed by author from CHCS III

This analysis shows that the percentage of household heads working a vulnerable second job decreases progressively from the first to the last quintile of the indicator; this is an additional proof of rigour in the analysis made. Our choice of working a second job is backed by Bocquier et al. (2010). According to them, working a second job may reflect underemployment or instability in the main job. Thus working a second job may be seen as a way of reducing or spreading the risks of an income loss or decrease. For them, a worker is vulnerable if this worker works a vulnerable second job, that is, outside the public or formal private sector. Thus a household head working a second job in the informal sector is vulnerable.

3.6.2. Decomposition Analysis of the Synthetic Employment Vulnerability Indicator and its Complement

The vulnerability/decency of employment among household heads is appreciated across employment sectors (public/private, formal/informal, and farm/nonfarm) and residence (urban/rural) as well as gender.

3.6.2.1. Analysis of the Indicator with respect to Employment Sectors

Table 3.7 presents summary statistics of the mean of employment vulnerability and its complement across employment sectors. Vulnerable employment is dominant among private sector household heads in Cameroon. Household heads employed in the private sector are

more vulnerable compared to those in the public sector. Thus, a greater proportion of public sector workers have decent employment status compared to their private sector counterparts, as interpreted in terms of contract security, social security, job satisfaction, underemployment, remuneration stability, labour status and job-related fringe benefits[36].

Table 3.7: Summary Statistics of the Mean of Employment Vulnerability and its Complement across Employment Sectors

	Employment Sectors						
	Public	Private	Formal-private	Informal	Nonfarm-private	Farm	Overall
Employment vulnerability indicator	10.58	87.90	47.79	91.18	80.41	93.05	76.45
Decent employment indicator	89.42	12.10	52.21	8.82	19.59	6.95	23.55
Total	100	100	100	100	100	100	100

Source: Constructed by author

It is worthy to note that this worse situation of employment vulnerability does not level-up among private sub-sectors. For instance, informal and farm sectors household heads are more vulnerable compared to those in the formal-private and nonfarm-private employment sectors, respectively. This way, vulnerability is predominant among informal sector household heads and those in farming activities.

These analyses of means (of employment vulnerability), albeit depict the intensity of this ill, are still not enough to draw conclusions in terms of dominance and correlation of employment vulnerability across employment sectors, location and gender. To begin, Table 3.8 provides the distribution of household heads with respect to the private and public employment sectors in Cameroon. In Table 3.8, our Pearson Chi-Square value[37] is 8362.23 and our significance is 0.000. This is indication that there is a significant difference - our significance level is less than 0.05; rejecting the null hypothesis that employment vulnerability is independent of the employment sector considered. Therefore, we can say that employment vulnerability and employment sectors are associated. In other words, there is a strong linear correlation between the type of employment sector and employment vulnerability.

[36] We acknowledge the fact that employment vulnerability/decency in the public sector may be underlined by other mechanisms, so interpretations on vulnerability/decency among public sector household heads are based strictly on the afore-defined indicators and should be done with some caution.

[37] See Appendix 3.1C for the Chi-Square statistic

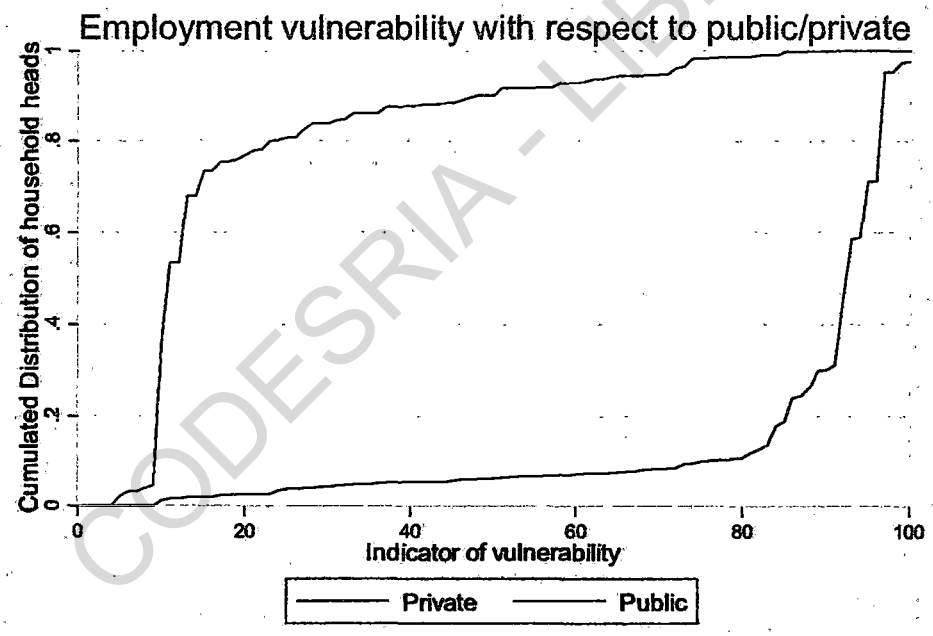
Table 3.8: Distribution of Household Heads with respect to type of Employment Sector and Quintiles of Vulnerability Indicator (in percentage)

	Quintiles of Vulnerability Indicator					
	1	2	3	4	5	Total
Private	99.86	99.82	99.80	90.9	13.96	80.87
Public	0.14	0.18	0.20	9.1	86.04	19.13
Total	100	100	100	100	100	100

Pearson Chi-Square = 8362,23 with 4 degrees of freedom and probability α of 0.000 N = 10046[38].
Source: Computed by author with the help of SPSS[39] 17 from CHCS III

The dominance curves constructed from the employment vulnerability indicator with respect to public/private employment sectors (Figure 3.2) indicates that employment vulnerability is more marked in the private sector than in the public sector. This finding is in tandem with our first hypothesis of work in this chapter.

Figure 3.2: Dominance Curve of the Indicator of Vulnerability with respect to Public/Private Sectors



Source: Constructed by author using CHCS III

The net dominance of the private sector on the public sector in terms of employment vulnerability among employed household heads conforms to our expectation, a priori, as the

[38] Remark: H_0 :Employment vulnerability is independent of employment sector
H_1: Employment vulnerability is dependent of employment sector

[39] SPSS stands for Statistical Package for Social Sciences

public sector in general, better guarantees employment security over other sectors in Cameroon (example: private). Essentially, performing the dominance analysis of the complement of employment vulnerability (employment decency) is simply a reflection on the 45 degree line of the above graph[40]. Most, if not all, civil servants in Cameroon enjoy stable remuneration (in terms of fixed monthly salaries), stable employment (with written contracts), and fringe benefits (in terms of housing and family allowances) which are very scarce in the private sector. Moreover, social security (by NSIF) uniquely protects civil servants and some formal private sector workers leaving a very high proportion of private sector workers with no social cover. In addition, most private insurance companies that may ensure worker coverage are financially inaccessible to most of these private sector workers. The consistency of this result reassures us on the reliability of the data used.

Among private sub-sectors, analysis of employment vulnerability still reveals some interesting insights. Besides evidences of a strong correlation between these private sub-sectors and employment vulnerability (Tables 3.9 and 3.10), we observed the net stochastic dominance of employment vulnerability in the informal sector as opposed to the formal sector (Figure 3.3). Equally, the farm sector dominates the nonfarm sector in terms of vulnerable employment (Figure 3.4). These results confirm our second hypothesis of the chapter and constitute a major call for attention.

Table 3.9: Distribution of Household Heads with respect to type of Private Employment Sector and Quintiles of Vulnerability Indicator (in percentage)

	Quintiles of Vulnerability Indicator					
	1	2	3	4	5	Total
Informal	99.84	99.36	97.71	96.04	50.84	88.76
Formal-private	0.16	0.64	2.29	3.96	49.16	11.24
Total	100	100	100	100	100	100

Pearson Chi-Square = 3369,8 with 4 degrees of freedom and probability α of 0,000 N = 9219.
Source: Computed by author with the help of SPSS 17 from CHCS III

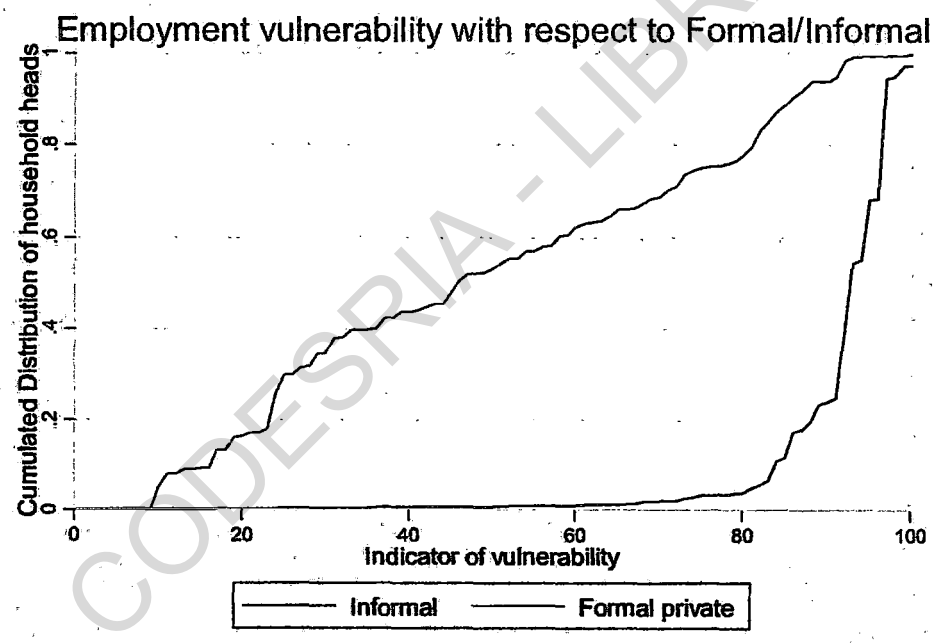
The figure that follows (Figure 3.3) apprehends the net stochastic dominance of informal sector[41] employment on formal sector employment in terms of the indicator of vulnerability.

[40] See figure 3.1A in appendix 3.1

[41] The generally accepted definition of the informal sector is a result of the resolution of the 15th International Conference on Labour Statistics which recommends the use of the following four criteria: administrative registration, legal form, maintenance of accounts and size of the establishment. The Government of Cameroon (2007), CHCS III, defined the informal sector on the basis of administrative registration, maintenance of

The stochastic dominance curve of informal/formal private sectors in terms of decent employment, which attests the net dominance of the formal private sector on the informal sector in terms of decent employment is presented in appendix 3.1 (Figure 3.1B). In effect, this sector (informal) in Cameroon is characterized by casual or unstable labour, unstable remuneration and little or no organization in terms of associations or unions. Even social security (ensured by the NSIF in Cameroon) only protects civil servants and formal sector workers. This practice excludes an important portion of workers, regrouped in informal farming (which predominates in Cameroon) and informal nonfarm sectors. Something should be done in this direction, as even some private insurance agencies or NGOs that can militate for workers' protection are financially inaccessible for this category of workers, informal sector workers.

Figure 3.3: Dominance Curve of the Indicator of Vulnerability with respect to Formal-Private/Informal sectors



Source: Constructed by author using CHCS III

It is interesting to know that employment sector type has an effect on the employment vulnerability; Table 3.10 indicate evidence of the linear correlation between farm/nonfarm private sectors and vulnerability indicator (we have a chi square probability of 0.000 less than

accounts and size of the establishment. The informal sector thus covered those sectors which were not registered or/and did not keep accounts or/and small indecent businesses.

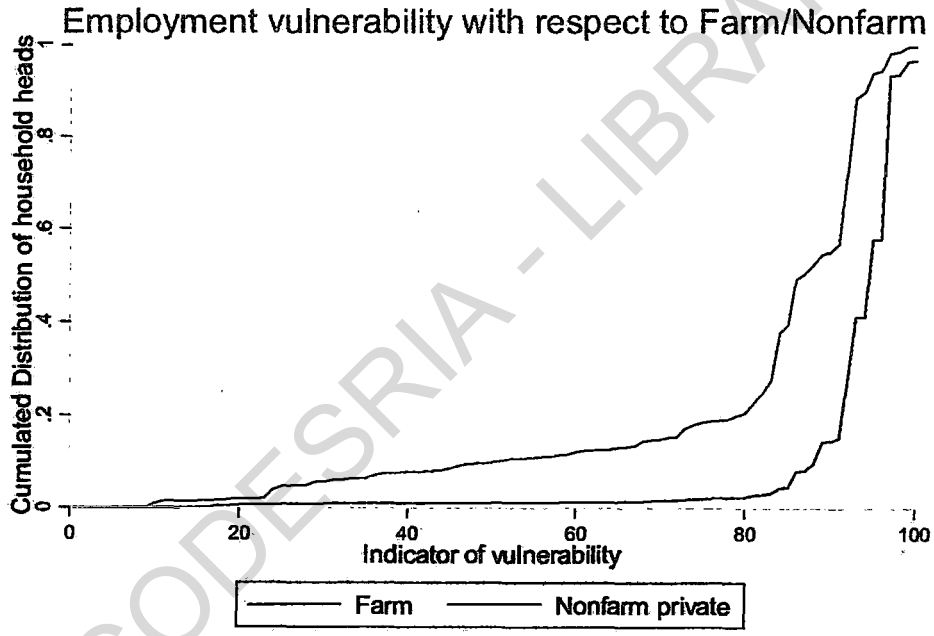
0.05; rejecting the null hypothesis that farm/nonfarm private sectors and vulnerability are independent).

Table 3.10: Distribution of Household Heads with respect to type of Private Sector Employment and Quintiles of Vulnerability Indicator (in percentage)

	Quintiles of Vulnerability Indicator					
	1	2	3	4	5	Total
Farm-private	84.72	57.11	48.92	22.03	9.67	44.50
Nonfarm-private	15.28	42.89	51.08	77.97	90.33	54.50
Total	100	100	100	100	100	100

Pearson Chi-Square = 2543,8 with 4 degrees of freedom and probability α of 0,000 N = 9219.
Source: Computed by author with the help of SPSS 17 from CHCS III

Figure 3.4: Dominance Curve of the Indicator of Vulnerability with respect to Farm/Nonfarm Private Sectors



Source: Constructed by author using CHCS III

Figure 3.4 posits the net stochastic dominance of farming activities on nonfarm activities in terms of employment vulnerability. Conversely, the nonfarm sector dominates the farm sector in terms of employment decency (Appendix 3.1, Figure 3.1C). Essentially, the farm sector in Cameroon is generally made-up of those who can hardly find work in the nonfarm formal private sector, due to lack of qualification. According to the Government of Cameroon (2007), only 18.2% of farming household heads have secondary education opposed to less

than 1% with tertiary education. Only about 30% have received technical training in this sector. The NSIF in Cameroon passes-over a majority in this sector, as it only sees to the rights of civil servants and formal sector workers.

All drives and efforts either to promote decent employment or reduce vulnerable employment among household heads in Cameroon can find relevant support from the analyses done so far. The analyses allow policy targeting, as initial indicators that overly underlie the vulnerability indicator are identified for policy prioritization. These analyses unveil the cross-sector variability of employment vulnerability and its predominance among household heads working in specific employment sectors; such analyses are particularly vital in situations of constrained budgets and policy preference. Besides, geography and gender may also determine employment vulnerability; the following section attempts to unravel information in this light.

3.6.2.2. Analysis of the Indicator with respect to Residence and Gender

Employment vulnerability tends to worsen in some regions and social grouping than in others. In an effort to provide informed knowledge on this, we attempt to apprehend the effect of location and gender on employment vulnerability among household heads employed in the private sector. We have a chi square probability of 0.000 less than 0.05; rejecting the null hypothesis that location and vulnerability are independent (Table 3.11).

Table 3.11: Distribution of Household Heads with respect to Location and Quintiles of Vulnerability Indicator (in percentage)

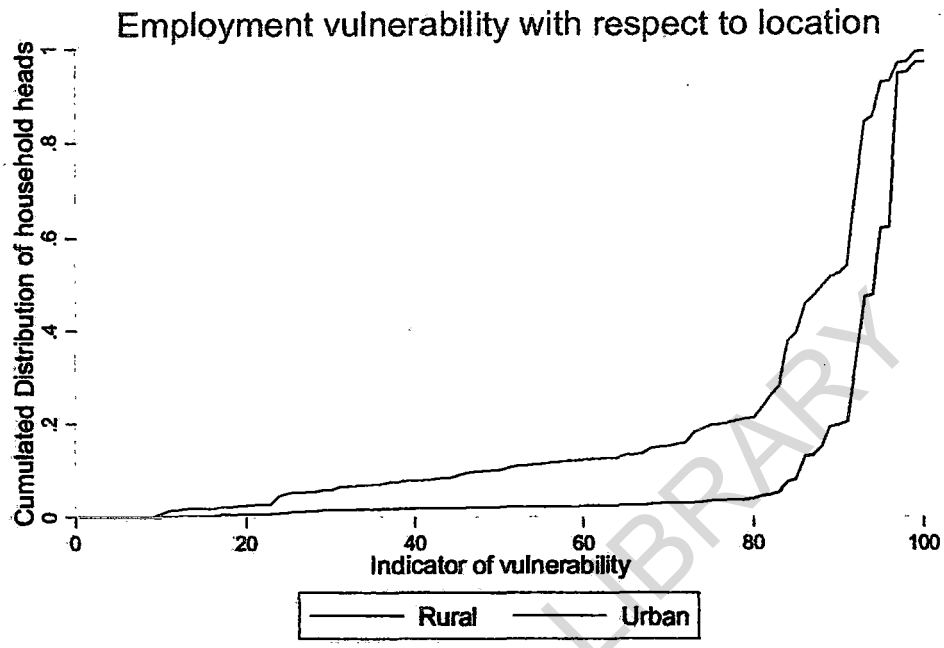
	Quintiles of Vulnerability Indicator					
	1	2	3	4	5	Total
Urban	21.21	44.13	34.05	65.09	79.24	48.74
Rural	78.79	55.87	65.95	34.91	20.76	51.26
Total	100	100	100	100	100	100

Pearson Chi-Square = 1379,9 with 4 degrees of freedom and probability α of 0,000 N = 9219.
Source: Computed by author with the help of SPSS 17 from CHCS III

It follows that there exist a strong linear correlation between employment vulnerability based on the adverse nature of employment and location (Table 3.11) and equally vulnerability is more dominant among workers in rural areas than those in urban areas (Figure 3.5). Stochastic dominance in terms of decent employment is simply a reflection of Figure 3.5 on

the 45° line (Appendix 3.1, Figure 3.1D); attesting the net dominance of urban on rural areas in terms of decent employment.

Figure 3.5: Dominance Curve of the Indicator of Vulnerability with respect to Location



Source: Constructed by author using CHCS III

The dominance of rural dwellers on urban dwellers in terms of employment vulnerability (Figure 3.5) reinforces the robustness of the analysis carried-out, while verifying part of our third hypothesis here. Generally, employment protection agencies and trade unions are more prominent or well grounded in the urban than in the rural areas. Equally, 74.6% of rural dwellers are involved in farming activities (Government of Cameroon, 2007) and employment vulnerability is widespread among this category (Figure 3.4).

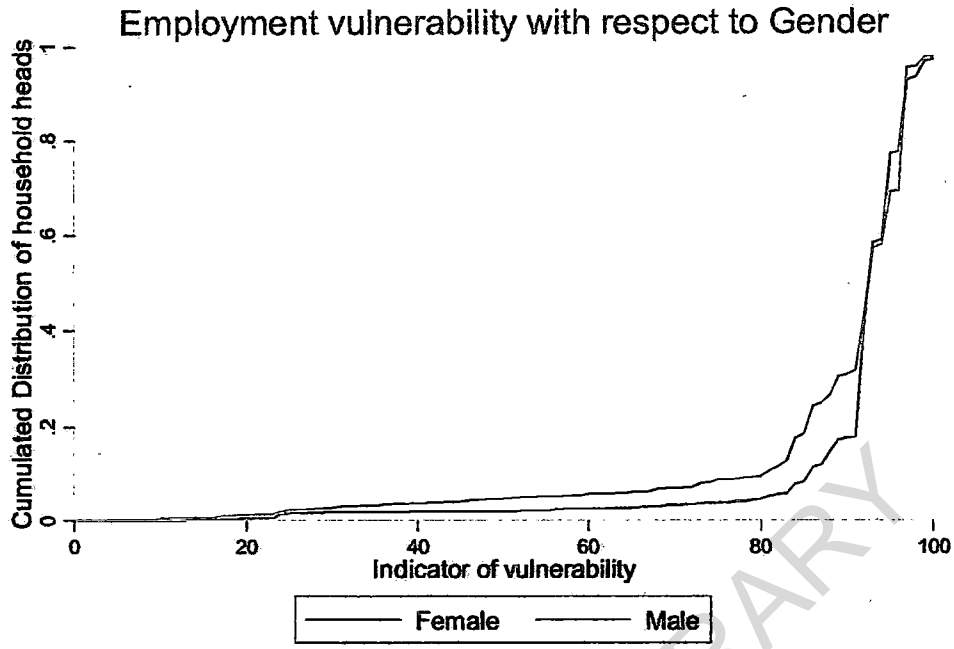
Table 3.12: Distribution of Household Heads with respect to Gender[42] and Quintiles of Vulnerability Indicator (in percentage)

	Quintiles of Vulnerability Indicator					
	1	2	3	4	5	Total
Male	70.0	66.6	64.0	83.5	86.7	74.1
Female	30.0	33.4	36.0	16.5	13.3	25.9
Total	100	100	100	100	100	100

Pearson Chi-Square = 388,6 with 4 degrees of freedom and probability α of 0,000 N = 9219.
Source: Computed by author with the help of SPSS 17 from CHCS III data

[42] Gender here refers to male and female household heads

Figure 3.6: Dominance Curve of the Indicator of Vulnerability with respect to Gender



Source: Constructed by author using CHCS III

Concerning gender, there is evidence of a linear correlation between gender type and employment vulnerability (Table 3.12). Figure 3.6 posits a weak stochastic dominance of female household heads on their male counterparts in terms of employment vulnerability; this dominance subsides as employment vulnerability intensifies; confirming the ILO's (2011) observation that employment vulnerability among women exceeds that of men. This result corroborates the third hypothesis of work in this chapter. Conversely, male household heads weakly dominate their female counterparts in terms of decent employment (Appendix 3.1, Figure 3.1E). This fair or weak dominance is possible as most female household heads may accept or prefer casual labour (part-time), lower hours of work or even prefer informal employment to formal employment to save some time for domestic and household activities. Most of them choose to operate as "buyam selam", to engage in beauty salons, and others decide voluntarily not to work. This analysis illustrates the underprivileged position of female household heads in the labour market and requires particularly attention.

Table 3.13 provides summary statistics of the mean of employment vulnerability and its complement across location and gender among private sector household heads to further flesh these analyses.

Table 3.13: Summary Statistics of the Mean of Employment Vulnerability and its Complement across Location and Gender

	Location and Gender				
	Urban	Rural	Male	Female	Overall Private
Employment vulnerability	80.09	91.32	87.14	90.88	87.90
Decent employment indicator	19.91	8.68	12.86	9.12	12.10
Total	100	100	100	100	100

Source: Constructed by author

3.6.2.3. Analysis of the Indicator and its Complement with respect to Wellbeing

It is vital at this level to investigate the relationship between well-being and employment vulnerability. In this light, we examine employment vulnerability with respect to expenditure quintiles. Table 3.14 depicts the situation for the overall sample of household heads.

From Table 3.14, employment vulnerability decreases with household well-being in Cameroon whereas "decent employment" increases with well-being. This is strong evidence that there exist a correlation between employment vulnerability and the level of well-being in Cameroon. This evidence ties with the chi-square test of independence in Table 3.15.

Table 3.14: Summary Statistics of the Mean of Employment Vulnerability and its Complement across Quintiles of Per Capita Expenditure

	Expenditure Quintiles					
	1	2	3	4	5	Total
Per capita expenditure	106930.2	165198.1	238873.2	356398.3	873842.4	477105.1
Employment vulnerability	87.06	84.15	78.70	71.14	61.00	71.95
Decent employment indicator	12.94	15.85	21.30	28.86	39.00	28.05

Source: Constructed by author

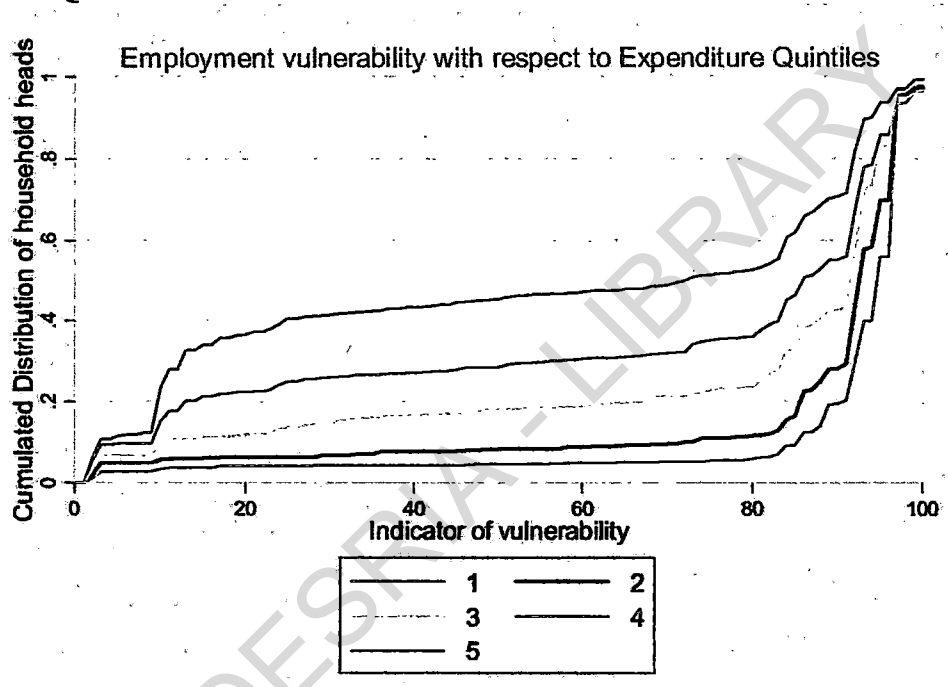
Table 3.15: Distribution of Household Heads with respect to Expenditure Quintiles and Quintiles of Vulnerability Indicator (in percentage)

	Quintiles of Vulnerability Indicator					
	1	2	3	4	5	Total
Expenditure 1	19.25	10.87	9.21	3.23	2.81	9.07
Expenditure 2	22.33	15.92	15.19	7.78	5.58	13.36
Expenditure 3	20.65	20.97	20.18	16.14	11.59	17.91
Expenditure 4	20.34	22.47	23.72	24.19	24.01	22.95
Expenditure 5	17.44	29.75	31.70	48.66	56.01	36.71
Total	100	100	100	100	100	100

Pearson Chi-Square = 1426.41 with 16 degrees of freedom and probability α of 0,000 N = 9219.
Source: Computed by author with the help of SPSS 17 from CHCS III data

The curves in Figure 3.7 do not practically meet. This confirms a net stochastic dominance of the poor on the rich in terms of employment vulnerability. Thus the poor or less privileged are necessarily more vulnerable in employment than the rich or the privileged[43]. This observation verifies the fourth hypothesis and further complements the rigour and consistency of our analysis. A reflection of Figure 3.7 on the 45° line, depicting the dominance of the rich on the poor in terms of decent employment, is performed and presented in Appendix 3.1, Figure 3.1F.

Figure 3.7: Dominance Curve of the Indicator of Vulnerability with respect to Expenditure Quintiles



Source: Constructed by author using CHCS III
NB: 1 to 5 represents the first expenditure quintile to the fifth expenditure quintile

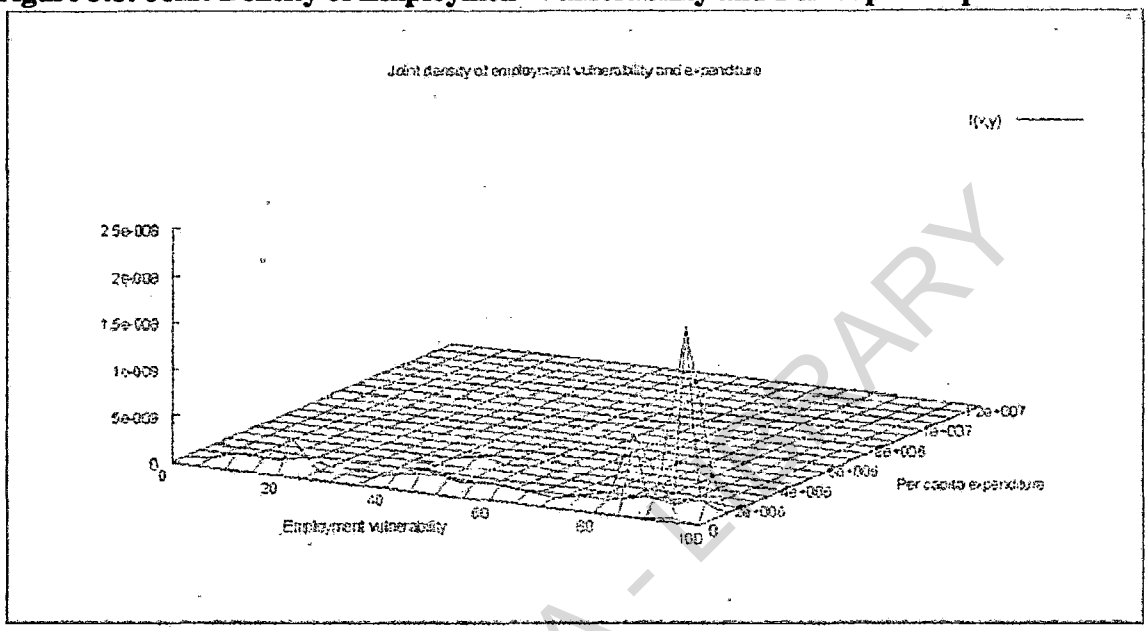
According to Barrell et al. (2005), a full density function may be of use in model evaluation and matching stylised facts of the real world. Thus, performing a joint density[44] of employment vulnerability and per capita expenditure, as per Figure 3.8, carefully shows us that employment vulnerability is very high among households at the tail of expenditure

[43] We find this construction convenient because poverty/poverty line in Cameroon is evaluated on the basis of household expenditure. Following the Government of Cameroon (2007), the poverty line in 2007 is constituted using the minimal basket of basic food and non-food items; including health, education and housing expenditures; this shows how expenditure is related to well-being and thus poverty in Cameroon.

[44] See Appendix 3.1D for the Gaussian kernel estimator of the joint density function.

distribution compared to those at the top of the distribution. This is indicated by the high pyramidal shape at the meeting of the lower tail of expenditure distribution and higher vulnerability scores (Figure 3.8). Thus high vulnerability scores pair-off or match-up with low per capita expenditures. This further substantiates the observation that employment vulnerability is higher among poor households than the nonpoor.

Figure 3.8: Joint Density of Employment Vulnerability and Per Capita Expenditure



Source: Constructed by author using CHCS III
NB: f(x,y) stands for the joint density of employment vulnerability (x) and per capita expenditure (y); and the axis ranging from 0 to 2.5×10^{-8} *tracks the xy-entry*

3.7. Concluding Remarks and Policy Implications

This chapter constructed an employment vulnerability indicator for employed household heads in Cameroon and analysed its distribution and dominance across employment sectors, location, gender, and expenditure quintiles. The analysis employed the indicator approach of the multiple correspondence analysis (MCA) given the qualitative nature of the initial indicators of employment vulnerability. The initial indicators: payslip and social security made the highest contributions followed by paid leaves, remuneration stability and housing allowance. However, the considerable contributions made by labour status, job satisfaction and employment contract could not be passed by. Under-employment and union membership made the smallest contributions, with union membership being the least.

Results of the analyses indicated that almost 76.5% of the household heads in the sample considered are vulnerable with respect to at least one of the vulnerability criterion, opposed to 23.5% with decent status. It was observed that vulnerable employment is predominant among private sector household heads in Cameroon. Thus, a greater proportion of public sector workers have decent employment status compared to their private sector counterparts, as interpreted in terms of contract security, social security, job satisfaction, underemployment, remuneration stability, labour status and job-related fringe benefits. This shows that vulnerable employment is clearly a private sector problem, as confirmed by the net stochastic dominance of the private sector on the public sector in terms of employment vulnerability. Within the private sector, we observed the net dominance of informal sector employment on formal sector employment in terms of the indicator of vulnerability and also the net dominance of farm employment on nonfarm-private employment. This is clear evidence that its incidence is more serious among household heads in informal and farm employment sectors in Cameroon.

Geography and gender also appeared to be important in determining employment vulnerability. We observed a net stochastic dominance of rural dwellers on urban dwellers in terms of employment vulnerability and only a fair dominance of female household heads on their male counterparts. These analyses illustrate the underprivileged position of rural dwellers and female household heads in the labour market, and require particularly attention. Our analyses also showed that employment vulnerability decreases with household well-being in Cameroon whereas "decent employment" increases with well-being. Dominance test indicated that the poor dominates the rich in terms of employment vulnerability in Cameroon. In this perspective, the poor are necessarily more vulnerable in employment than the rich in Cameroon. This is preliminary evidence that we use econometric modelling in the next chapter to verify.

Given the underprivileged position of rural dwellers and female household heads in the labour market, the Rural and Urban Youth Support Programme (U-PAJER) should increase its outreach in terms of micro-activities, junior enterprises and training (for instance business development, health care administration, food services, managers, hotel and catering). In 2011 this initiative employed 138 youths, trained 2628 and financed 116 junior enterprises (Government of Cameroon, 2012). This initiative should endeavour to reach the worse affected rural areas of the country and treat young women disproportionately with respect to

their male counterparts; this especially for those in informal and farming activities, for better results and healthier coverage. Thus, more government funding may be provided to U-PAJER to allow her reach out to these underprivileged groups. The government can identify an agenda for action to help vulnerable workers obtain work that provides a decent income and secures fair working conditions. The government of Cameroon should continue to develop the investment climate to boost the private sector and more especially, develop a strategy to support socioeconomic and geographic mobility of workers from informal to formal private activities; given the prevalence of vulnerability in informal activities. Programs to support commercial agriculture are highly commendable.

In cognisance of the intensity of employment vulnerability in the private sector in Cameroon, a natural worry is on the effect of this ill on the labour market outcomes (say income or income inequality) of this category of workers (private sectors workers) and whether this effect varies across the activity sectors of the household heads. This thesis furthers analyses in an attempt to throw light on these puzzles: the effects of employment vulnerability on private sector household income (Chapter 4) and on income inequality (Chapter 5) across the private and private sub-sectors of individual household heads.

CHAPTER 4

Modelling the Effects of Employment Vulnerability on Private Sector Household Income in Cameroon

4.1. Introduction

Over the past 25 plus years, labour markets in Cameroon and other developing countries have been experiencing marked changes in response to important social and economic forces. Since the advent of the crisis of the 1980s, the image of the household with a single earner, most often the male, working full-time in a permanent job with one employer has been replaced by a combination of two earners, with many working part-time or in temporary employment. Some household heads have even gone further to combine two jobs in order to keep and maintain their families. Most of the retrenched public sector workers as a result of the structural adjustment programme (SAP)[45] embraced private sector farm, nonfarm, formal and informal activities to cope with these shocks and to maintain their households. The private sector is represented here as a last resort in times of crisis and major economic shocks. Unfortunately, this is the sector where unsteady income schemes, social insecurity, job dissatisfaction, job instability and other characteristics of indecent or vulnerable employment are likely more apparent.

In the Cameroon labour market, household heads working in the private sector are more vulnerable in their jobs than those in the public sector. This situation is of major concern, especially the puzzle on how this adverse situation of employment vulnerability in the private sector affects the labour outcomes (say monthly income) of those therein. It is equally worthy to mention that employment vulnerability intensity does not level-up across private sector employment segments. For instance, household heads in the informal and farm employment sectors are more vulnerable compared to those in the formal-private and nonfarm-private sectors, respectively. Thus, more workers in formal-private and nonfarm-private employment

[45] The putting in place of the SAP involved: liquidating non-profit making and privatising some marginal profit making public enterprises; reducing public expenditure; freezing salary increment of the public sector workers; decreasing public and semi public sector workers from early 1990 and implementing salary cuts in January and November 1993 (Baye, 2006a).

sectors have decent employment status compared to their informal and farm sector counterparts, as interpreted in terms of the factors used to construct our employment quality index (Table 3.1). These summarised examples are indications that the participation of these vulnerable categories of workers in the labour market leaves their well-being at risk.

Recent attention along these lines is focused on assessing vulnerable employment and showing how it associates with major economic outcomes (ILO, 2007). There is also growing consensus that job instability, an aspect of vulnerability, is central among poor workers and is a leading cause and expression of poverty (World Bank, 2000). Current empirical endeavours in Cameroon even indicate that employees holding fixed term contracts are twice more productive than those holding indefinite-term contract (Fomba, 2008; 2011). Other country-based endeavours have investigated the influence of trade union membership on income or salary (Tsafack, 2000). All these evidences show that employment status is associated with major economic outcomes. This chapter takes a broader view of this association; it combines institutional variables (employment contracts; compliance with the labour code in terms of social security, vacation, hours work); time-related factors (casual and unstable employment); job satisfaction; remuneration stability; union membership; and job-related fringe benefits in the form of an index to check this association. Importantly, Cameroon in her most recent GESP has placed growth and decent employment at the centre of poverty reduction. In order to provide inputs into the GESP and to assist the government in her struggle against vulnerable employment and poverty, this chapter addresses the main question of: What are the proximate determinants of private sector household income in Cameroon, overall and by employment sectors?

Studies on the association of vulnerable employment and economic outcomes like income are just beginning to evolve. In the developed countries, it has been observed that physically hazardous and highly strenuous jobs are often better paid than less strenuous or hazardous jobs (see Poggi, 2007; Fernandez and Nordman, 2009). Unfortunately, empirical evidence on the theory of compensating wage differentials[46] is completely absent at country-specific levels in sub-Saharan Africa (SSA). Bocquier et al. (2010) use data from the 1-2-3 surveys collected in 2002-2003 to carry-out a cross country comparison for seven economic capitals[47] of West

[46] Smith (1776) identified five circumstances to explain why it is not the wage that is the balancing factor among different jobs on a competitive market, but all the pros and cons of a job.
[47] Abidjan, Bamako, Cotonou, Dakar, Lome, Niamey, and Ouagadougou

Africa. The work of Bocquier et al. (2010), while filling gaps in the SSA empirical literature on employment vulnerability, has two major weaknesses: (1) the study draws data from the 1-2-3 surveys which only capture issues in economic capital cities, hence not suitable for nationwide policies; and (2) it uses only variables and sectors which are similar in the 7 cities under review. In an effort to circumvent these weaknesses, the following specific research questions would be addressed in this study:

- What are the major determinants of private sector employment vulnerability?
- What is the role of employment vulnerability among the determinants of private sector household income in Cameroon?
- What is the effect of employment vulnerability on household income across employment sectors in Cameroon?
- Are there pecuniary compensations for adverse working conditions?

Using the 2007 CHCS-III which covers vital labour market indicators, the main objective of this chapter is to identify the major determinants of private sector household income in Cameroon, overall and by employment sectors. The specific objectives are:

- To assess the determinants of private sector employment vulnerability;
- To evaluate the effect of employment vulnerability on private sector household income, while testing the theory of compensating wage differentials;
- To examine the differential effects of employment vulnerability on income by sector of employment (formal/informal and farm/nonfarm). This is important because average gains may compensate for a certain level of vulnerability across sectors. This will also allow us to track elements of segmentation across formal/informal and farm/nonfarm with respect to vulnerability; and
- To identify policy orientations on the basis of the study.

These objectives will allow our analysis to check whether vulnerability has a differential effect on income depending on the household head's sector of employment and location.

These objectives are guided by the following testable hypotheses:

- ❖ Vulnerability correlates negatively with the density of institutions and positively with attachment to traditional beliefs;
- ❖ Employment vulnerability is expected to be inversely associated with private sector household income;
- ❖ Workers with very high intensity of vulnerability may receive some compensation for their arduous workings conditions; and
- ❖ It is probable that responsibility at work attracts some pecuniary compensation.

The rest of this chapter is organised as follows. Section 4.2 reviews the literature on employment vulnerability and its association with income. Section 4.3 presents the theoretical framework. Section 4.4 develops the methodology of the study. Section 4.5 presents the data and discusses the variables used in the study. Section 4.6 submits the findings and finally, section 4.7 concludes the study.

4.2. Literature Review

Literature on traditional models, within the competitive framework, underline the existence of compensating payments due to non-pecuniary job attributes like working conditions or differences in the stability of jobs across industries. It is important to recall that the idea of equalizing or compensating wage differentials was first introduced by Smith (1776, Book I, Chapter X, Part I). Growing empirical literature on the evidence of this idea, compensating wage differentials, only found strength in the 1970s. Early studies on the internal wage policies of firms acknowledged the presence of equalizing differences (Doeringer and Piore, 1971, p. 66-68 and Reynolds, 1974, p. 210).

A line of reflection focused on working conditions and job-related risks to brighten this idea. Lucas (1972) found evidence of significant compensation for repetitive work and somewhat smaller compensation for jobs with adverse working conditions (hazards and extreme temperature). For him, jobs requiring physical strength appeared to command lower wages (p. 554-55). In the contrary, Bluestone (1974), Quin (1975), and Hamermesh (1977) all found no evidence of wage compensation for jobs requiring physical strength (hazards or extreme temperature). This is clear evidence of conflicting results on this subject in the literature. Smith (1973) concluded that the probability of job-related fatal injuries (or job-related death) may be fully reflected in wage rates.

Another stream of studies have emphasised on the fact that individuals may choose more flexible and easier jobs at the cost of lower wages. Lazaar (1977) observed significantly lower wages for young men enrolled in school. He argued that this observation is consistent with an equalizing-difference explanation which holds that students optimally prefer more flexible and easier jobs at the cost of lower wages. Though, with little empirical support, human capital theorists maintain that individuals gain entry into occupations with prospects of higher future wages only by accepting lower current wages (Mincer, 1974b, p. 58-59). Schiller and Weiss (1977) examined the nexus between pension benefits and wages in a sample of firm workers and found evidence of equalizing-difference hypothesis among younger workers but not among those nearing retirement. These studies highlight the need to check the possibility of compensating differentials across sub-groups or employment sectors within the labour market.

Other studies have focused on hours of work flexibility, working conditions, and employment and income stability to address the theory of compensating wage differentials. Duncan (1976) found substantial compensating differentials for some job characteristics (freedom to control hours worked, employment and income stability, and safe working conditions). In the same light, Duncan and Stafford (1977) reported positive premiums for work effort and for jobs that restrict "opportunities to choose an individual work schedule and work pace". However, the premiums become statistically insignificant when a theoretically preferable wage measure is employed. It is worthy to mention that up to this level, the empirical relationship between wages and other fringe benefits (like vacations, health insurance or job allowances) is still scarce.

A branch of the literature stresses on adverse working conditions from a broader perspective, including physical demands, noise, or dirtiness, by using hedonic wage equations (see for example Brown 1980). In recent research, for example, job stress (French and Dunlap, 1998), flexible working hours (Gariety and Shaffer, 2001), shift work (Lanfranchi et al., 2002), and perception of job instability, measured by product market volatility (Magnani, 2002), among other factors, have been investigated. Most of these studies suffered the problem of omitted-variable bias, and the coefficients of various adverse job characteristics were often wrongly-signed and insignificant in the wage equations (Bockerman et al., 2004). Bockerman et al. (2004), on their part, investigate the role of adverse working conditions in the determination

of individual wages and overall job satisfaction in the labour market. Their results show that working conditions have a very minor role in the determination of individual wages in the labour market. In contrast, adverse working conditions substantially increase the level of job dissatisfaction and the perception of unfairness of pay at the workplace.

Another generation uses some industry-level variables to counteract the evidence of compensating-difference, stressing the importance of non-competitive dimensions of wage formation. In this perspective, Dorman and Hagstrom (1998) stress that the non-competitive aspects of wage formation are very important in terms of compensating wage differentials. Their estimated wage equation included a number of industry-level controls (such as profitability and capital/labour ratio) or, alternatively, a full set of dummies attached to industries. They found that the inclusion of industry-level controls largely wipes out the compensating wage differentials that have been observed in the literature. This pattern is consistent with the dominance of non-competitive wage formation in the labour market. Hwang et al. (1998) and Lang and Majumdar (2003) also acknowledge that working conditions may not be reflected in wages. Notwithstanding, it is important to recall that equilibrium distribution of wage and job characteristic combinations may not show evidence of compensating wage differentials.

Recent endeavours to investigate the theory of compensating wage differentials attempt to combine the characteristics of the workers with those of their jobs in the form of an index or indicator before studying the evidence of compensating-difference. The work of Fernandez and Nordman (2009), use individual job characteristics to construct the composite index of vulnerability and study its link with income. Like Poggi (2007), Fernandez and Nordman (2009) observe that, in developed countries, physically hazardous and highly strenuous jobs are often better paid than less strenuous or hazardous jobs.

Following from Cheli and Lemmi (1995) and Fernandez and Nordman (2009), Bocquier et al. (2010) construct the private sector employment vulnerability index and establish its links with monthly income in seven economic capitals of West Africa. Bocquier et al. (2010) find that the average impact of vulnerability on income is generally negative for an average level of vulnerability. In the formal private sector of the West African cities, losses of income due to vulnerability are lower for high levels of vulnerability, but do not translate into gains. In the informal sector, however, the average predicted income for a high vulnerability level is higher

than the average predicted income for a low vulnerability level. This way, the assumption that average gains may compensate for a certain level of vulnerability is thus confirmed in the informal sector.

However, the work of Bocquier et al. (2010), though vital in the SSA empirical literature on employment vulnerability, draws data from the 1-2-3 surveys which only capture concerns in economic capital cities, hence not suitable for broad-based policies; and uses only variables and sectors which are similar in the seven cities under review, as intimated earlier. Empirical knowledge on the employment vulnerability at the country-level in SSA is still unravelled. As value added, our study uses the 2007 Cameroon household consumption survey (CHCS-III), to account for some additional variables (paid leaves, and housing allowances) in constructing the vulnerability index and establish its links with household per capita monthly income, using the control function econometric approach. This famous approach as adopted in Epo (2012) fails to verify the Sargan test and one is inclined to believe that this made analyses not to be very systematic[48]. Here we have attempted to systematically consider this approach.

4.3. Theoretical Framework

Our interpretation of the link between employment vulnerability and household income draws on the theory of compensating wage differentials. There is a stretched history of economic research into the mechanisms or models that narrow or widen wage differentials between individuals. The first generation of such models focused on competitive markets where they found wage premiums compensating non-pecuniary job attributes, such as working conditions, and differences in job stability across industries (Brown, 1980; Rosen, 1086; Murphy and Topel, 1987). Most of these authors argue that when job characteristics (other than wages) enter into players' labour market decisions (firms and workers); the market balance is thus due to the equalisation of workers' utilities rather than their wages. Rosen (1986) speculates that the reckoning behind this is to be found in a simple supply and demand structure. On the one hand, labour supply decisions are based on a trade-off between earned income (wages) and the cost of doing the job (stress, repetition, production deadlines, etc.) such that, at optimum, wage differences correspond to the marginal rate of substitution

[48] Without assurance of the validity of the instruments used, the work quickly passed-on to adopt the control function approach; this is not very systematic.

between consumption and working conditions[49]. On the other hand, labour demand decisions by firms are based on a trade-off between the necessity of paying the workers compensation commensurate with the strenuous or hazardous nature of their tasks and the need to improve the working conditions offered.

In this perspective, under the hypothesis of homogeneous individuals and heterogeneous work environments, wages differ between workers such that they all obtain the same utility. To encourage workers to accept more adverse working conditions, firms therefore have to offer higher wages. This is the central idea behind the theory of compensating wage differentials. Bootlegging the hypothesis of homogeneous individuals necessarily introduces a great deal of uncertainty as to the existence of compensation for working conditions when it is observed at the midpoint of the worker distribution. There could be need to divide the population observed into more homogeneous groups, for instance by using a conditional wage quantile derived from quantile regressions or employment sectors, so as to reduce the noise created by the presence of individual heterogeneity in the estimation of the compensating differential. More lately, non-competitive theories have argued that wage differences between apparently identical individuals tend more to reflect non-compensating differentials, such as the workers' relative bargaining power (Daniel and Sofer, 1998; Manning, 2003) and the existence of efficiency wages[50] (employer's wish to pay workers at a higher rate than the one that would prevail over a competitive market). Other recent hypotheses have highlighted the existence of information asymmetries, which allegedly increase the friction in the labour supply-demand match (Hwang et al., 1998), and the existence of factor productivity differences between firms (Burdett and Mortensen, 1998; Pissarides, 2000; Mortensen, 2003).

Some empirical studies have spotlighted the relationship between wage structure and non-monetary job satisfaction, but most of these studies often generate conflicting results (for example, French and Dunlap, 1998; Groot and Maassen van den Brink, 1998; Lanfranchi et al., 2002; Magnani, 2002; Clark and Senik, 2006; Bockerman et al., 2006; and Poggi, 2007). Research into the nexus between compensating differentials and observed job attributes, especially when it entails distributional approaches is still just evolving. In a recent

[49] Suppose we have the utility $U(C, A)$, where C is the worker's consumption and A adverse working conditions, the worker maximises her utility under constraint $C= W(A)$, implying that $W'(A)=UA/UC$.
[50] For a review of the efficiency wage theories and its extension (see Katz, 1986 and Akerlof and Yellen, 1990). See Lindbeck and Snower (1989) for a review of insider outsider models (labour market segmentation theory).

study of this kind, Fernandez and Nordman (2009) observe that the compensating differential actually differs depending on the worker's relative position in the income distribution. For example, pecuniary compensation for adverse working conditions could well be overestimated if the most capable (or resistant) workers are selected for employment statuses where these attributes are more commonplace.

Moreover, basing on the assumption that the most capable individuals are also the most likely to receive efficiency wages, or to have a certain amount of bargaining power, working conditions could well have less to do with the wage-setting process for these individuals than for other workers without these characteristics. By and large, workers could also find it easier to ask for premiums for adverse working conditions when the demand for labour exceeds the available manpower, creating a labour market imbalance that probably varies along the income distribution. Our work focuses on the issue of employment vulnerability found, for example, in insecure employment contracts, adverse working conditions and, more broadly, greater worker exposure to work-related risks. After constructing the employment vulnerability index, we employ a quantitative approach addressing the effects of vulnerability on household income, while controlling for other correlates. Thereafter, we use a distributional approach checking whether there are any compensating differential phenomena found along farm-nonfarm and formal-informal employment sectors.

4.4. Methodology

Our interpretation of the link between employment vulnerability and income raises a number of econometric issues that our study attempts to address. There exists a likelihood of employment vulnerability being endogenous in the income equation and evidence of a non-linear correlation of the endogenous variable with its residual. Our study then employs the control function approach (Wooldridge, 1997; Mwabu, 2009) to investigate the effect of employment vulnerability on income across employment sectors in Cameroon. Out of curiosity, this chapter also attempts to check for selectivity bias; given that the vulnerability intensity of the unemployed, discouraged unemployed and inactive household heads is not observed. We further performed density curves of employment vulnerability and household per capita monthly income and their joint distribution to substantiate our econometric results; that is, investigate the behaviour of monthly income at different vulnerability intensities

To quantify the effect of vulnerability on household income, what matters to us is the cumulative number of vulnerability criteria fulfilled by an individual rather than such or such a criterion. This way, the effect of vulnerability (I) on income can be written as follows:

$$Y = X\alpha_y + \varphi I + \varepsilon_1 \quad (4.1)$$

where: Y is the log of household per capita household income per month; I is the vulnerability intensity; X represents a vector of the human capital variables and other correlates (potential labour market experience[51] and its square, control for gender-dummy, microcredit access, number of younger children, being married, seniority in the enterprise and control for urban residency); α is a vector of parameters to be estimated including the constant term; and ε_1 the error term. Our analysis has as objective to estimate the effect of employment vulnerability (φ) on income overall and across sub-sectors in Cameroon. For example, formal-private as opposed to the informal sector and farm as opposed to the non-farm sector.[52]

There is a likelihood of vulnerability being endogenous as unobservable variables may be associated with vulnerability and household income. More generally, unobservable variables that affect the level of vulnerability and the level of income may reflect the worker's bargaining capacities and the worker's household situation. Specifically, a worker who has no bargaining power, who is shy or has no social interactions, is likely to be unable to negotiate either good working conditions or wage rise. Equally, if a worker's household is insecure or if a worker's household is hit by a shock (illness or birth or unemployment), the worker may have to hastily accept a poorly-paid job, if she lacks social networks to respond to this household shock. In this respect, ignoring this factor in our equation may leave us with non-convergent estimators of (φ). We employ therefore the IV method to resolve this problem (see Card, 2001, Mwabu, 2009 and Bocquier et al., 2010).

The IV method involves the use of a vector of instrumental variables, Z, which explain vulnerability intensity and are not directly correlated with household income or ε_1, the error

[51] Potential labour market experience = Age – minus schooling – minus six (job tenure in years).
[52] In the literature, labour market segmentation is usefully stylized by what is called labour market dualism (see Dixit, 1973). One sector is alternatively called "formal", "modern", "good jobs", or "urban" while the other part is alternatively called "informal", "traditional", "bad jobs", or "rural".

term in equation (4.1). Our instruments are regional density of formal governmental institutions and attachment to traditional believes captured at cluster level.[53] These instruments chosen to better suit the country context have no direct impact on income as they are not associated with the worker's productivity, capacities or the type of job held except through employment vulnerability itself. Thus, the reduced-form equation is given by:

$$I = X\alpha_1 + Z\gamma_1 + \varepsilon_2 \tag{4.2}$$

Where, α and γ are vectors of the parameters to be estimated and ε_2 the error term.

In addition, the heterogeneity of household income due to non-linear interaction of employment vulnerability with unobservable or omitted variables could render our estimated coefficients biased. This study employs the control function approach to address this potential issue (see, Garen, 1984; Wooldridge, 1997; Mwabu, 2009; Baye and Fambon, 2010 and Baye, 2010b). Hence, to check for potential endogeneity and heterogeneity, due to non-linear interaction of vulnerability with unobservable variables, the residual, $\hat{\varepsilon}_2$, predicted from the reduced form equation (equation 4.2) and its interaction with vulnerability, $(\hat{\varepsilon}_2 * I)$, are built-into equation (4.1) to obtain equation (4.3), which is the control function model:

$$Y = X\alpha + \varphi I + \omega\hat{\varepsilon}_2 + \theta(\hat{\varepsilon}_2 * I) + \hat{\varepsilon}_3 \tag{4.3}$$

Where, $\hat{\varepsilon}_2$ is the residual of vulnerability, derived from the reduced-form model of vulnerability (see, equation 4.2); $(\hat{\varepsilon}_2 * I)$ is interaction of fitted vulnerability residual with the actual value of the vulnerability variable; $\hat{\varepsilon}_3$ is the error term; and α, φ, ω and θ are parameters to be estimated.

As noted by Wooldridge (1997) and Baye (2010b), the IV estimates of equation (4.3) are unbiased and consistent only when the two conditions below are respected: (i) the expected value of the interaction between vulnerability and its residual, $(\hat{\varepsilon}_2 * I)$, is zero or linear and

[53] The literature uses the marital status of the household head and the dummy variable for the institutional sector (formal private, informal private or unknown) of the individual's father (see Fernandez and Nordman, 2009 and Bocquier et al., 2010).

(ii) there is no sample selection problem. But according to Card (2001); Mwabu (2009); and Baye (2010b), if the correlation is non-linear, then use of the control function is required and the inclusion of the interaction term, $(\hat{\varepsilon}_2 * I)$, in equation (4.3) purges the estimated coefficients of the effects of unobserved heterogeneity. After the control function variables $\hat{\varepsilon}_2$ and $(\hat{\varepsilon}_2 * I)$ are generated, the estimation of equation (4.3) will clean the estimates of the parameters of household income of potential simultaneity bias and unobserved heterogeneity.

Haven checked the problems of endogeneity and unobserved heterogeneity, the estimates of equation (4.3) may not be applicable to the entire sample of private sector workers in Cameroon, because the vulnerability of private sector workers who were not observed in the sample is not reflected in equation 4.3 (that is, the unemployed, discouraged unemployed and inactive)[54]. This way, failing to employ an approach that reflects the whole sample of workers may allow our parameters estimates to suffer from sample selection bias. To check the problem of selection, equation (4.4) is introduced:

$G=1(X\alpha_g + W\gamma_g + \varepsilon_4 > 0) \Leftrightarrow$ if I is unobserved $G \leq 0$ and $G = 1$ if I is observed. (4.4)

where, G is a dichotomous indicator function for selection of observations into the sample, W is a vector of variables that instrument for the sample selection indicator of vulnerability intensity, α and γ are vectors of parameters to be estimated, and ε_4 the error term.

We then proceed to apply the Heckman approach (Statacorp., 2001) that jointly estimates the probit for sample selection (equation 4.4) and the structural parameters including the residuals and the interaction terms (equation 4.3) by the maximum likelihood estimation (MLE) procedure. This approach purges the structural estimates of potential simultaneity bias, unobserved heterogeneity and sample selection bias simultaneously.

The coefficient of the resulting inverse of the Mills ratio, which controls for sample selection bias, is the product of the correlation coefficient between ε_3 and ε_4, and the standard deviation of ε_3. The Heckman approach automatically generates the sample values of the

[54] In this analysis we presume that if these unemployed and inactive household heads were to work they would do so in the private sector.

inverse of the Mills ratio and its coefficient upon convergence of the log-likelihood function (Statacorp., 2001).

However, it is important to note that the control function (equation 4.3) is the estimation approach of interest. This is not only because it purges our parameter estimates of the problems of potential endogeneneity and unobserved heterogeneity, but because it frames-up well with the interest of our study. Our interest is to address the link between employment vulnerability and incomes of employed household heads; so concerns with respect to those unemployed, discouraged unemployed and inactive are not very vital to us. This interest finds great support with the control function approach. Notwithstanding, sample selectivity that factors-in unemployed, discouraged unemployed and inactive household heads in our regression analysis was only done for curiosity reasons.

4.5. Data used and Instruments of the Composite Index of Vulnerability

4.5.1. Data presentation and Justification of the Income Measure

4.5.1.1. Data presentation

We employ the Cameroon household consumption surveys, CHCS III conducted in 2007 by the National Institute of Statistics (NIS), which provides information on labour market employment sectors and labour market characteristics relevant for the study. The CHCS III survey was conducted between May and July 2007; and comprised 11391 households that were actually interviewed with 9219 of these household heads in the private sector and about 1102 of them in public/parapublic and international organisations. It is important to recall that 165 of these household heads are unemployed according to the international labour office, 93 are discouraged unemployed and 812 are inactive in the labour market.

The dependent variable for our study is per capita monthly income, surrogated by per capita expenditures per month. The potential endogenous variable is employment vulnerability constructed in the previous chapter. Exogenous included variables are education (years); experience (years of work) and its square; seniority in the main job (dummy); number of younger children (cluster level); number of married household heads (cluster level), gender (dummy); and location (dummy). Instruments of endogenous input are: density of institutions per region and attachment to traditional believes (cluster level). The density of regional

institutions is extracted from the Presidential Decree N°2008/376 of November 2008 based on Administrative Organisation in Cameroon[55]. Other variables: sector of employment (farm/nonfarm, and formal/informal).

4.5.1.2. Justification of the Income Measure

This role of income can be interpreted in more than one way. If one has in mind spending power then perhaps disposable income (income after taxes and compulsory deductions) may be an appropriate concept. The focus on income as conventionally defined clearly has shortcomings, as it is hard to get reliable data on income (Atkinson and Brandolini, 2001). According to Blundell and Preston (1998) consumption expenditure may be a more appropriate economic indicator of income. For them, use of consumption data can avoid a number of difficult technical problems that arise from the presence in practice of zero and negative incomes.

Ravallion (1994) underlines that expenditure is less inclined to vary with fluctuations than income. This view makes expenditure particularly suitable in developing and agricultural economies where the informal sector is considerable and agricultural activities, subject to seasonal variations, are predominant. Consolidation this observation, Deaton (2009) emphasises that expenditure data is better measured than income in developing countries and agrarian economies; as income for rural households may fluctuate within the year in line with the harvest cycle, in urban economies with large informal sector as well; income flows may be inconsistent. Thus, it may be quite difficult for households to provide meaningful information on their income. In this perspective, information on income in most surveys in developing countries is likely to be of low quality. In this context, expenditure is likely a closer proxy to the current income of a household. Moreover, for Thorbecke (2005) and Klasen (2008) it is easy to obtain information on the income of the earner(s) in a household, but it is not easy to know how this income is later on distributed within the household. Generally, this problem is solved by assuming a unitary distribution of income within the household. Thus, justifying our use of expenditure per capita as a proxy of per capita income; given by household total expenditure divided by household size.

[55] See appendix 4.1 for the density of institutions per region.

This proxy may particularly suit the context of developing countries like Cameroon, as individuals and households hardly answer survey questions relative to their income. They hide their monthly, weekly or daily income for reasons still unknown to us. This way, the income columns of surveys in most developing countries are plagued with many missing values rendering them unrepresentative. For instance out of the 11391 households interviewed in the 2007 Cameroon household consumption survey, CHCS III, only about 6700 household heads provided information on their income, leaving us with about 4600 missing values. Thus, in this study household per capita income is surrogated by household per capita expenditure.

4.5.2. Justifications of the Instruments of Vulnerability

4.5.2.1. Institutions and Vulnerability

In almost every country today, governments have an unquestionable responsibility in ensuring decent working conditions among individuals and households therein. Vulnerability is related to the risks, shocks, and stresses to which a household head is subjected and the state of being defenceless or the lack of means to cope with these risks, shocks, stresses, or demands (Pagés, 2003; p.9). The sources of these risks, among other things, may include institutions governing resource access and contract enforcement, working conditions, together with labour and commodity markets as a whole. We argue that the regional spread of administrative institutions and institutional change may help household heads in their efforts to attain decent employment status. Almost every household in Cameroon would be capable of developing better working conditions if the regional institutions implement policies and programmes related to contract enforcement, minimum wages, social security and other decent work facets.

The government and her regional institutions have, as duty, to encourage a general attitude in the population about the quality of work and favourable working conditions. The formal institutions, found in each sub-division, range from civil and municipal administrations, law and order, to ministerial delegations. Each sub-division in Cameroon is generally endowed with these institutions; the more there are sub-divisions in a region, the higher the institutional coverage in this region. Thus, we consider the number of sub-divisions in a region to capture its institutional coverage. The regional delegation for labour and social security and employment and professional training coordinate and promote regional employment. These regional delegations should create the necessary conditions so that working household heads

and employment agencies can function smoothly. For North (1990), institutions are 'the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. He refers to the rules governing property rights, businesses, employment, churches and schools. Ostrom et al. (1993) support this, by stating that institutions are the people and the patterns of regular, repetitive interactions among them that transform inputs into outputs. Also note that informal institutional settings that include social norms, routines, and political processes can determine working conditions of people. Thus institutions should interact between employers and employees to encourage favourable working conditions. We therefore use the density of formal regional institutions in Cameroon to instrument for employment vulnerability. We expect the density of institution to correlate inversely with employment vulnerability.

4.5.2.2. Traditional Attachment and Vulnerability

The question of the linkage between traditional attachment and vulnerability in employment may appear new. However, attachment to traditional believes, given its practice in Africa, is probably a non-negligible factor of social and economic interactions. We argue that attachment to traditional doctrine affects a household head's bargaining power and his socio-economic interactions negatively. Thus, the latter, relatively absent from modern social classes as compared to Protestants, Christians and Muslims lacks the social networks and ability to deal with household shocks (unemployment, birth or illness). Such a household head may have to accept, in the event of a household shock, a poorly-paid or a job with adverse working conditions, just because she lacks social networks to respond to this household shock. It is also vital to highlight that this phenomenon is generally inherited, because it is past down from generations to generations involving little or no choice on the part of the traditionalists; though it can be argued that it is one's choice to remain a traditionalist.

Weber (1930) argues that Protestant doctrines, for instance Calvin's doctrine of predestination provide the theological motivation for capitalistic activities. According to him, strict Protestant asceticism or Catholic monasticism which these churches naturally imposed, especially on the property less classes, affects the productivity of labour in the capitalistic sense of the word. This is indication that strict doctrines that churches and traditions practice may undoubtedly affect a household head's decision and determination at work as well as her ability to negotiate wage rise and working conditions. Audretsch et al. (2007), further

confirms this, by arguing that religion affects an individual's decision making habit. Given the possible correlation of traditional attachment with our outcome variable, income, we capture it at cluster level to instrument for vulnerability. We expect traditional attachment to correlate positively with employment vulnerability.

4.6. Empirical Analysis

4.6.1. Descriptive Statistics and Reduced-form Estimates of Vulnerability

Here we carry out some descriptive discussions on the variables employed in this chapter and present the reduced-form estimates of vulnerability. These discussions will help enhance our interpretations and allow us generate study-specific conclusions.

4.6.1.1. Descriptive Statistics

Table 4.1 hosts summary statistics describing the variables used in the empirical analysis. On average, a household head in the private sector earns about 21 500 CFA francs per month. This average monthly income is well below the minimum wage of 28 500 CFA francs per month in Cameroon. Most of the households in our sample are headed by men and majority are rural dwellers. More than 79% of households are headed by men as opposed to about 21% headed by women. Close to 30% of private sector households live in urban areas whereas 70% are in rural areas. On the averagely, there are more vulnerable household heads in the private sector compared to the public sector. This vulnerability differential between the above employment sectors is enough ground for further questioning of how these private sector household heads may be affected by this rather adverse situation. Very few private sector workers hold managerial positions and just a small minority of private sector operators have access to microfinance credit. Only about 8% of the household heads interviewed are holding managerial positions in private enterprises and only about 6% of private sector household heads in a cluster benefit access to microcredit.

Averagely, a private sector household head has acquired 6 (six) years of education, so majority have only completed primary school. According to the Government of Cameroon (2007), about 33.3% of these private sector operators have no education, 37.4% have completed primary education, 26.3% have reached the secondary school level and only 3%

have reached the university. About 63% of household heads in each cluster are married and on average household heads in a cluster have 2 (two) children.

Table 4.1: Descriptive Statistics

Variables	Number of observations	Mean	Standard deviation
Outcome variables			
Log of household capita monthly income	9219	10.17	0.64
Household per capita monthly income	9219	21 500	20357.37
Potential endogenous variable			
Employment Vulnerability Intensity (0 - 100)	9219	87.90	15.35
Exogenous included Variables			
Labour experience (years of work)	9219	32.93	13.95
Labour experience squared	9219	1278.82	1066.06
Years of Education	9219	5.37	4.68
Seniority in the enterprise (dummy for managerial position)	9219	0.08	0.27
Access to microcredit (cluster level)	9219	0.06	0.09
Number of younger children (cluster level)	9219	1.18	1.33
Number of married household heads (cluster level)	9219	0.63	0.21
Gender of household head (male = 1)	9219	0.80	0.40
Location of household head (urban = 1)	9219	0.30	0.46
Instruments of endogenous variable			
Density of institutions (per region)	9219	0.50	0.32
Attachment to traditional beliefs (cluster level)	9219	0.04	0.08
Controls variables			
Predicted vulnerability residual	9219	-0.09×10^{-7}	13.82
Interaction of vulnerability and its residual	9219	191.01	690.46
Other variables			
Formal private employment sector (formal = 1)	9219	0.08	0.26
Informal employment sector (informal = 1)	9219	0.92	0.26
Nonfarm private employment sector (nonfarm = 1)	9219	0.543	0.48
Farm private employment sector (farm = 1)	9219	0.457	0.48

Source: Compiled by author from the 2007 Cameroon Household survey (ECAM III)

On the average, each region in Cameroon has about 50% of institutional coverage. Most private sector household heads are in the informal sector followed by the farming sector. Close to 92.5% of private sector household heads are in informal employment as opposed to 7.5% in the formal employment sector. Close to 46% of these household heads depend on farm activities (small scale farms, plantations, fruit firms and animal rearing) compared to about 54% in nonfarm activities (own-account businesses, housekeeping, banking, as well as associative enterprises like cooperatives, NGOs, syndicates).

4.6.1.2. The Reduced-form Estimates of Vulnerability

Excluded Variables versus Employment Vulnerability

The employment vulnerability index ranges from 0 to 100 and a progression towards 100 depicts increasing vulnerability. Table 4.2 submits the reduced-form estimates of the endogenous variable, employment vulnerability (equation 4.2). The density of institutions which represents the institutional coverage in each region is negatively and significantly associated with employment vulnerability. This implies that decision making to reduce vulnerable employment among private sector workers in Cameroon should also be seen from the angle of institutional coverage by region. Regional institutions (civil and municipal administrations, law and order, ministerial delegations, and trade unions) can play a vital role in encouraging a general attitude among private sector workers about the quality of work and favourable working conditions. Regional delegations of labour and social security as well as employment and professional training are crucial inputs in promoting quality employment among private sector workers at the regional level, that is, assist in building and guarantying a win-win interaction between the private sector employer and the employee.

Moreover, civil society organisations, trade unions and employers can improve their own efforts to reduce vulnerable employment. Trade union strategies for increasing membership amongst vulnerable workers, assessing the current availability of employment advice provision, and considering how good employers can better share practice and promote change with and amongst others are to be encouraged. This sense of judgment corroborates that which is underlined in North (1990) on the role of institutions.

The average number of household heads who are attached to traditional believes and doctrines captured as cluster level means, is positive and significant in determining employment vulnerability. This is indication that traditional attachment adversely affects a household head's social and economic interactions, limiting the individual's ability to deal with household and economic shocks like unemployment, birth and illness; exposing the latter to greater chances of accepting a vulnerable job in order to cope with these shocks. This observation is probable, as household heads who are attached to traditional believes are likely to be absent from modern and decision making classes in the society.

Table 4.2: Reduced-form Estimates of Employment Vulnerability

Explanatory Variables	Dependent Variable	t-values
	Employment vulnerability intensity: ranges from 0 – 100 for household heads actively employed in the private sector and missing if household head is unemployed, discouraged unemployed or inactive	
Density of institutions (per region)	-2.951***	(-6.31)
Attachment to traditional beliefs (cluster level)	13.405***	(7.41)
Labour experience	-0.197***	(-4.47)
Labour experience squared	0.003***	(4.36)
Years of education	-0.873***	(-21.85)
Seniority in the enterprise	-5.036***	(-9.09)
Access to microcredit (cluster level)	-0.106	(-0.07)
Number of younger children (cluster level)	0.279**	(2.44)
Number of married household heads (cluster level)	2.927***	(3.61)
Gender of household head (male = 1)	-2.948***	(-7.78)
Location of household head (urban = 1)	-6.095***	(-17.37)
Constant	100.486***	(96.67)
R-squared	0.1896	
Adjusted R-squared	0.1887	
Partial R-squared (on excluded instruments)	0.0108	
Fisher Test –statistic (df; p-value) (on excluded instruments)	41.09 (2. 9207; 0.0000)	
Observations	9219	

Source: Computed by author using ECAM III

*Note: ***, ** and * represent 1%, 5% and 10% levels of significance, respectively*

Included Variables versus Employment Vulnerability

Included variables in the outcome equation that are positively associated with employment vulnerability are: labour experience square, the cluster mean of number of children less than 5 (five) years, and the cluster mean of number of married household heads. Contrary to labour experience square, labour experience of household head is negatively and significantly correlated with employment vulnerability. This indicates that though work experience correlates negatively with employment vulnerability, there is a critical level of labour experience above which it starts correlating positively with employment vulnerability; this may reflect experience beyond retirement. This is also indication of a U-shaped relationship between work experience and employment vulnerability.

Education in years is negatively related to employment vulnerability. Interestingly, this result shows that the more educated a household head is, the less likely is this household head to be vulnerable. These findings are supported by Imoro and King (2006) who found that inadequate participation in education and skills training expose people, especially the youths, to vulnerability in terms of employment. Educated household heads are not only likely to access decent jobs in the labour market but can also bargain their wages and working conditions better than their uneducated counterparts. Private sector workers in the urban areas are generally less vulnerable as those who have access to microcredit.

Being male gender type is negatively and significantly related to vulnerability in the private sector. These is evident as most of the petit businesses or petit trading in the private sector, with no social cover, less security and apparent instability, are done by women. Thus, training and capacity building programmes to empower women and young girls are vital. Training in income generating activities, in the management of micro-financial institutions and capacity upgrading of those already in private employment is a way forward. This suggestion corroborates with the Government of Cameroon (2012, p. 97), where emphasis is placed on socio-economic development through advocacy, sensitization, support, capacity building and other forms of support programmes.

Relevance, Strength and Validity of Instruments

The first-stage F-statistic on excluded instruments of 41.09 (p-value 0.000) is evidence that the two instrumental variables are jointly significant (Table 4.2). Concerning the validity and strength of our instruments, the Sargan Chi2 test statistic of 3.028 (p-value 0.0819) casts no doubt on the validity of the instruments. While allowing for a 2SLS relative bias of ten per cent, the test statistics of 41.086 is far more than the Stock-Yogo weak ID test critical value of 19.93, implying that our instruments are not weak (Table 4.3 column 2).

4.6.2. Determinants of Private Sector Household Income in Cameroon

The primary objective of this section is to investigate the effect of employment vulnerability on private sector household income, while controlling for other correlates of private sector income. After considering the effects of employment vulnerability on the general sample of private sector workers, further checks for the differential effect of employment vulnerability

are conducted by examining its effects across formal/informal and nonfarm/farm private employment sectors in Cameroon.

4.6.2.1. Correlates of Private Sector Household Income under Alternative Assumptions: Full Sample

Table 4.3 hosts estimates of the income production function for the whole sample under different approaches or assumptions. Column (1) presents the ordinary least squares (OLS) estimates of the structural parameters of equation 4.1. These estimates are exposed to the adverse effects of potential endogeneity and heterogeneity biases. The next column, column (2), submits the instrumental variable (IV) estimates of household income function. Lastly, column (3) cleanses the structural equation estimates of potential endogeneity and unobserved heterogeneity biases. Thus, in column 3, additional regressors arise: the residual of employment vulnerability is generated and included as additional regressor to check for potential endogeneity and the interaction term, interaction of employment vulnerability and its residual, is also generated and included in the structural equation to account for unobserved heterogeneity (see equation 4.3).

In Table 4.3, employment vulnerability is negatively and significantly related to household per capita monthly income irrespective of the approach used. This result supports the first hypothesis of the chapter. It also ties with the recent finding by Bocquier et al. (2010) who found that the average impact of vulnerability on income is generally negative in developing countries. It is also important to highlight that this result runs contrary to Poggi (2007) and Fernandez and Nordman (2009) who observed that, in developed countries, the effect of employment vulnerability on income is positive.

This way, according to Poggi (2007) and Fernandez and Nordman (2009), workers who accept adverse working conditions are often better paid. This type of situation is possible in developed countries where the labour is highly specialized, but in developing countries or in low income countries this situation is most likely to weigh negatively on labourers; with a highly unskilled and unspecialised labour force. Moreover, the opportunity cost of most unskilled labour in Cameroon is near zero.

Table 4.3: Income Production Function: under Alternative Assumptions - Dependent Variable is log of Household Per Capita Monthly Income

Variables	Estimation		
	OLS (1)	IV 2SLS (2)	Control function (3)
		Correcting for endogeneity	*Correcting for endogeneity and unobserved heterogeneity*
Employment vulnerability intensity	-0.005***	-0.028***	-0.030***
	(-13.4)	(-6.03)	(-7.58)
Labour experience	-0.013***	-0.018***	-0.018***
	(-8.54)	(-8.63)	(-10.2)
Labour experience squared	0.00016***	0.0002***	0.0002***
	(8.08)	(8.28)	(9.81)
Years of education	0.030***	0.010**	0.011***
	(20.7)	(2.26)	(2.96)
Seniority in the enterprise	0.298***	0.184***	0.192***
	(15.3)	(5.65)	(7.05)
Access to microcredit (cluster level)	0.394***	0.402***	0.397***
	(6.89)	(5.87)	(6.95)
Number of younger children (cluster level)	-0.111***	-0.103***	-0.104***
	(-27.3)	(-20.40)	(-24.6)
Number of married household heads (cluster level)	-0.299***	-0.235***	-0.231***
	(-10.4)	(-6.38)	(-7.54)
Gender of household head (male = 1)	-0.053***	-0.121***	-0.121***
	(-3.93)	(-5.73)	(-6.89)
Location of household head (urban = 1)	0.417***	0.272***	0.268***
	(33.0)	(8.31)	(9.81)
Predicted vulnerability residual			0.027***
			(6.72)
Interaction of vulnerability and its residual			-0.00006***
			(-3.46)
constant	10.44***	12.776***	12.909***
	(203.0)	(27.13)	(32.8)
R-squared / Uncentred R-squared (for 2SLS)	0.4095	0.9963	0.4126
Partial R-squared (on excluded instruments)		0.0108	
Weak identification test: Cragg-Donald F-statistic [10% maximal IV relative bias]		41.086 [19.93]	
Underidentification test (Anderson canon. Corr. LR statistic – Chi2 [df;p-value]		81.913 [2;0.0000]	
Sargan statistic (overidentification test of all instruments) – Chi2[df;p-value]		3.028 [1; 0.0819]	
Durbin-Wu-Hausman Chi2 test for exogeneity of the potential endogenous variable [df;p-value]		35.973 [1;0.0000]	
Number of observations	9219	9219	9219

Source: Computed by author using ECAM III

*Note: ***, ** and * represent 1%, 5% and 10% levels of significance, respectively. t-statistics in parentheses, except otherwise specified.*

The OLS estimate of the effect of vulnerability on income is -0.005. It is likely that household heads with less social networks or low bargaining power are more vulnerable than those with enough social networks, and hence more likely to suffer the ill effects of vulnerability on income than others. In this perspective, observed household income may not only suffer from employment vulnerability but also from unobserved variables that affect employment vulnerability. The OLS predictions of the effect of vulnerability on household income are therefore biased and inconsistent. Checking only for this potential endogeneity, the impact of employment vulnerability on income remains significantly negatively and the coefficient of employment vulnerability jumps to -0.028 (Table 4.3, column 2). This finding conforms to Bocquier et al. (2010) who affirmed that when endogeneity is account for, the impact of vulnerability remains negative, but is much greater in absolute terms. Notwithstanding, there still exists another econometric problem that may contaminate the IV estimates and render them unfit for policy implications: the possibility of a non-linear interaction between employment vulnerability and its fitted residual (Wooldridge, 1997; Card, 2001; Mwabu, 2009; Baye and Fambon, 2010).

Accounting for potential endogeneity and unobserved heterogeneity biases through the control function approach, the estimated coefficient of employment vulnerability stands at -0.03 – which is almost six times the OLS estimate of employment vulnerability and just slightly deeper than the IV estimate of the effect of vulnerability by -0.002. This is indication that the size and degree of the effect of employment vulnerability on per capita household monthly income depend on the estimation approach used. This observation further emphasises the need to use the estimation approach that internalises potential econometric problems to better inform poblic policy advice.

The endogeneity test – the Durbin-Wu-Hausman Chi2 stats = 35.973, p-value =0.0000 - for exogeneity of potential endogenous regressors rejects exogeneity of employment vulnerability (Table 4.3, column 2). Moreover, the coefficients of the fitted vulnerability residual is significant in the outcome equation (Table 4.3, column 3), confirming that this input into the outcome equation is indeed endogenous. The interaction term is statistically significant, indicating that purging our estimates of the effect of unobserved variables is necessary.

For curiosity reasons, we again employed the Heckman ML approach to account for selectivity bias (Card, 2001 and Mwabu, 2009); given that the unemployed, discouraged

unemployed and inactive household heads are not checked with any of the above approaches. Thus, we define a selection indicator that tracks the observed and the unobserved private sector household heads, in terms of employment vulnerability[56] (see Appendix 4.1, Table 4.1A). As a follow-up, in column (4) of Appendix 4.1 - Table 4.1B, an additional regressor arises: the inverse of the Mills ratio (IMR) is generated in censored samples through the Heckman ML approach to account for selectivity bias.

Accounting for selectivity, the results still convey the same message and policy implications (see Appendix 4.1 - Table 4.1B, column 4). Though, the inverse of the Mills ratio is significant, it is essential to highlight that the policy message drawn in terms of signs and magnitude is same as that with the control function approach that only corrects for potential endogeneity and unobserved heterogeneity (Appendix 4.1 - Table 4.1B, column 3 and 4). However, this selection approach, though necessary, does not suit the goal and basis of this study; the study is focused on analysing the employment vulnerability of already working private sector household heads. Thus checking for selectivity (that is, bringing in the unemployed and inactive household heads), though econometrically important, may not be very appropriate[57]. Equally, given that the results of this analysis are forwarded to the proceeding chapters, it is better to consider an approach that ties to those observed. The preferred estimation approach of the effect of employment vulnerability on household per capita income is the control function approach. The direct effect of employment vulnerability on per capita household monthly income of -0.03 in our preferred approach clearly ascertains that employment vulnerability dilutes household per capita monthly income by about 0.03 times less than the income of households employed with decent status.

In Table 4.3 column 3, work experience correlates negatively with household monthly income, whereas work experience square relates positively with household monthly income. This does not only indicate that household income improve with higher levels of work experience but more precisely that there is a critical level of work experience above which household income are enhanced. Better still, it depicts a U-shaped relationship between labour or work experience and household income. Though knowledge on this critical level of work

[56] Note that the employment vulnerability of unemployed, discouraged and inactive household heads is not observed; since they are not working.

[57] Note: given also the definition of the initial indicators of employment vulnerability in Chapter 3, this category (unemployed and inactive household heads) should not be a call for concern.

experience is still at large, this is indication that more experienced household heads earn more than the less experienced.

Years of schooling relates positively with household income. This is not only because more educated household heads are more likely to access opportunities in the labour market but also because they are more probable to operate with greater determination and dedication in the private sector. The finding corroborates with the predictions of the theory of human capital. It also ties with Kakwani et al. (2006, p. 29) who affirm that human capital acquired through education generally improves people's income potential. In this perspective, income increase with the years of education, thus confirming the works on human capital (Mincer, 1974a) and those based on Cameroon data (Abessolo, 1997; Ajab-Amin and Awung, 2005 and Fomba, 2008), but contrasting the work of Tafah-Edokat (1998) on Cameroon. One may think of years of schooling here to be endogenous, which is not wrong. But our comfort is on the argument that these years of schooling were already acquired before the income generating decisions. This way, the process of income generation does not actually underlie years of schooling.

Male gender type relates negatively with private sector income. Being male gender type does not reward labour in the private sector in Cameroon, but being a qualified or educated male can lead to gains in income. Seniority (holding a managerial position which is also attributable to leadership skills) in the enterprise is positively related to household income. This evidence of compensations for managerial and supervisory duties may be rewarding responsibility at work. This is consistent with the general acknowledgment that there is a matching of individuals with high ability to positions with higher job complexity (Barron et al., 1999). This result is in tandem with our third hypothesis of work in this chapter. Equally, the introduction of this variable may be viewed as another way to venture or capture the effects of unobserved individual heterogeneity.

Urban residency is positive and significant in determining household income; thus urban residency can also help in enhancing household income. This is not necessarily due to the existence of relatively better jobs in urban areas, but also because urban dwellers invest most of their time and money to acquire skills, good health and thus developing their human capital endowments and higher income (Udo-Aka, 1975 and Epo et al. 2010). The number of younger children aged between 0-4 years is negatively related to household income. This is

however probable as their presence may reduce the likelihood of employment and/or participation in terms of hours worked in the private sector and further affects household income negatively. This observation is supported by Manda (1997) who found a negative and significant relationship between the presence of younger children in a household and the decision to enter employment. It also corroborates with Zamo-Akono (2007) who with Cameroon data observed that the presence of children reduces the hours of work for women in informal activities, but only pertinent beyond a given threshold (five children) in the formal private sector. It is also important to highlight that the presence of younger children increases the reservation wage[58] of especially married women, whereas their participation in labour activities can complement household income.

The number of married household heads captured as cluster means correlates negatively and significantly with household income. This is possible as being married as opposed to being single reduces women's chances of employment in the private and informal sectors and hence income. This observation runs contrary to Brown (1980) who found that being currently married enhances income. Access to microcredit is positively and significantly correlated with household income. Microcredit access permits households to finance consumption and also to undertake micro-investment endeavours that are welfare and income enhancing (Khandker, 2003; Hao, 2005; and Sikod and Ndamsa, 2011).

4.6.2.2. Correlates of Private Sector Household Income: Subsamples

Table 4.4 hosts control function estimates of the structural parameters of household per capita monthly income by private employment sectors in Cameroon. For the formal-private and informal employment sectors, the effect of employment vulnerability on household per capita monthly income is negative and significant. This finding is consistent with the full sample.

Worthy of note is that household heads in the informal sector suffer the adverse effects of vulnerability more significantly than their formal sector counterparts (Table 4.4 columns 1 and 2). This is indication that formal-private sector workers receive some relative pecuniary compensation for their adverse working conditions, though not enough to translate into

[58] The reservation wage is the minimum wage at which a person is willing to enter employment.

gains[59]. This may be because employers in the informal segment where labour supply far outstrips demand, compared to the formal employment sector, are reluctant to pay workers more for adverse working conditions. This may also be attributed to the organisational standards which are obviously better-off in formal employment sectors; most likely the relatively better worker protection standards in the formal sector, compared to the informal sector. This way, employers in the formal sector are more inclined, compared to those in informal employment, to motivate their employees to take-up tasks that do not support entirely their fundamental rights as workers. The assumption that average gains may compensate for a certain level of vulnerability is therefore only relatively confirmed in the formal private sector.

For the farm and nonfarm-private employment sectors (Table 4.4 columns 3 and 4), the effects of employment vulnerability on household per capita monthly income are also negative and significant as in the full sample. However, there is evidence that the farm sector suffers adverse effect of employment vulnerability on household income that is significantly in excess of that reported by the nonfarm subsample. This result implies that vulnerable household heads in the farm sector are more exposed to losses in income due to employment vulnerability than their counterparts in the nonfarm-private sector. Though vulnerability does not translate to gains in the nonfarm private sector, it is however clear that household heads in nonfarm activities receive some relative compensation for their vulnerable status, compared to household heads working in the farm sector.

The other correlates (for instance, labour experience and its square, years of education, gender type, microcredit access, seniority in the enterprise, number of younger children in the household, married household heads, male and urban residency) drive through the same message in the informal, farm and nonfarm employment sectors as in the full sample. Most striking, in the formal-private employment sector, married household heads relate positively and significantly to household income. This perhaps is not a call for the unmarried in this sector to rush for it, but rather a signal for greater determination and dedication at work for all those on the path to marriage. Cluster level access to microcredit which is an important input in the income function of informal sector households is negative and not significant in the formal-private sector.

[59] This is to say that though formal-private workers receive some relative pecuniary compensations, their adverse working conditions do not still relate positively with their incomes.

Table 4.4: Income Production Function: Dependent Variable is log of Household Per Capita Monthly Income

Variables	Sub Samples				
	Overall-Private (1)	**Informal (2)**	**Farm (3)**	**Formal (4)**	**Nonfarm (5)**
Employment vulnerability intensity	-0.030***	-0.028***	-0.030***	-0.027*	-0.025***
	(-7.58)	(-6.89)	(-5.44)	(-1.91)	(-4.28)
Labour experience	-0.018***	-0.017***	-0.013***	-0.050***	-0.022***
	(-10.2)	(-9.56)	(-5.45)	(-6.11)	(-7.83)
Labour experience squared	0.0002***	0.00022***	0.00019***	0.001***	0.00024***
	(9.81)	(9.18)	(6.17)	(5.58)	(6.1)
Years of education	0.011***	0.011***	0.016***	0.008	0.006
	(2.96)	(2.84)	(2.99)	(0.60)	(1.16)
Seniority in the enterprise	0.192***	0.145***	0.159***	0.413***	0.287***
	(7.05)	(4.9)	(3.86)	(4.99)	(7.45)
Access to microcredit (cluster level)	0.397***	0.432***	0.412***	-0.119	0.254***
	(6.95)	(7.26)	(5.11)	(-0.61)	(3.08)
Number of younger children (cluster level)	-0.104***	-0.097***	-0.086***	-0.210***	-0.150***
	(-24.6)	(-22.5)	(-15.7)	(-11.5)	(-19.7)
Number of married household heads (cluster level)	-0.231***	-0.268***	-0.238***	0.191**	-0.120***
	(-7.54)	(-8.29)	(-5.24)	(1.99)	(-2.86)
Gender of household head (male = 1)	-0.121***	-0.116***	-0.151***	-0.027	-0.056**
	(-6.89)	(-6.42)	(-6.1)	(-0.37)	(-2.17)
Location of household head (urban = 1)	0.268***	0.279***	0.126***	0.172*	0.226***
	(9.81)	(9.75)	(2.67)	(1.94)	(5.97)
Predicted vulnerability residual	0.027***	0.032***	0.031***	0.023*	0.020***
	(6.72)	(7.08)	(4.94)	(1.64)	(3.44)
Interaction of vulnerability and its residual	-0.00006***	-0.00013***	-0.00013***	0.00008***	0.00003*
	(-3.46)	(-4.92)	(-3.29)	(2.7)	(1.74)
constant	12.909***	12.782***	12.822***	13.149***	12.625***
	(32.8)	(31.0)	(23.0)	(9.38)	(21.6)
Fisher Test-statistic (df;p-value)	538.90 (12. 9206; 0.0000)	381.82(12. 8252; 0.0000)	102.68(12. 4204; 0.0000)	63.29(12. 941; 0.0000)	221.92(12. 4808; 0.0000)
Adj R-squared	0.4118	0.3561	0.2244	0.4396	0.3548
Number of observations	9219	8265	4217	954	5002

Source: Computed by author using ECAM III

*Note: ***, ** and * represent 1%, 5% and 10% levels of significance, respectively.*

Note: t-statistics in parentheses, except otherwise specified

Worth mentioning is the observation that the number of younger children has a negative effect on household income in the formal and nonfarm-private sectors significantly in excess of that in the informal and farm sectors respectively. A possible, perhaps obvious, reason may be that household heads in informal and farming activities find it relatively easier to cope with their labour market activities and younger children, thus mitigating the effect of the latter on market income. This is evident given the relative work flexibility with own-account businesses and farming activities compared to the formal-private activities where work is more tight and regulated.

Though the econometric results ascertain that the effect of employment vulnerability is negative on household per capita monthly income, insights on whether workers may receive some premiums at higher vulnerability levels are still obscured. This drives us to the following puzzle:

Is there actually no Premium for Higher Levels of Vulnerability?

On the one hand, we check the behaviour of private sector income across vulnerability levels or intensities, by performing the joint distribution[60] surface of employment vulnerability and per capita income (Figures 4.1). There is a possibility that above a certain level of vulnerability workers may receive pecuniary compensations for their adverse working conditions; that is a level above which these adverse working conditions are translated into gains. Heckman et al. (1997) emphasize the many policy relevant objects obtainable after identifying the joint distribution of outcomes. Equally, a good understanding of the full joint distribution allows a policy maker with rich information set about the possible outcomes and often this may make the choice of an appropriate policy rule much easier (Barrell et al., 2005). This figure indicates that the average impact of vulnerability on household income is generally negative for an average level of vulnerability. However, evidences of premium pay are likely to be found for workers who support vulnerability intensities between 89% and 100%.

[60] See Appendix 4.1B for the estimator of the joint distribution function.

Figure 4.1 further shows that workers who work under very arduous or adverse conditions may receive higher incomes than the less vulnerable in employment. This way, it is most likely that somewhere between 0.89 and 1.00, there can be an intensity beyond which employment vulnerability leads to gains in income, but these figures can hardly unveil this evidence. To uncover such specific evidence, we systematically perform regressions for levels of vulnerability ranging from 0.89 to 1.00 on the other hand, to track that specific level of vulnerability beyond which private sector workers receive pecuniary compensations.

Figure 4.1: Joint Distribution of Employment Vulnerability and Monthly Income

Source: Constructed by author
NB:F(x,y) is the joint distribution of employment vulnerability (x) and per capita income per month (y); and the axis ranging from 0 to 1 tracks the xy-entry

According to Table 4.1C in Appendix 4.1, up to an intensity of 0.93, employment vulnerability affects household income negatively and significantly. With an intensity of vulnerability between 0.94 and 0.95 inclusive, the effect remains negative but this time insignificant. Interestingly, considering an intensity of vulnerability greater than or equal to 0.96, the effect is positive but insignificant. This implies that private sector workers who support vulnerability intensities greater than or equal to 0.96 receive some gains in income. Thus, the theory of compensating wage differentials is weakly verified for private sector workers with vulnerability intensities above 0.96; weakly confirming the second hypothesis of

work in this chapter. It is crucial to remark that this situation is more appealing in the informal sector where majority of those with intensities above 0.96 are found. Out of 1839 private sector workers with vulnerabilities greater than or equal to 0.96, 1836 of them are in the informal sector and only 3 are in the formal sector[61].

4.7. Concluding Remarks and Policy Implications

This chapter borrowed the employment vulnerability index constructed in chapter 3 to further link up household employment vulnerability and private sector household income empirically and checked this linkage across private employment sectors in Cameroon. The chapter employed a range of econometric approaches and the control function proved to be the most appropriate estimation strategy as it purged the structural parameter estimates of potential endogeneity and unobserved heterogeneity problems simultaneously. We equally performed density curves of employment vulnerability and household per capita monthly income and their joint distribution to substantiate our econometric results.

Econometric results showed that the effect of employment vulnerability on private sector income is generally negative. However, we observed that above a given level of vulnerability level (that is, with an index of vulnerability greater or equal to 0.96) the workers receive non-significant pecuniary compensations for their adverse working conditions. Importantly, concerning the formal and informal sectors, the situation was found to be more appealing in the informal sector. We found that formal as opposed to informal, and nonfarm private sector workers as opposed to those in informal activities, receive some relative pecuniary compensation for their adverse working conditions, though not enough to translate into gains. Thus, the assumption that average gains may compensate for a certain level of vulnerability was therefore verified for private sector workers with vulnerability intensities above 0.96 and only relatively confirmed in the formal and nonfarm private sectors. We also found evidence of compensations for managerial and supervisory duties or rewarding responsibility at work. The years of education, cumulated labour market experience and access to microcredit proved to be important inputs in determining private sector income, more especially in the informal and farm sectors. It was equally found that the number of younger children aged between 0-4

[61] As for the farm and nonfarm sectors, 1562 of workers with vulnerabilities greater than or equal to 0.96 are in farming and only 277 are in nonfarm activities (Table 4.1D, Appendix 4.1).

years in a household adversely affects household income, especially in the formal and nonfarm private sector.

These findings suggest that: (1) improving working conditions among private workers would go a long way to complement their income, especially in the informal and farming sectors. Specialized institutions like regional delegations for labour and social security and employment and professional training can coordinate and re-organise regional employment in the private sector in Cameroon to offer the best protection against the common features of employment vulnerability. These institutions are able to create the necessary conditions so that working households and employment agencies can function smoothly; they can ensure that working household heads in the private sector are treated fairly and meaningfully in terms of employment contracts, working hours per week, remuneration status and are affiliated to a social security network (example NSIF). Essentially, civil society organisations, trade unions and employers can improve their own efforts to reduce vulnerable employment. Trade union strategies for increasing membership amongst vulnerable workers, assessing the current availability of employment advice provision, and considering how good employers can better share practice and promote change with and amongst others are to be encouraged.

(2) More sector-specific targets or conventions to improve working conditions should be encouraged. Conventions like that signed in 2006 between the Cameroon government and the ILO to improve working conditions of private security agents, though not effective, is a good initiative that should be extended to other private sub-sectors, especially farm and informal. All these institutional efforts to improve working conditions among private sector workers would have a significant indirect effect on their private sector income. Institutions and conventions that militate to improve working conditions of workers in Cameroon are encouraged to scale-up their outreach to large numbers of vulnerable workers in informal and farming activities.

(3) Given the importance of education, training and regional institutions in curbing employment vulnerability, institutions like the National Employment Fund (NEF) should expand their activities - training of jobseekers, orientation of jobseekers, jobs prospects and provision of self employment - by opening other regional centres; as with the recent case of Bamenda. Each region in Cameroon should have a NEF to enhance the fight against employment vulnerability and thus, income. Equally, newly opened development centres like

the National Civic Service for Participation in Development (NCSPD), set up during the first half of 2011, can also ensure participation of youths and vulnerable social groups in development.

(4) However, improve credit access and education programmes for private sector workers would greatly complement their income, more especially for those in informal and farming sectors. Struggles to reduce employment vulnerability should be accompanied by agricultural training programmes to enhance agricultural productivity in the farming sectors and reduce poverty therein. This way, region-based agricultural development programmes like the South-West Development Authority (SOWEDA) in the South Western region and the North-West Development Authority (MIDENO) in the Northwest Region may be replicated in other regions of Cameroon.

CHAPTER 5

Sources and Components of Private Sector Household Income Inequality in Cameroon

5.1. Introduction

The economic reform policies in the 1980s and the 1990s under the famous Washington Consensus[62] have recently led to growing concerns for income inequality. In many developing countries today, employment has become more private, especially informal; income shares have dropped and the gap between household income and that between employment sectors (for instances farm/nonfarm, formal/informal) have increased. These developments are controversial to some of the typical labour market elements of reform policies under the Washington Consensus such as reduction of employment protection, reduction of minimum wages, and breaking up of bargaining power. These developments may also reflect a lack of equity, social protection and social justice among labour force participants; provoking income disparities and job risk differentials among them, especially in the private sector.

The National Institute of Statistics (2011) underscored that if economic growth does not generate decent jobs (or reduce vulnerable jobs), it would induce wage inequalities. So taking a step to enlighten the authorities concerned with the GESP on the role of vulnerable employment on income inequality is vital. According to Van-der-Hoeven (2000), the dynamic, equity and social cohesion elements of labour market policies are important elements of redistributive and growth policies. This way, including these elements of labour market policies (for instance dynamic efficiency: increasing the quality of the labour force; and maintaining a sense of equity and social justice: reducing vulnerability among labour force participants) are necessary to reduce inequality. However, given that in the labour market we have vulnerable and decent households or groups, changes in labour market

[62] The Washington Consensus in the 1980s relegated discussions on inequality to the sidelines; it regarded measures to reduce inequality as detrimental to growth, especially during periods of adjustment when all emphasis should be placed on reviving growth quickly.

policies may have, at the very least, different consequences for particular households or groups.

In examining inequality trends in Cameroon, one observes at the national level that the Gini coefficient of total household expenditures per adult equivalent dropped fairly from 42.2% in 1984 to 40.2% in 1996. Between 1996 and 2001, inequality rose – this period corresponds to a probable consequence-period of reform policies,[63] though their responsibility may only be part of the whole. The IMF (2003) accuses inappropriate policy response to massive domestic and external debts to be part of the problem. Some argue that, because reform policies have been adopted in all developing countries and considering that most have been carried out for a decade or more, there exists a causal link between these policies and inequality trends (Van-der-Hoeven, 2000). Inequality in Cameroon, marginally decreased from 40.4% in 2001 to 39.0% in 2007 (Fambon and Tamba, 2010). One attractive characteristic of income inequality in Cameroon is its spatial disparity across employment sectors. For instance, private sector income inequality remains slightly higher than public sector inequality. Inequality in per capita income among private sector household heads stands at 38% compared to 37.3% in the public sector (Government of Cameroon, 2007).

Formal private sector income inequality remained higher than informal sector inequality in 2007. Per capita income inequality among formal private sector household heads stood at 38.7% compared to 35.3% in the informal sector. The same scenario is observed for farm and nonfarm private employment sectors, where nonfarm sector inequality stood at 34.3% in 2007 as opposed to 30.4% in the farm sector (Government of Cameroon, 2007). This disproportionate level of inequality in farm and nonfarm as well as informal and formal private sectors may be likened to increased unemployment in nonfarm and formal sectors as well as to the growing number of low earners in these sectors. Most attempts to account for income inequality in Cameroon have either addressed accusations at sub-groups (Chameni, 2005; Baye, 2008; and Essama-Nsah, 2010) or at income/expenditure components (Chameni, 2008, Tabi (2009), and Miamo and Chameni, 2009) or at individual, household and demographic characteristics (Epo et al., 2010). The contributions of labour market factors such as potential labour market experience, seniority in the main job, employment

[63] Episodes of Structural Adjustment programmes starting with the 1988 SAP followed by the Devaluation of 1994 of the CFA franc and the Post Devaluation Reforms: the 1997 Enhanced Structural Adjustment Facility (ESAP) (see Ndamsa, 2009 for details).

vulnerability are yet still to be considered in examining income inequality in Cameroon. In this perspective, this chapter attempts to provide answers to the following main research question: What are the proximate sources of private sector household income inequality in Cameroon?

Using the regression results from the previous chapter (Chapter 4), this main question can be decomposed into the following specific questions:

- What is the role of employment vulnerability and other regressed-sources in accounting for private sector income inequality in Cameroon?
- How much inequality is accounted for by within- and between-components of inequality in Cameroon?

The main objective of this chapter is to evaluate the relative importance of employment vulnerability in explaining measured private sector income inequality in Cameroon. The specific objectives are:

- To assess the role of employment vulnerability and other regressed-income sources in accounting for private sector income inequality in Cameroon;
- To decompose private sector income inequality, with and without vulnerability, into the within- and between-components of inequality; and
- To guide ongoing and future policy on the basis of our findings.

These objectives will inform stakeholders involved with the current GESP of the potential ills that employment vulnerability can place on the Cameroon economy in terms of widening income gaps between households in private employment sectors. They will undoubtedly serve as inputs into the ongoing struggles of the Cameroon government to promote decent employment (that is, reduce vulnerable employment) and growth as a well thought package to reduce poverty. These objectives are guided by the following hypotheses:

- Employment vulnerability is expected to be inequality increasing;
- Measured inequality is believed to be largely attributable to regressed human capital sources; and

- ❖ Private sector inequality, with and without vulnerability, is dully attributable to the within-sector component.

In what follows, Section 5.2 reviews the literature; Section 5.3, discusses the theoretical framework; Section 5.4, details the methodology; Section 5.5, justifies the inequality measure used; Section 5.6, presents the empirical findings; and Section 5.7, concludes the chapter.

5.2. Literature Review

Decomposition of income inequality may shed light on both its structure and dynamics. Inequality decomposition examines the contribution to inequality of particular characteristics and is important to assess the role of each characteristic to overall inequality. Inequality decomposition analyses were pioneered by Bourguignon (1979), Cowell (1980) and Shorrocks (1982, 1984). Literature review on income inequality decomposition permits us to briefly disentangle four main categories of inequality decomposition.

The first category decomposes income inequality into population sub-group components such as gender, age, religion, place of residence, or region. Pioneers in this category of inequality decomposition include: Bourguignon (1979), Cowell (1980) and Shorrocks (1980, 1984). Essama-Nsah (2010) like Chameni (2005) has applied this approach to decompose expenditure/income inequality among Cameroonian households into three components, intra-group, net inter-group and overlapping inter-group. Equally, in this category we have Baye (2008) who has used the Shapley approach to exactly decompose inequality trends into within-group and between-group components using income and non-income well-being indicators in Cameroon.

The second category of inequality decomposition examines the different components of income/expenditure in accounting for an observed level of income/expenditure inequality. Here the level of total income/expenditure inequality is determined and thereafter decomposed into the different components of income/expenditure. Pioneers in this category include for example, Pyatt et al. (1980), Shorrocks (1982, 1999[64]), and Chantreuil and Trannoy (1999). Miamo and Chameni (2009) have used the Shapley-Shorrocks source

[64] To resolve the problems faced by some conventional decomposition techniques, Shorrocks (1999) proposes a unique theoretical framework driven by the Shapley Value which eliminates the residual or interaction.

decomposition to disentangle total income/expenditure inequality in terms of income/expenditure sources. The main income/expenditure sources used in this study include: food, housing, health, and transport expenditures.

The third category combines the first and the second category to obtain the simultaneous decomposition method of inequality indices. With this approach, the contributions of the various population sub-groups and the income/expenditure sources to total income/expenditure inequality are independent of the inequality index used (see Mussard, 2004 and Chameni, 2008). The above three categories decompose income/expenditure inequality into population sub-groups and income/expenditure sources, but fail to inform policy makers on the role of some individual and labour market characteristics (such as education, potential labour market experience, seniority in the main job, and working conditions) in explaining inequality in a multivariate context.

To fill this gap, Fields and Yoo (2000) and Morduch and Sicular (2002) in the fourth category introduced a new integrated regression-based approach for decomposing income inequality indices. Their approach is an extension of the decomposition technique proposed by Shorrocks (1982, 1984 and 1999). This approach uses estimated income flows from variables in an income generating equation (transformation of income limited at semi-log specification or the standard linear income equation) to decompose a measure of total income inequality. This method provides a rich opportunity to assess the importance of regressed variables like education, potential labour market experience, employment vulnerability in explaining total inequality. Alayande (2003) has used the regression-based decomposition approach developed by Murdoch and Sicular (2002) to decompose income inequality and poverty in Nigeria.

Fields (2002; 2004) attribute the variance and log-variance of the dependent variable, as a measure of inequality, to the explanatory factors and allow R^2 to be the fraction of the variance that is explained by all the X's taken together. The regression-based decomposition here is presented in the form of percentage-weights so that each factor's contribution is expressed as a percentage of R^2. Besides the problems with the log-variance (see, Sen, 1973 and Foster and OK, 1999), the decomposition of the R^2 is heavily criticised on the basis that; R^2 is the fraction of income that is explained by all explanatory variables and not necessarily the fraction of inequality explained by these variables. These problems are resolved by applying the regression-based approach combined with the natural rule of decomposition by

Shorrocks (1999) or the before-after approach recommended by Cancain and Reed (1998), to allow the contributions of the independent variables to sum up to total inequality (see Wan, 2004).

The regression-based decomposition as introduced by Fields and Yoo (2000) and Morduch and Sicular (2002) though important, ignores the contribution of the constant and the residual terms and lays restrictions on the transformation of the dependent variable (see Wan, 2002). Wan (2004) then updates this decomposition to consider the role of the constant and the residual in explaining income inequality using this approach; which according to him constitutes vital information in the decomposition approach.

The Sub-Sahara Africa works on the regression-based decomposition approach are still somewhat fragmented. Alayande (2003) and Oyekale et al. (2006) have applied this approach in Nigeria and Epo et al. (2010) has applied the updated approach by Wan (2004) in Cameroon to decompose changes in income inequality within and between male- and female-headed households. According to Wan (2004), ignoring the constant and the residual term in the regression-based decomposition is keeping aside relevant information which can help to track the unobserved determinants of income or income distribution. The recent work by Epo et al. (2010) though extend this approach to account for the marginal contributions of each independent variable including the constant and the residual term to overall inequality, does not still provide knowledge on some labour market issues in explaining income inequality across employment sectors. The place of job disutility (vulnerable working conditions) in accounting for income inequality is yet to be verified empirically, though theory acknowledges unpleasant working conditions as a cause of income inequality (Sloman, 1991 and Fernandez and Nordman, 2009).

Up to this stage, it is evident that studies on the regression-based approach that use the natural rule of decomposition by Shorrocks (1999) or the before-after approach recommended by Cancain and Reed (1998) are still rare. The only attempts in this direction, as of now, are the works of Wan (2002) and Epo et al. (2010). Another worry is that this architecture is yet still to be employed to examine the contribution of some labour market issues in explaining income inequality across employment sectors. In this sense, our proposed study examines the contribution of variables such as education, potential labour market experience and its square, seniority in the main job, and employment vulnerability in explaining income inequality

within and between households working in the farm and non-farm[65], and between formal(private) and informal employment sectors in Cameroon.

5.3. Theoretical Framework

Inequality as theorized is the dispersion of the distribution of income (expenditure or some other welfare indicator) or non-income attributes including education, health, skills, job status, employment status and other attributes of the population. Sen (1997) highlights the fact that inequality in human capital, socio-cultural characteristics and political characteristics prevent individuals/households from accessing socio-economic endowments. List (1999) acknowledges the use of dimensions or attributes across individuals to better understand inequality. Informed knowledge on how inequality in labour market related factors such as labour skills, job status, employment vulnerability, and sector of employment will surely guide redistribution policy towards better achievements in terms of equity and social justice. This inevitably ties to Van-der-Hoeven (2000) who argues that labour market policies, regulations and institutions have at least three goals: improving allocative efficiency (matching supply and demand of labour); improving dynamic efficiency (increasing the quality of the labour force); and improving or maintaining a sense of equity and social justice among labour force participants. The section that follows employs an empirical approach that allows for the contributions of regressed-income sources to total inequality.

5.4. Methodology

In an effort to provide answers to the relevant policy question of how much inequality is accounted for by each explanatory variable, we employ a regression-based procedure (see Fields and Yoo, 2000; Fields, 2002; Morduch and Sicular, 2002; Alayande, 2003; Fields, 2004; Wan, 2004; Epo, 2012). This approach assigns weights to the explanatory variables in our income equation to account for income inequality. This approach engineers its decomposition in a way that the variation of income, gauged for example by an inequality measure, is broken down into the various explanatory factors such that the whole is equal to

[65] With non-farm in this study, we mean non-farm private sector

100%[66]. We thereafter employ the approach developed in Araar (2006a) and Baye (2008) to account for the within- and between-group inequalities of regressed-income sources.

5.4.1. Regression-based Decomposition Approach

The literature proposes several measures to characterise inequality in the distribution of living standards (see, Sen, 1973; Theil, 1979; Kakwani, 1980; Fields, 1980; Shorrocks, 1984; Glewwe, 1986; Litchfield, 1999). For these authors, any good measure of inequality must satisfy at least five axiomatic conditions: (1) mean independence; (2) population size independence; (3) symmetry; (4) Pigou-Dalton transfer sensitiviy; and (5) decomposability. The inequality measures that satisfy all this criteria are the generalised entropy class and the Atkinson measure (see, Cowell and Kuga, 1981 and Shorrocks, 1984).

In addition to the above measures is the Gini index that satisfies all the basic axioms of an appropriate measure of inequality except the decomposability axiom. However, as indicated in Litchfield (1999) there are ways of decomposing the Gini by group but the component terms of inequality are not always intuitively or mathematically appealing. Good enough, the regression-based approach provides results across the different measures of income inequality.

Morduch and Sicular (2002) introduced a new integrated regression-based approach extending the decomposition technique proposed by Shorrocks (1982). By letting $I(y)$ to be the weighted sum of total household income, corresponding to a measure of inequality; $a_i(y)$ the proportional share of an individual or household to total income, y; and y_i the per capita income of household i, Shorrocks (1982) developed an inequality measure expressed as a weighted sum of income:

$$I(y)=\sum_i a_i(y)y_i \tag{5.1}$$

[66] The term "decomposition" is used here in a less restrictive sense. Many studies including the literature on inequality decomposition by factor components (example Pyatt et al, 1980; Shorrocks, 1982; Chameni, 2005 and Baye, 2008) and the literature decomposing differences in means between groups (Oaxaca, 1973, Blinder, 1973; and Oaxaca and Ransom, 1994) have used this less restrictive sense.

But since household income is observed as the sum of income from M sources or endowments, $y_i = \sum_{m=1}^{M} y_i^m$, the above inequality measure can be expressed in terms of the sum-specific component, s^m, as follows:

$$I(y) = \sum_i a_i(y) \sum_{m=1}^{M} y_i^m = \sum_m \left[\sum_i a_i(y) y_i^m \right] = \sum_{m=1}^{M} s^m \tag{5.2}$$

This way, the proportional contribution of income source m, s^m, is given by:

$$s^m = \frac{\sum_i a_i(y) y_i^m}{I(y)} \tag{5.3}$$

According to Shorrocks (1982), the arbitrariness in the choice of the weights $a_i(y)$ will yield an infinite number of potential decomposition rules for each inequality index. Thus, the value we attribute to the proportional contribution allocated to any income source can be made to take any value between minus and plus infinity. Shorrocks (1982) then goes further to increase restrictions on the choice of weights in order to derive a unique decomposition rule. These restrictions are: (1) if income increases or decreases by a constant amount across all income sources, the overall or total inequality is zero; and (2) if total income is divided into two components whose factor distributions are permutations of each other, their contributions to total inequality are equal. By imposing these restrictions, he obtained the unique decomposition rule below:

$$s^m = \frac{\text{cov}(y^m, y)}{\text{var}(y)} \tag{5.4}$$

Morduch and Sicular (2002) extended the decomposition rule (5.3) to a regression-based decomposition to obtain the share of inequality attributable to the estimated income source flow of each explanatory variable. Using an income generating function, $y = X'\beta + \varepsilon$ (where X' is a vector of explanatory variables with the first column, an n-vector of 1s, for the constant term $\beta_o = (1,1,1,.....1)$; β is a vector of parameters and ε is a vector of error

terms), Morduch and Sicular (2002) expressed income as a sum of predicted income and predicted error terms:

$$y = X'\hat{\beta} + \hat{\varepsilon} \tag{5.5}$$

Equation (5.5) is considered as the estimated income source flow of the various household explanatory variables.

The regression results allow us to make use of decomposition by income source (or factor income) since they yield estimates of income flow attributed to household variables. From the regression results, the estimated income flows contributed by the various explanatory variables are gotten from $\hat{y}^m = X'\hat{\beta}_m$. It then follows that total income is the sum of these income flows (plus the regression error term):

$$y_i = \sum_{m=1}^{M+1} \hat{y}_i^m \qquad \text{where } \hat{y}_i^m = \begin{cases} \hat{\beta}_m x'_{i,m} & \text{for m} = 1.....\text{M} \\ \hat{\varepsilon}_i & \text{for m} = \text{M}+1 \end{cases} \tag{5.6}$$

The share of inequality attributable to the estimated income source flow of the explanatory variable, $\hat{y}_i^m$, is obtained by substituting equation (5.6) into equation (5.3):

$$s^m = \frac{\hat{\beta}_m \sum_i a_i(y) x'_{i,m}}{I(y)} \tag{5.7}$$[67]

Where $\hat{\beta}_m$ is a vector of estimated coefficients, $x'_{i,m}$ the income source m attributable to household i, $a_i(y)$ and $I(y)$ as defined in (5.3).

[67] Morduch and Sicular (2002) suggested a simple and straight forward procedure for deriving the standard errors of s^m, but this straight forward procedure has been criticised by Yuko et al. (2006). As with the Gini index, it is not straight forward to compute the standard errors of s^m (see Mordarres and Gastwith, 2006 and Epo et al., 2010)

The decomposition in equation (5.7) ignores the contribution of the constant term and the residual term. Wan (2004) then updates this decomposition to consider the contributions of the constant term and the residual term in explaining income inequality.

Our study uses the updated regression-based approach by Wan (2002; 2004) and extends it to control for the marginal contributions of regressed-income sources including the constant and the residual in explaining income inequality. This approach has four main advantages: (1) the approach holds other things equal; (2) decomposition is done in a way that the contributions of the several independent variables sum to the contributions of the overall model; (3) it allows for variations in the dependent variable to be gauged by an index other than the variance; and (4) Wan (2002) shows that this approach allows for identification as well as quantification of roots or determinants of inequality. The number of exogenous variables can be arbitrary with proxies being used as need arises.

Our income equation can be rewritten to take the following form:

$$Y_i = \beta_0 + \beta_1 x'_{i,1} + \beta_2 x'_{i,2} + ---+ \beta_m x'_{i,m} + \varepsilon_i \qquad (5.8)$$

Where, Y_i is the log of household per capita income of household i; β_0, β_1, ..., β_m are parameters to be estimated; x'_i $(i = 1,2,...,n)$ the set of independent variables and ε is the error term. The independent variables, X', include: education, potential labour market experience and its square, employment vulnerability, marital status, control for gender-dummy, location and for socio-professional status in the main job.

In order to purge restrictions on the transformations of the dependent variable and pitfalls related to the constant and the residual term, let's express our estimated income function as follows (see, Wan, 2002 and 2004):

$$Y = F(X') + \varepsilon = \beta_0 + Y^*(X') + \varepsilon \qquad (5.9)$$

Where, Y is the income function (per capita income) or its transformation such as the logarithm of income (LnY), X' is a vector of income determinants, β_0 is the constant term,

ε is the error term and $Y^*(X')$ is the estimated income source. F(X') allows for any form (linear with the presence of the constant term or highly non-linear with the absence of this term) and other transformations of income (original income or logarithm of income) can be used as the dependent variable.

Let $Y^*(X') = \sum \beta_m X'_m = \sum Y_i$ where, $Y_i = \beta_m X'_m$ represents the income flow from the mth factor.

Let $\hat{Y}$ denotes the determinist part of equation (5.9). Basing on equations (5.9) and (5.8) we can have: $\hat{Y} = \beta_0 + Y^* \equiv \hat{Y} = \beta_0 + \sum_i Y_i$. We can rewrite equation (5.9) as:

$$Y = \hat{Y} + \varepsilon \tag{5.10}$$

To account for the contribution of ε, we follow Shorrocks (1999) by removing ε from equation (5.10) and obtain:

$$I(Y / \varepsilon = 0) = I(\hat{Y})$$

Where $I(\cdot)$ represents an inequality measure.

We can then determine the contribution of the residual term to inequality, I(Y), as follows:

$$S^{\varepsilon} = I(Y) - I(\hat{Y}) \tag{5.11}$$

The decomposition makes intuitive as well as theoretical sense, since the ranking of Y and $\hat{Y}$ differs and would be equivalent only if there is good enough fit of the income function.

Now focusing on the constant term, we can write $\hat{Y} = Y^* + \beta_0$. Applying the natural rule of Shorrocks (1999), we have:

$$I(\hat{Y} / \beta_0 = 0) = I(Y^*)$$

This way, the contribution made by the constant term is simply:

$$S^0 = I(\hat{Y}) - I(Y^*) \tag{5.12}$$

Lastly, the contribution of the estimated income factors is straightforward:

$$S^m = I(Y^*) \tag{5.13}$$

Therefore inequality, I(Y), can be decomposed into S^ϵ, S^0, and S^m which represent the contributions made by the residual term, the constant term, and the estimated factor sources respectively. These contributions can be expressed in percentages summing to 100%.

The idea to generate the contributions of the different predicted income factors that account for measured private sector income inequality in terms of marginal contributions hinges on the Shapley value concept as developed by Shorrocks (1999). According to Shorrocks (1999), the entry of an extra factor in a set of factors permits the factor to benefit a marginal gain or loss proportionate to what it brings into the set.

This chapter uses the above architecture to examine the contribution of some labour market variables in explaining income inequality among private sector household heads in Cameroon. Knowledge on the contribution of variables such as education, potential labour market experience and its square, seniority in the main job, employment vulnerability in explaining income inequality among private sector workers as well as the within- and between-group components that account for income inequality across employment sectors (farm and non-farm as well as across formal and informal) in Cameroon is vital for policy action. Moreover, the consideration of the constant term which can be liken to a headcount tax (negative constant income) or a headcount subsidy (positive constant income) permits policy analysts to understand the role of a headcount tax or headcount subsidy in increasing or decreasing inequality in Cameroon respectively.

In summary, it is straightforward that measured inequality, I(Y), is decomposed exactly into the contributions of the various explanatory variables, the constant and the residual terms. The regression based-decomposition framework applied is independent of the inequality measure used. Equally, any arbitrary transformation of the target variable is allowed, as inequality would be measured on the transformed value (see, Fields and Yoo, 2000 and Epo et al., 2010).

Moreover, even if the dependent variable is transformed, inequality may still be measured over the original variable by this procedure.

5.4.2. Sectoral Inequality Decomposition of Regressed-Income Sources

This sub-section accounts for the within- and between-group inequalities of regressed-income sources. The inequality of regressed-income source, with and without vulnerability, and that of the vulnerability source are decomposed into within- and between-group inequalities across employment sectors (for example, farm/nonfarm and formal/informal). Use is made of the exact decomposition of the Gini coefficient.

Sub-group Decomposition of the Gini: The Shapley Value Approach[68]

The Shapley Value decomposition rule is designed to obtain exact decomposition of the Gini coefficient into within- and between-group components that purge the overlapping term (Araar, 2006a and Baye, 2008). The application of this approach is two-fold. The first fold consist in decomposing the overall Gini index of regressed-income source, with and without vulnerability, into within- and between-group contributions. The second phase entails expressing the within-group contribution as a weighted sum of the within-group contributions by the different employment sectors. Let $G(\tilde{Y})$ be the total Gini index per regressed source of income, then we can express:

$$G(\tilde{Y}) = v(W_g, B_g) \tag{5.14}$$

Where W_g and B_g are the within- and between-group inequalities and v is a characteristic function.

In the first phase, we suppose that the within-group inequality component $\left(G_W^{sh}\right)$ and the between-group inequality component $\left(G_B^{sh}\right)$ exactly account for the overall Gini coefficient per regressed source ($G(\tilde{Y})$). To compute the marginal contributions of each of these factors, the basic rules to follow are: (1) eliminate the between-group inequality and compute the

[68] See Appendix 5.1 for a characterization of the Shapley value

within-group inequality by using a vector of a regressed source of income where each household's endowment has been multiplied by μ/μ_K. This operation renders the average endowment of each group to equal μ; (2) eliminate the within-group inequality and compute the between-group inequality, $G(\mu_1,.....,\mu_K)$ by using a vector of regressed endowment where each household has the average endowment of its group, denoted μ_K; and (3) eliminate between- and within-group inequality simultaneously and each household is left with the average regressed endowment. In this case, $G(\mu)=0$.

The above elimination order is arbitrary and the arbitrariness is removed by obtaining the Shapley Value within- and between-group contributions as follows:

$$\begin{aligned} G_W^{sh} &= \frac{1}{2}\left[v(W_g,B_g)-v(B_g)+v(W_g)-0\right] \\ &= \frac{1}{2}\left[G(v)-G(\mu_K)+G(Y(\mu/\mu_K))-G(\mu)\right] \end{aligned} \tag{5.15}$$

and

$$\begin{aligned} G_B^{sh} &= \frac{1}{2}\left[v(W_g,B_g)-v(W_g)+v(B_g)-0\right] \\ &= \frac{1}{2}\left[G(v)-G(Y(\mu/\mu_K))+G(\mu_K)-G(\mu)\right] \end{aligned} \tag{5.16}$$

From the within-group contribution to overall inequality expressed in equation (5.15), the second step consists to decompose global within-group inequality as a sum of within-group inequality across groups. With $G(\mu)=0$, the within-group contribution is then based on three inequality indices. The same rule is used for determining the impact of eliminating the marginal contribution of group k, notably the attribution of group k's average share to all its members in order to eliminate the group's contribution to global within-group inequality. This gives us the Shaply Value of group k's contribution to total within-group inequality.

To illustrate this procedure, let's use two groups A and B (for example, A= farm sector of employment and B = nonfarm or A = informal and B = formal private), equation (5.15) is restated as follows:

$$G_W^{sh} = \frac{1}{2}[G(Y) - G(\mu_A, \mu_B) + G(Y_A, i(\mu/\mu_A), Y_B, i(\mu/\mu_B))] \quad (5.17)$$

The Shapley Value contribution of group A to global within-group inequality is given by:

$$\begin{aligned} G_W^{sh} = \frac{1}{4}\{&[G(Y) - G(\mu_A, Y_B) + G(Y_A, \mu_B) - G(\mu_A, \mu_B)] \\ &+ [G(\mu_A, \mu_B) - G(\mu_A, \mu_B) + G(\mu_A, \mu_B) - G(\mu_A, \mu_B)] \\ &+ [G(Y_A, i(\mu/\mu_A), Y_B, i(\mu/\mu_B)) - G(\mu, Y_B, i(\mu/\mu_B)) + G(Y_A, i(\mu/\mu_A), \mu) - G(\mu, \mu)]\} \end{aligned} \quad (5.18)$$

The same procedure can be done symmetrically for the second group.

It is true that the exact decomposition of the Gini coefficient into the within- and between-sector components has been criticised on the basis that the Gini is not group decomposable, if the sub-sectors of income overlap. However, many authors have shown that the Gini coefficient can be decomposed successfully (Litchfield, 1999). Shorrocks (1999) develops an integrated decomposition framework, based on the Shapley approach, which is widely used in many fields of economics. The Shapley approach eliminates the residual or overlapping term and makes results and attributions more reliable. The presence of the overlapping makes results and interpretations difficult, for instance, cases where the overlapping is greater than one of the components. Shapley decomposition framework eliminates the overlapping term yielding an exact decomposition that attributes overall inequality more meaningfully.

5.5. Data used and Justification of Inequality Measures used

5.5.1. Data presentation

By construction, use is made of the estimated variables in the previous chapter (Chapter 4), generated from CHCS III conducted in 2007 by the National Institute of Statistics, which hosts information on labour market employment sectors and labour market performance indicators relevant for the study. However, we generate the complementary vulnerability input by combining the control function variables: predicted vulnerability and its interaction with unobserved variables, as per chapter 4 – Table 4.3, column 3. Specifically, the complementary

vulnerability input equals exponential of the sum of the predicted residual and the interaction term or the product of the exponential of the predicted residual and the exponential of the interaction term. This is made possible because Wan (2002) indicates that one of the advantages of the regression-based decomposition analysis is its ability to group variables without this affecting the observed inequality value of the predicted dependent variable (household per capita income).

5.5.2. Description of Inequality Indexes used in the study

There are many inequality measures in the literature; Coulter (1989) even identified about 50 (fifty) different inequality measures. But Litchfield (1999) posited that only a few have the "desirable properties" required to be a good inequality measure[69]. Though, apparently, there seem to be no consensus on how best to measure inequality (Olaniyan and Awoyemi, 2005). Debate on the merits and demerits of various desirable properties is almost giving way to a consensus on this subject (Morduch and Sicular, 2002; Oyekale et al., 2006). Cavendish (1999) broadly classified inequality measures into normative and positive measures, where the positive measures are indices that summarise features of statistical dispersion in income distribution and normative measures are derived by imposing restrictions on the inequality function derived from well stated ethical beliefs underlying the societies' concern for inequality (Olaniyan and Awoyemi, 2005; Epo, 2012). For instance, positive measures include the Gini coefficient, the coefficient of variation, the relative mean deviation and the variance of logarithms.

The Gini index developed by Gini in 1912 is a widely used measure of inequality because it satisfies all the basic characteristics of a good measure except the decomposability criteria if the sub-sectors of income overlap. However, many authors have shown that Gini coefficient can be decomposed successfully (Litchfield, 1999). Pyatt et al. (1980) and Shorrocks (1982) as well as Araar (2006a) have pointed out that the Gini coefficient is the most suitable for source decomposition. The Gini coefficient measures the ratio of the area between the Lorenz Curve and the iso-distribution line (equality line) to the area of maximum concentration.

[69] See Chapter 2 section 3 for discussions on the desirable properties for a good inequality measure.

The Generalised Entropy class (GE) and the Atkinson measure meet all the basic criteria of a good inequality measure (Cowell and Kuga, 1981 and Shorrocks, 1984). However, it is necessary to highlight that these two measures are not significantly different, as the Atkinson index is simply the transform of the GE measures. Thus, both the GE and the Atkinson indexes rank income identically (Cowell and Kuga, 1981). The GE measures describe inequality but allows for different sensitivities to income differences at various parts of the distribution: GE(θ =0) is more sensitive to income differences at the lower tail of the distribution; GE(θ =1) is uniformly sensitive to income differences across the distribution; and GE(θ =2) is particularly sensitive to income differences at the top of the distribution. Essentially, as with the Gini coefficient, a value equal to 0 for the GE measures indicates perfect equality; on the other hand, a higher value indicates more inequality. GE(θ = 2) is half the squared coefficient of variation (CV) (Cavendish, 1999). Note that when GE equals zero, there is perfect equality in the distribution. The GE class is fundamentally useful in sub-group decomposition analysis but not suitable for source decomposition analysis. The inequality measures used here are the standard Gini index and the Generalised Entropy class of inequality indices.

Gini index

The Gini index is sensitive to income/expenditure changes that transpired at the middle of the distribution. It is a widely used summary statistic and is thus particularly useful for purposes of comparison. Following from Donaldson and Weymark (1980) and Duclos and Araar (2006), after ordering incomes in a Lorenz consistent manner, the class of S-Gini ("Single-Parameter" Gini) inequality indices can be shown to be equal to the covariance formula:

$$G(\rho) = \frac{-Cov\left[Q(p), \rho(1-p)^{(\rho-1)}\right]}{\mu} \tag{5.19}$$

where Q(p) is the level of income below which we find a proportion p of the population. $p \in [0, 1]$ is the proportion of individuals/households in the population with income levels that are less than or equal to the quantile Q(p). ρ is the inequality aversion parameter that captures the deviation of quantiles from the mean at various ranks in the population. The larger the value of ρ, the greater the weight given to the deviation of incomes from the mean, μ, at the

lower tail of the distribution. When ρ becomes very large, the index G(ρ) equals the proportional deviation from the mean of the lowest income. When $\rho = 1$, the same weight is given to all deviations from the mean, which renders the inequality index G($\rho = 1$) always equal to 0, regardless of the income distribution under consideration. Thus, S-Gini indices range between 0 (when all incomes are equal to the mean or ρ is set to 1) and 1 (when total income is in the hands of a single individual/household or when ρ is large and the lowest income is close to 0).

In this perspective, the standard Gini index is obtained by simply letting $\rho = 2$:

$$G(\rho = 2) = \frac{2Cov[Q(p), p]}{\mu} \tag{5.20}$$

which depicts the proportion of the covariance between incomes and their ranks. The Gini index for $\rho = 2$ in equation (5.20) can be shown graphically as twice the area lying between the Lorenz curve and the 45^o line divided by the total area.

Generalised Entropy class of inequality indices

The generalized entropy class of inequality indices GE(θ) satisfies all the five axioms for an appropriate measure of inequality and this way, it is sensitive (collectively) to all parts of the distribution (Litchfield 1999). It is notably decomposable between socio-economic groups unlike the Gini index. The generalized entropy class of indices is expressed as follows:

$$GE(\theta) = \begin{cases} \frac{1}{\theta(\theta-1)}\frac{1}{n}\left[\sum_{i=1}^{n}\left(\frac{y_i}{\mu}\right)^{\theta} - 1\right] & if \quad \theta \neq 0,1 \\ \frac{1}{n}\sum_{i=1}^{n} log\left(\frac{\mu}{y_i}\right) & if \quad \theta = 0 \\ \frac{1}{n}\sum_{i=1}^{n}\frac{y_i}{\mu} log\left(\frac{y_i}{\mu}\right) & if\ \theta = 1 \end{cases} \tag{5.21}$$

where n is the number of households in the sample, y_i is income level of the i^{th} household, and $\mu = 1/n \sum y_i$ is the mean income. θ is the parameter of inequality aversion, which tracks

the weight given to distances between income at different parts of the distribution, and can take any real value as explained above. The values of GE(θ) range from 0 to ∞, with 0 representing an equal distribution and higher values representing higher levels of inequality. Recall that if $\theta = 0$, GE($\theta = 0$) we have the mean logarithmic deviation; if $\theta = 1$, GE($\theta = 1$) we have the Theil's inequality index and $\theta = 2$, GE(θ=2) gives half of the squared coefficient of variation. Our study considers $\theta = 0.5$, $\theta = 1$, and $\theta = 2$ to check the behaviour of our regressed-income sources across different parts of the distribution.

5.6. Empirical Results

Table 5.1 hosts the total income inequality decomposition by predicted income sources. Column (1) of this table presents the income shares of predicted income sources to total household per capita income. This table shows the substantial share made by human capital variables in determining total household per capita income. Cumulated labour market experience (experience squared) and years of schooling jointly accounted almost 38% of private sector income, with labour experience squared registering the highest income share. Urban residency and holding a managerial position in the enterprise also have considerable income shares. This is probable as majority of urban dwellers have access to better paid jobs compared to their rural counterparts. Other estimated sources that may complement total household income, though marginally, are access to microcredit at the cluster level and the complementary vulnerability input (predicted residual of vulnerability plus interaction of vulnerability with unobservables).

Our results indicate that employment vulnerability registered the largest diluting share on total household per capita income of private sector workers. This is indication that in the private sector, the net effect of employment vulnerability is not nothing but lower household income. Worthy to note, the number of young children in a household also dilute total household per capita income considerably.

5.6.1. The Contributions of Predicted Sources of Income to Measured Inequality in the Private Sector

This sub-section reports the exact and the marginal contributions of the estimated income sources to total income inequality in the private sector in Cameroon. On the one hand, Table

5.1 submits the exact contributions of the predicted income sources to total income inequality for the Gini index and the generalized entropy (GE) measures. Columns 2, 3, 4 and 5 host the Gini and GE measures ($\theta = 0.5$, $\theta = 1$, and $\theta = 2$), respectively.

It is essential to note that though detailed interpretations are done with respect to the most popular and widely used Gini index, discussions are also made with regards to the GE; which may help track the behaviour or sensitivity of the estimated sources at the lower ($\theta = 0.5$) and upper tails ($\theta = 2$) of income distribution. This way, discussions with respect to the GE will allow us to gauge the contributions of the regressed-income sources to income gaps at different tails of the distribution of income.

From Table 5.1 employment vulnerability increases income inequality by more than 4% in the private sector (column 2). This cankerworm, employment vulnerability, which has the tendency of diluting market income in developing countries, may be qualified as "a thing of the poor". It does no less than worsening income inequality between the poor or less privileged and the rich or the privileged as well as between the informal and the formal sector or between rural and urban areas as intimated earlier in this study. Employment vulnerability is thus a threat that widens income inequality among private sector household heads in Cameroon.

This finding confirms the first hypothesis of the chapter. The observation that vulnerable employment widens income inequality agrees with the National Institute of Statistics (2011, p. 4-5) which posits that growth that does not generate decent jobs may induce income inequalities and social strife. It is vital to raise the fear that persistent job quality inequalities in an economy can push social and political pressure groups to manifestations and strives which can hamper economic activities and subsequently economic growth. This is a cause for attention on this issue. Good enough the government of Cameroon is presently embarked on improving decent employment.

The years of schooling and labour market experience increase income inequality in the private sector. This result is probable, given the prevailing situation in the Cameroon private sector. To begin, most education programmes and capacity building workshops largely benefit the rich or privileged than the poor or less privileged. Equally, the returns to education is somewhat low in the private sector; as a household head in the private sector earns on average

21 500 CFA francs per month compared to 36 100 CFA francs for a public sector household head (Government of Cameroon, 2007).

Table 5.1. Total Income Inequality Decomposition by Predicted Income Sources

Income Sources	Predicted Income Shares (1)	Shapley Value Approach			
		Gini Index (2)	Generalized Entropy Class		
			$\theta = 0.5$ (3)	$\theta = 1$ (4)	$\theta = 2$ (5)
Employment vulnerability intensity	-0.803	0.016	0.011	0.013	0.025
		(0.041)	(0.044)	(0.046)	(0.055)
Labour experience	-0.350	0.022	0.008	0.008	0.011
		(0.058)	(0.033)	(0.031)	(0.025)
Labour experience squared	0.205	0.006	-0.006	-0.006	-0.010
		(0.016)	(-0.023)	(-0.021)	(-0.023)
Years of education	0.170	0.039	0.024	0.026	0.048
		(0.103)	(0.098)	(0.098)	(0.106)
Seniority in the enterprise	0.064	0.011	0.008	0.010	0.024
		(0.029)	(0.031)	(0.036)	(0.054)
Access to microcredit (cluster level)	0.017	0.003	0.0003	0.0003	-0.0001
		(0.007)	(0.0014)	(0.001)	(-0.0002)
Number of younger children (cluster level)	-0.119	0.026	0.015	0.016	0.026
		(0.070)	(0.061)	(0.060)	(0.059)
Number of married household heads (cluster level)	-0.044	0.012	0.005	0.005	0.007
		(0.032)	(0.022)	(0.020)	(0.015)
Gender of household head (male = 1)	-0.063	0.002	0.0002	0.0002	0.0001
		(0.004)	(0.001)	(0.0007)	(0.00011)
Location of household head (urban = 1)	0.140	0.054	0.033	0.037	0.059
		(0.142)	(0.14)	(0.135)	(0.131)
Complementary vulnerability input	0.000033	0.000003	0.000002	0.000002	0.000002
		(0.000009)	(0.000009)	(0.000008)	(0.00004)
Residual	0.000	0.189	0.144	0.160	0.259
		(0.497)	(0.593)	(0.593)	(0.578)
constant	1.783	0.000	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)
Total value		**0.380**	**0.243**	**0.270**	**0.448**
		(1.000)	(1.000)	(1.000)	(1.000)

Source: Computed by authors with the help of STATA 10 and DASP 2.1 Stata Package developed by Araar and Duclos (2009). Note: values in brackets represent the relative contributions

In addition, the observation that the years of schooling and labour market experience increase income inequality may be due to the scarcity of job opportunities in the country as a whole. This result may also be justified by the observation that, in the private sector, about 33.3% have no education and a large proportion (37.4%) have only completed primary school (Government of Cameroon, 2007) which cannot secure a well paid job in the private sector. Essentially, years of schooling and labour market experience, attributable to human capital sources, jointly account for more than 14% of private sector income inequality; confirming the second specific hypothesis. This finding also verifies the claims of the Chicago-school theory or Mincer's and Becker's human capital theory that differences in wages and salaries are largely explained in terms of human capital.

Holding a managerial position also increases income inequality in the private sector, since such positions that attract higher incomes are held by very few. In Cameroon, only 8% of private sector household heads hold managerial or supervisory positions. Worthy to note, regressed human capital sources (years of schooling, labour market experience and leadership skills, attributable to managerial position) overwhelmingly accounted for observed inequality. They jointly accounted for almost 21% of observed private sector inequality, validating the second hypothesis of this chapter. Access to microcredit tends to increase income inequality. This is probable as the poor household heads rarely benefit from microcredit as a result of lack of appropriate guarantee or collateral security and poor projects. This leaves the poor with lack of financing to start-up micro-activities or businesses that can generate income. This highlights that a tour back to the standard approach of microfinance[70] may be a good avenue for sealing down inequality. This corroborates with Oyekale et al. (2006, p. 24) who found that access to formal and informal credit tends to increase income inequality.

Male household headship unlike urban residency increase, though marginally, income inequality. Residing in an urban area tends to increase income inequality by about 14%. This is attributable to the relative availability of well paid jobs in the urban than rural areas. Efforts to encourage the planting of industrial establishments and transformation units in rural areas may prove fertile. The number of young children below 5 (five) years old and the number of married people at the cluster level tend to increase income inequality. This is evident as the

[70] This refers to the poverty reduction approach. That is, providing financial services to the poor, while maintaining or developing institutional capacity.

presence of young children reduces involvement in productive activities, in terms of hours worked. This shows that birth control and family planning should also be integrated in poverty alleviation and inequality reduction measures.

The complementary vulnerability sources only help to complement in worsening income inequality among private sector workers. This is indication that unobservables that determine employment vulnerability (for instance bargaining power and social networks) tend to increase income inequality; as bargaining power and social networks do not level-up across household heads, and also are not common place. Unlike the constant with a zero contribution as in Wan (2002), the residual term registers a substantial contribution to the measured Gini index. However, its contribution (of almost 49.7%) is far below the threshold of 80% fixed by Wan (2002) for studies with limited value. This term tracks the contribution of omitted determinants of private sector income in Cameroon.

Columns 4, 5, and 6 submit the regression-based decomposition results by predicted income sources, using the generalised entropy; $\theta = 0.5$, $\theta = 1$, and $\theta = 2$, respectively. The generalised entropy has the peculiarity of measuring inequality at a given level of income distribution. Here we consider $\theta = 0.5$ and 2 to track the contributions of regressed-income sources to income inequality at the lower and upper tails of the distribution of living standards. This endeavour will inform policy makers on the variables-cum policies that account for income inequality among private sector workers at the lower and upper tails of income distribution, often likened to the poor and rich tails respectively. We also consider $\theta = 1$ which allows equal weighting across the distribution of living standards for purpose of comparison.

In general, we observe that the income inequality increasing effect of employment vulnerability is more pronounced among private sector household heads at the upper tail of the distribution of income than those at the lower tail. Employment vulnerability accounts for about 4.4% of measured income inequality among household heads at the lower tail of the distribution of income compared to 5.5% for those at the upper tail. This is evident as programmes to enhance the working conditions of household heads may by-pass the poorest of the lower tail and the poor of the upper tail and mainly benefit the better-off in these classes. This is indication that efforts to reduce the vulnerability of private sector workers at the lower and upper tails of distribution of income are tantamount to reducing overall private

sector income inequality. Years of schooling and labour experience increase income inequality in the lower and upper tails of income distribution. This is due to obvious reasons; as most education enhancement programs by-pass the poorest of the lower tail and the poor of the upper tail. Years of schooling account for 9.8% of income inequality at the lower tail of income distribution compared to 10.6% in the upper tail. This shows that education programs specifically designed for the poorest of the lower tail and the poor of the upper tail can mitigate the inequality gap among private sector household heads.

Job experience square on her part reduces income inequality in the lower and upper tails of income distribution. This indicates that capacity building programmes to enhance the skills of private sector workers may militate to reduce inequality in income. Holding a managerial position account for almost 3.1% of income inequality among private sector workers at the lower tail of the distribution compared to 5.4% for those at the upper tail. This is most likely as the poorest of the lower tail and the poor of the upper tail are most unlikely to hold managerial or supervisory positions in enterprises. Access to microcredit increases income inequality among lower and upper tail household heads. This is probable as the poorest household heads in the lower tail and the poor in the upper tail may relatively lack the necessary collateral or guarantee required by lenders. This observation is relevant given the gradual passage of microfinance approach from poverty reduction to financial sustainability, where poor (or poorest) household heads are increasingly being considered risky borrowers.

The number of young children and the number of married household heads at the cluster level increase income inequality in the lower and upper tails of the distribution of income. The number of young children account for about 6% of measured income inequality in the lower and the upper tails. This is indication that birth control and family planning programmes specifically designed for the poorest and poor household heads should be incorporated in anti-inequality strategy packages. Being male gender type and residing in the urban area increase income inequality as intimidated earlier.

In addition, Table 5.2 submits the marginal contributions of the regressed-income sources to measured inequality. The notion of marginal contributions as developed by Shorrocks (1999) is based on the concept of the Shapley Value. According to this notion, regressed-income sources enter or join a coalition of sources and their marginal contributions are examined. Talks on marginal contributions in this exercise are done with respect to Gini index. This is

not only due to its popularity and wide usage but equally because the Gini index is good for decomposition by sources (Araar, 2006a and Epo, 2012). It is necessary to recall that the exact contribution of each regressed-income source to measured income inequality is the weighted mean of the marginal contributions of that source in all configurations of sources[71]. Interestingly, the level of entry or positioning of each regressed-income source to a set or coalition of already existing sources is viewed as a policy-mix venture. This exercise is particularly useful for policy prioritization and targeting, especially in an atmosphere of limited public resources or constrained budgets. Table 5.2 below reports the marginal contributions of the regressed-income sources to measured inequality.

In Table 5.2, putting aside the predicted residual, it is vital to highlight that labour experience, urban residency and years of schooling record the highest marginal contributions to measured inequality in level 1. This is indication that spatial differences (between urban and rural areas) as well as differences in the implementation of educational and training programmes have important inequality considerations. This observation highlights the key role that broad based[72] human capital development policies can have on income inequality. Concerning employment vulnerability, we observe that out of the weighted mean contribution of employment vulnerability (0.016) to measured income inequality (0.38) in the private sector, close to 0.0024 points is realized when the other sources are absent (level 1). Worthy of note is the observation that as other regressed-income sources are gradually being considered as from level 2, the sum of the remaining weighted marginal contribution of employment vulnerability is positive up to the last level (level 13).

Essentially, the sum of the weighted marginal contributions of job experience square is positive up to level 5 and takes a negative sign from level 6 to 13. This indicates that enacting policies that promote skills and capacity building for all private sector workers may be inequality equalizing or reducing, but the full inequality reducing effect of these programmes would only concretise with the inclusion of other policies (policies addressing employment vulnerability, microcredit access, and education inequalities). The same judgment can be given to job experience that take negative from the eleventh level.

[71] We refer to all the regressed-income sources and the predicted residual.
[72] Education and capacity building programmes that involve all private sector segments, that is, the rich as well as the poor private sector segments.

Table 5.2. Marginal Contributions of the Predicted Income Sources to observed Gini Inequality based on the Shapley Value Approach

Predicted income sources	level 1	level 2	level 3	level 4	level 5	level 6	level 7	level 8	level 9	level 10	level 11	level 12	level 13
Employment vulnerability intensity	0.00235	0.00159	0.00125	0.00111	0.00105	0.00103	0.00103	0.00103	0.00104	0.00105	0.00105	0.00107	0.00108
Labour experience	0.00783	0.00487	0.00308	0.00198	0.00131	0.00088	0.00060	0.00043	0.00031	0.00024	0.00020	0.00017	0.00016
Labour experience squared	0.00766	0.00441	0.00237	0.00107	0.00022	-0.00036	-0.00075	-0.00103	-0.00123	-0.00138	-0.00149	-0.00157	-0.00163
Years of education	0.00612	0.00437	0.00345	0.00296	0.00271	0.00258	0.00251	0.00247	0.00244	0.00243	0.00242	0.00241	0.00241
Seniority in the enterprise	0.00193	0.00133	0.00101	0.00083	0.00073	0.00067	0.00064	0.00062	0.00061	0.00061	0.00061	0.00062	0.00064
Access to microcredit (cluster level)	0.00130	0.00061	0.00031	0.00017	0.00011	0.00008	0.00006	0.00005	0.00004	0.00003	0.00002	0.00001	0.00001
Number of younger children (cluster level)	0.00505	0.00345	0.00258	0.00210	0.00183	0.00166	0.00155	0.00148	0.00142	0.00137	0.00134	0.00132	0.00132
Number of married household heads (cluster level)	0.00274	0.00165	0.00113	0.00089	0.00077	0.00071	0.00068	0.00066	0.00064	0.00062	0.00060	0.00058	0.00057
Gender of household head (male = 1)	0.00068	0.00032	0.00016	0.00009	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001
Location of household head (urban = 1)	0.00719	0.00575	0.00492	0.00442	0.00410	0.00388	0.00371	0.00358	0.00347	0.00337	0.00328	0.00319	0.00311
Complementary vulnerability input	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002
Residual	0.02214	0.01918	0.01725	0.01592	0.01496	0.01420	0.01358	0.01304	0.01256	0.01212	0.01170	0.01130	0.01091
constant	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Source: Computed by author using the DASP 2.1 Distributive Software. Levels indicate the place of entry of the other predicted sources

5.6.2. Sectoral Decomposition of Inequality With and Without Vulnerability

The sectoral decomposition of inequality is performed using both income source (with and without vulnerability) and vulnerability dimensions. Tables 5.3 and 5.4 host the within- and between-sector contributions to regressed-income source and vulnerability inequalities in the formal/informal and farm/nonfarm private employments sectors, respectively. In 2007, of the income source S-Gini of 38.0 %, the within-sector or within-group component overwhelmingly accounted for 92.5 % and 73.5 % in the formal/informal and farm/nonfarm sub-sectors respectively compared to the between-group contributions of 7.5 % and 26.5 %. The bulk of the within-sector income source inequality was registered in the informal and farming employment sectors (Table 5.3 and 5.4). The informal sector accounted for 87.7 percentage points of the within-sector income source inequality compared to about 4.8 percentage points for the formal private sector (Table 5.3). In the same light, the farm employment sector accounted for 44.2 percentage points of the within-sector income source inequality among private sector workers as opposed to 29.3 percentage points for the nonfarm private sector (Table 5.4). This is indication that more targeted policy objectives that focused on reducing income inequality among household heads working in the informal and farm employment sectors may have considerable effects on overall private sector income inequality.

Table 5.3. Sectoral Decomposition of Inequality With and Without Vulnerability by Formal and Informal Employment Sectors

Sector	Shapley Value Decomposition of the S-Gini Coefficient ($\rho = 2$)							
	Income Source Inequality with vulnerability		Income Source Inequality without vulnerability		Change		Vulnerability source inequality	
	Estimate	RCi	Estimate	RCi	Estimate	RCi	Estimate	RCi
Informal	0.334	0.877	0.318	0.882	0.016	-0.005	0.112	0.356
Formal	0.018	0.048	0.037	0.101	-0.019	-0.053	0 .026	0.083
Intra_group	0.352	0.925	0.355	0.983	-0.003	-0.058	0.138	0.44
Inter_group	0.028	0.075	0.006	0.017	0.022	0.058	0.176	0.56
Overall Private	0.380	1.000	0.361	1.000	0.019	0.000	0.314	1.000

Source: Computed by author from CHCS 2007 Survey data using DAD 4.5 Software for Distributive Analysis. Note: RCi stands for relative contributions

Considering the sectoral decomposition of income source inequality without vulnerability, the S-Gini coefficient drops to 36.1% at the overall level compared to 38% when measured with vulnerability (Tables 5.3 and 5.4). This further emphasises the observation that employment vulnerability is inequality increasing. The within-sector component still prevails in explaining overall income source inequality without vulnerability in both the informal/formal and farm/nonfarm private sectors. Thus, verifying the third hypothesis of the chapter. However, we observe that inequality within the informal sector drops from 33.4% to 31.8% and the relative contribution of the informal sector to within-group inequality drops by 0.5%. This shows that employment vulnerability worsens income inequality among household heads working in the informal sector. For the farm/nonfarm employment sectors, employment vulnerability worsens inequality among household heads working in the farming sector with respect to those in the nonfarm private sectors.

Table 5.4. Sectoral Decomposition of Inequality With and Without Vulnerability by Farm and Nonfarm Employment Sectors

Sector	Shapley Value Decomposition of the S-Gini Coefficient ($\rho = 2$)							
	Income Source inequality with vulnerability		Income source inequality without vulnerability		Change		Vulnerability source inequality	
	Estimate	RCi	Estimate	RCi	Estimate	RCi	Estimate	RCi
Farm	0.168	0.442	0.178	0.492	-0.010	-0.05	0.092	0.293
Nonfarm	0.112	0.293	0.135	0.373	-0.023	-0.08	0.145	0.464
Intra_group	0.28	0.735	0.312	0.865	-0.032	-0.130	0.237	0.757
Inter_group	0.101	0.265	0.049	0.135	0.052	0.130	0.076	0.243
Overall private	0.38	1.000	0.361	1.000	0.027	0.000	0.314	1.000

Source: Computed by author from CHCS 2007 Survey data using DAD 4.5 Software for Distributive Analysis. Note: RCi stands for relative contributions

The sectoral decomposition of vulnerability source inequality into within- and between-group effects is presented in the eastern-corner of Tables 5.3 and 5.4. In the period under review, the within-group component overwhelmingly accounted for the vulnerability source inequality of 31.4 % in the farm/nonfarm private employment sectors. An interesting observation is that the between-group inequality dominated in the informal/formal employment sectors (see Table 5.3). The informal employment sector accounted for up to 35.6 percentage points of within-

group vulnerability source inequality compared to only 8.3 percentage points for the formal sector.

In a nutshell, the nonfarm private employment sector carried the bulk of the within-group vulnerability source inequality; 46.6 percentage points compared to 29.3 percentage points for the farm sector (Table 5.4). This is implication that policy efforts to check vulnerability inequality between employment sectors should give attention to the formal private and informal sectors whereas those that tackle specific sector vulnerability inequality should be driven towards the farm/nonfarm private sectors. The policy guides are likely to generate greater impacts on the overall private sector vulnerability inequality in Cameroon.

These two dimensions of well-being (Income source inequality - with and without vulnerability - and employment vulnerability inequality) do attest to the dominant contribution of within-group inequality in the distribution of well-being in the Cameroon private sector. However, while the between-group contribution is negligible in the income source dimension – with and without vulnerability - for the formal/informal employment sectors, it is non-negligible in the vulnerability dimension of inequality (Table 5.3). These results indicate that better policy outcomes could be reached in reducing private sector income source inequality if policy objectives are aimed at tackling inequality within the formal and informal employment sectors and very little could be achieved if emphasis is placed on sectoral disparities. Concerning the vulnerability dimension in the formal/informal employment sectors, opting for an optimal-mix of within- and between-group policy orientations, with more emphasis on the between component, appears to be more appropriate in scaling-down vulnerability source inequality in formal/informal employment sectors rather than focusing only on one orientation.

For the farm/nonfarm employment sectors, the between-group contribution is non-negligible in both dimensions, but quite more considerable in the income source with vulnerability than in that without vulnerability (Table 5.4). This implies that greater efficiency could be achieved in reducing income source and vulnerability inequalities in the private sector if both within- and between-group considerations are targeted disproportionately in the farm/nonfarm sectors. Worthy to recall, more emphasis on within-sector inequality is likely to produce greater impacts on overall private sector regressed-income source and vulnerability

inequalities. However, the emphasis to lay on the between-group consideration may not level-up along the income source and vulnerability dimensions.

5.7. Concluding Remarks and Policy Implications

This chapter attempted to identify the role of employment vulnerability and other regressed-sources in accounting for private sector household income inequality and to examine how much inequality in income and vulnerability is accounted for by within- and between-employment sector components of inequality in Cameroon. Thus, the chapter first employed the regression-based decomposition architecture to examine the contribution of some labour market variables in explaining income inequality among private sector household heads in Cameroon. Then, we used the Shapley Value decomposition rule to obtain exact decomposition of the Gini coefficient into within- and between-group components. We observed that human capital variables registered substantial shares in determining total household per capita income in the private sector. Our results indicated that employment vulnerability registered the largest diluting share on total household per capita income of private sector workers in 2007. The regression-based decomposition provided results for the Gini index and the GE measures, thus interpretations were made with respect to the most popular and widely used Gini index and the GE measures.

With respect to the Gini index, employment vulnerability was found to be inequality increasing; it increased income inequality by about 4% in the private sector. This observation confirmed the view that employment vulnerability has a diluting effect on market income in developing countries, especially among household heads in "poorer"[73] employment sectors. Equally, years of schooling and labour market experience increased income inequality in the private sector. This was likened to the prevailing situation in the Cameroon private sector, where most education programmes and capacity building workshops largely benefit the rich than the poor. This result was also justified by the observation that, in the private sector, about 33.3% have no education and a large proportion (37.4%) have only completed primary school (Government of Cameroon, 2007) which cannot secure a well paid job in the private sector.

[73] Poorer in terms of social and institutional protection, for instance farming and informal employment sectors as compared to nonfarm and formal employment sectors respectively.

Holding a managerial position and access to microcredit were also found to increase income inequality in the private sector. Residing in an urban area tended to increase income inequality by about 14%. Essentially, regressed human capital sources (years of schooling, labour market experience and leadership skills, attributable to managerial position) substantially accounted for observed inequality. They jointly accounted for about 21% of observed private sector inequality.

In 2007, we found that of the income S-Gini of 38.1 per cent, the within-sector component overwhelmingly accounted for 92.5 per cent and 73.5 per cent in the formal/informal and farm/nonfarm sub-sectors, respectively compared to the between-sector contributions of 7.5 per cent and 26.5 per cent. Thus, verifying the hypothesis that measured private sector inequality is overwhelmingly accounted for by the within-sector component. The bulk of the within-group income inequality was registered in the informal and farm employment sectors. In the period under review, the within-group component overwhelmingly accounted for the vulnerability S-Gini of 5.8 per cent in both the formal/informal and farm/nonfarm private employment sectors. The informal employment sector and the nonfarm private largely accounted for the within-group vulnerability inequality compared to the formal sector and farming sector.

Efforts to encourage the formalisation of the informal sector may be very fertile ground for policy administration and designing. More targeted policy objectives that focused on reducing vulnerability inequality among household heads working in the informal and farm employment sectors may have considerable effects on overall private sector income inequality. Equally, policy efforts to check vulnerability inequality in these sectors are likely to generate greater impacts on overall private sector vulnerability inequality. Thus, initiatives like the one-stop shop by the government of Cameroon to facilitate creation of enterprises and formalization of those in informal activities should be encouraged and extended. Conventions with the ILO that can improve the working conditions of private sector household heads in Cameroon should be embraced. Importantly, the quality-employment or decent employment driven growth enshrined in the GESP by the government of Cameroon should be followed-up to ensure an objective implementation of the designed strategies.

However, for the government of Cameroon to witness success with the GESP, in terms of decent employment, more targeted policy measures to improve the working conditions in the

informal and farming activities are strongly recommended. The reduction of employment vulnerability may pair-up fairly well with education/capacity building programmes as well as measures to improve credit access for those household heads in the informal and farm sectors to produce very commendable effects on overall private sector income inequality.

CHAPTER 6

Reconciling Efficiency and Equity of Decent Private Sector Employment Relative to other Regressed-Income Sources: A Social Welfare Decomposition Analysis

6.1. Introduction

The past decade has witnessed a growing interest in the impact of development on poverty. This era is marked by burgeoning research interests and debates on the extent to which economic growth benefit the poor (Ravallion, 1998 and 2001; Ravallion and Datt, 2000 and 2002; Quah, 2001; Ravallion and Chen, 2003). One school of the debate maintains that the potential benefits of economic growth to the poor are undermined or offset by the inadequate redistributive policies and by increases in inequality that accompany economic growth. The second school argues that despite increased inequality in the liberal economic policies, open markets raise incomes of everyone in the society, including the poor, which proportionally reduce the incidence of poverty. However, we do not also have to forget that if open markets fail to consider people's social, economic and especially the fundamental employment rights of workers it may lead to deprivation. Notwithstanding, in the midst of globalization, the concern of policymakers should not be on which school is right or wrong, but rather on the ability to mediate between these prominent policy goals; income objectives (efficiency) and redistributive objectives (equity).

Poverty remains a major issue for developing countries, especially in Sub-Saharan Africa (SSA). According to the World Bank (2000), SSA is one of the poorest regions in the world. The problem of widespread poverty in SSA is rooted in the economic downturn of the late 1980s. While jobs were at the core of economic policy even before the economic crisis, there was growing concern that many of the jobs being created were "vulnerable jobs", insecure in nature, marked by unstable pay and lack of representation. It is increasingly clear that employment is not always a guarantee to avoid poverty. A recent ILO report estimates that roughly 500 million people (that is, 18 % of the work force) in low income countries are 'working poor', living with an annual income below the poverty line (ILO, 2007). Although

these numbers have fallen, this decline has been driven essentially by development in China, South Asia, and middle-income countries. Despite the important gains during the second half of the 1990s, nearly 4 out of every 10 Cameroonians in 2001 were 'working poor', living with an annual income below the poverty line of FCFA 185,490, roughly equivalent to US $1 per person, per day, or FCFA 19,000 per month (Government of Cameroon, 2003). According to the Government of Cameroon (2007), the monetary poverty threshold in 2007 stood at 269, 443 francs CFA per adult equivalent per year and the number of people living under this poverty threshold has increased in the last few years.

According to the World Follow-up Report of 2008[74], halfway towards achieving the MDGs, the progress achieved in the world is not satisfactory, particularly in Africa. In Cameroon, poverty reduction is a burning concern of the government, but the fear is that Cameroon may be far from meeting the 2015 millennium target of reducing poverty by half; as monetary poverty index has hardly drifted between 2001 and 2007. One attractive characteristic of income poverty in Cameroon is its sector disparity. According to the Government of Cameroon (2007), only 10.2% of public sector workers are working poor; living below a monthly income of about 22 454 CFA[75] francs compared to 44% in the private sector. More organised and off farm sectors appear to be routes out of poverty. This is because only 9.5% of workers in formal private employment are working poor compared to 46.8% in informal employment. Equally, 20.4% of those in nonfarm private sectors are working poor as opposed to 59% in farming activities.

The situation of income distribution in Cameroon depicts a widening gap between the poor and nonpoor, formal and informal workers as well as between workers employed in farm and nonfarm sectors as intimated in the introductory portion of the previous chapter. These observed disparities suggest the need to accompany or blend income growth policies with appropriate redistributive policies to ensure the fruits of growth benefit all sectors in the economy. This is also indication that not only GDP growth, but also other factors like income distribution patterns associated with socio-demographic factors should be considered to address welfare concerns of the poor and nonpoor. Such factors like decent employment, human capital, financial capital just to mention a few may help enhance total social welfare

[74] World Development Indicators: Report on the progress of the achievement of the Millennium Development Goals by region.

[75] The annual poverty line was estimated at 269 443 CFA francs per adult equivalent per year (giving 22 454 CFA francs per adult equivalent per month).

represented in terms of efficiency (household mean income) and equity (household income distribution). Chapter 4 treated the determinants of household income and Chapter 5 investigated the sources and components of income inequality, but these frameworks are somehow fragmented. This way, considering an approach that combines household income objectives and redistributive objectives under the same framework, as suggested by social welfare analysis, may be very necessary. Thus, this chapter is conducted to address the measurement of social welfare received by private sector households on the basis of mean income and income distribution, using the generalised social welfare decomposition framework. The chapter innovatively decomposes social welfare as a weighted sum of individual welfare of various regressed-income components or endowments as well as sectors of employment.

Given that the concern of most development policymakers is to determine target sectors and key variables-cum policies that can boost income growth and enhance equity, thus improving social welfare, the main research question here is: What are the social welfare shares and impacts of decent employment relative to other regressed-income sources and sectors of employment? Specifically, this chapter attempts to provide answers to the following questions:

- What is the share of each regressed-income component in total social welfare of private sector households?
- How does growth in the mean value of each regressed-income component impact on total social welfare of private sector households?
- What is the share of each employment sector in total social welfare of private sector households? and
- How does income growth in each employment sector affect total social welfare of private sector households?

The main objective of this chapter is to study the private sector social welfare shares and impacts of employment decency among other regressed-income sources in Cameroon. The specific objectives are:

- To evaluate the share of decent employment and other regressed-income components in total social welfare of private sector households;

- To examine the effect of growth in the mean value of decent employment and other regressed-income components on private sector social welfare;
- To assess the share of each employment sector in private sector social welfare. Employment sectors here are informal/formal private sectors and farm/nonfarm private sectors;
- To tease-out the effect of income growth in each employment sector on private sector social welfare; and
- To provide targeted policy measures that tackle income growth and equity simultaneously.

These objectives may help inform policymakers better on regressed variables-cum-policies which can impact both income inequality and poverty. Confirming this policy objective, Kakwani et al. (2004) asserts that a policy menu that targets both distributional concerns and poverty reduction worries could lead to the enhancement of both economic growth and equity.

These objectives are guided by the following testable hypotheses:

- Efficiency considerations are more important than equity considerations in determining social welfare;
- Regressed-human capital component accounts for the greatest relative share of total social welfare;
- Growth in human capital endowments produces the highest effects on social welfare;
- An additional CFA franc directed to boost decent employment in the private sector and proportionally distributed will go a long way to reduce overall inequality and enhance total welfare.
- Formal employment sectors as well as nonfarm sectors are inequality-augmenting compared respectively to informal and farm sectors of employment;
- Employment sectors with higher mean income shares are not forcefully those with higher welfare shares; and
- A proportionately distributed income growth in informal and farm employment sectors is more welfare augmenting than the same growth in the formal and nonfarm employment sectors, respectively.

The rest of this chapter is organized as follows: Section 6.2 reviews the literature that has attempted to blend efficiency and equity in the analysis of social welfare; Section 6.3 presents the theoretical framework; Section 6.4 develops the methodology of the study; Section 6.5 presents the findings; and Section 6.6 hosts the concluding remarks and policy implications of the chapter.

6.2. Literature Review

The concept of social welfare function, as intimated earlier, was first introduced by Bergson (1938). He considered the social welfare function as a real-valued function that ranks conceivable social states from lowest to highest. Samuelson (1949) in turn evaluated the various ways by which social welfare function can be used in welfare economics[76]. Economic literature measures social welfare either cardinally in terms of monetary units (say CFA franc or Dollar) or ordinal in terms of Pareto efficiency. The ordinal approach is made up of the Lorenz Dominance and Generalised Lorenz Dominance approaches whereas the cardinal approach is the measurement of social welfare using the Sen social welfare function (Sen-SWF). The Sen-SWF takes as inputs any variable considered to affect economic welfare (for example life expectancy or per capita income) of the population (Sen, 1970, p.33). Cardinal measures, unlike ordinal measures, are not aggregated from individual utility functions.

The ordinal approaches hinge on Atkinson theorem (Atkinson, 1970) which holds that the Lorenz Dominance is a necessary and sufficient condition to identify welfare superiority in the dominating distribution, for a policymaker who is income-seeking and inequality-averse. For this theorem, the mean of the dominating distribution should be the same or higher than that of the dominated distribution. In specific terms, social welfare is higher in distribution B than distribution A if the following conditions are verified: (i) the Lorenz Curve of distribution B dominates that of distribution A; (ii) the distributions have the same mean income or the mean income in B is greater than that in A; and (iii) the policymaker is income-seeking and inequality-averse (that is, SWF has positive first derivative and negative second derivative with respect to individual incomes).

[76] Welfare economics is a branch of economics that uses microeconomic techniques to evaluate economic well-being, especially relative to competitive general equilibrium within an economy as to economic efficiency and the resulting income distribution associated with it.

Baluch and Razi (2007) as Mukhopadhaya (2003) has applied the ordinal approach in Pakistan and Singapore respectively. Baluch and Razi (2007) observed that while social welfare in the society increased over-time, their comparisons were ambiguous because Lorenz Curves were intersecting. In such situations, cardinal measures are more appropriate in such situations. Notwithstanding, Mukhopadhaya (2003) suggested that in such a case it is possible to find out different concave utility functions that can rank two social situations differently.

Critics, championed by Shorrocks (1983), attacked on the premise that it permitted comparison only when distributions have the same mean and produced ambiguous results when Lorenz Curves intersect. In an attempt to resolve these insufficiencies of the Lorenz Dominance criterion, Shorrocks (1983) extended Atkinson's formulation by introducing the concept of Generalized Lorenz Dominance Approach. This approach was estimated by scaling the ordinary Lorenz curve up by the mean income. He indicated that even if ordinal Lorenz Curves of two distributions intersect, the condition of generalised Lorenz Dominance could still be satisfied by testing for higher order of dominance.

Notwithstanding, it was observed that Lorenz Dominance and generalised Lorenz Dominance criteria of welfare comparison provides only partial ordering of social welfare considering only the inequality aspect (Baluch and Razi, 2007). Moreover, according to Baluch and Razi (2007), these criteria ignore the economic efficiency/growth aspect of social welfare considerations. In addition, Mukhopadhaya (2001c) and Baye (2011) underscore that the generalised Lorenz Dominance has profound efficiency bias. After the demerits of the generalised Lorenz Dominance approach, the search is for an approach that will consider both equality and efficiency considerations of social welfare. Fortunately, the expectations of the literature found refuge in Sen (1974).

Sen (1974) in an attempt to address the insufficiencies of the Lorenz Dominance criteria introduced the Sen-SWF which judges trends in total welfare and trends in its components (equality and efficiency). The Sen-SWF, a cardinal SWF with complete ordering, can be employed to assign numerical values of all possible social situations in the income distribution space. Baluch and Razi (2007) have also applied the Sen-type SWF on data from Pakistan. They observed that an increase in mean income of 0.5% and income inequality of 0.16 resulted to a 16.1% increase in welfare of rural areas as opposed to urban areas where a

lower growth rate of 1.1% and higher income inequality of 0.48 led to a fall in welfare by 5.1% between 2001 and 2002.

Notwithstanding, some endeavours have questioned the sole reliability on the Pareto criterion of Sen-SWF. Mukhopadhaya (2001b) has questioned the philosophy of Paretian principle as a desirable property of the SWF. He further demonstrated that it is possible to generalise the widely used Sen-SWF, which can be non-Paretian under special circumstances and to allow mediation between efficiency and equity considerations. Mukhopadhaya (2001b) has applied the method (generalised Sen-SWF) using Australian data to decompose total welfare into different factor components of income (Earned Income, Unearned Income and Government Benefit). Baye (2011) has also employed it on Cameroon data to decompose trends in social welfare across regions (rural, semi-urban and urban). It is evident that most attempts in the literature limit analysis of social welfare on income/expenditure and completely ignore the determinants of income. This thesis adopts a new analytical perspective that uses the information contained in income generating equations to account for total social welfare in a given population. The analytical perspective derived here has advantages of its own. Because it relies on a regression framework, it expresses the level of total social welfare as a function of the income determinants that are used in the regression of income.

6.3. Theoretical Framework

The concern of most development policymakers is to design policy interventions that can revamp growth (income growth) and reduce income inequality; this is tantamount to increasing efficiency and equity. Efficiency and equity, components of the SWF, can be tracked by a non-utilitarian form of the Bergson (1938)-Samuelson (1949) SWF as follows:

$$W = W(Y, \theta) \tag{6.1}$$

Where W is total social welfare, Y is total income representing efficiency and $\theta = \theta(x_1, x_2, x_3, \ldots, x_n)$ stands for an inequality measure representing inequality. For this SWF (equation 6.1), an increase in efficiency and inequality will increase and decrease social welfare (W), respectively. With a reading of this function, it is clear that many SWFs will verify the above conditions. In an attempt to render the welfare function in equation (6.1)

more specific, Sen (1974 and 1979) using a non-utilitarian approach[77] introduced axiomatically the following SWF:

$$W = \mu(1 - G) \tag{6.2}$$

Where μ is the mean income of the population and G is the Gini inequality coefficient of the income distribution[78]. This function indicates that an increase in mean level of income will lead to a higher level of social welfare and an increase in income inequality will reduce social welfare. It can be shown that the Sen-SWF also obeys the Paretian principle. For the Sen-SWF, the rate of substitution between mean income (efficiency) and income inequality at a constant welfare level is written as follows:

$$\frac{\partial G}{\partial \mu} = \frac{1-G}{\mu} \tag{6.3}$$

From equations (6.2) and (6.3), the Sen-SWF is more sensitive to mean income than to inequality. Given that both *G* and *u* are determined by the income profile of the society and cannot be influenced by the policymaker or decision-maker at different levels of growth or income distribution, this SWF is not flexible. The marginal welfare change with respect to mean income, in this case, is (1-*G*) which is a constant. In this perspective, for any inter-sector comparison, this SWF will always be biased in favour of more advanced economic sectors with higher per capita incomes and relatively low inequality. Equally, in the case of an international comparison, this SWF will always be unfair or biased in favour of developed countries with relatively high per capita incomes and relatively low inequality.

Conscious of these short comings of the Sen-SWF, Mukhopadhaya (2001a) proposed a general and flexible SWF for policy mediation by incorporating a trade-off parameter, β, between efficiency and equity. This way, we have:

$$W = \mu^{\beta}(1 - G) \qquad \forall\, 0 \leq \beta \leq 1 \tag{6.4}$$

[77] Note that all utilitarian SWFs are Paretian.

[78] Sen (1976) shows that this index, calculated from the income distribution, 'is a sub-relation of social preference relation defined in the distribution of commodities'. Alternatively, Yitzhaki (1979, 1982) showed that this index could be based on relative deprivation. Sheshinski (1972) also derived this index from the Gini coefficient.

Equation (6.4) is non-Paretian if β is less than 1 (since when $\beta = 1$, the modified SWF becomes the Sen SWF, which is Paretian). With equation (6.4), social welfare will decrease if the benefits of a growth process only go to the richest person in the society (for $\beta < 1$). When $\beta = 0$, the SWF becomes a function of inequality (G) regardless of the level of efficiency of the population (Mukhopadhaya, 2001b).

With this modified SWF, the rate of substitution between inequality and efficiency at a constant welfare level is given by:

$$\frac{\partial G}{\partial \mu} = \left(\frac{1-G}{\mu}\right)\beta \tag{6.5}$$

With variable values of β the decision-maker now has the choice of β depending on whether she is more income-seeking than being inequality averse. Thus, the SWF is now flexible with respect to the trade-off between efficiency and equity. If the decision-maker considers efficiency to be more important than equality, she will choose a higher value of β (close to one). In the contrary, if she is more inequality averse than income-seeking, she will go for a lower value of β (close to zero).

This SWF may be criticized on the basis of its unfairness in favour of the poor in the population. For instance, if the income of the poorest person increases irrespective of the values of β and G, social welfare must increase. In this perspective, this SWF has some Rawlsian flavour; according to which an increase in the richest person's (sector's) income does not change social welfare. Fortunately enough, in our modified SWF, with $\beta < 1$, an increase in the income of the richest person (or sector) causes social welfare to decrease. Thus, the class of SWF (with $\beta < 1$) is non-Rawlsian and also non-Paretian.

6.4. Methodology

Recall that our objective in this chapter is to evaluate the share of each regressed-income component in social welfare and tease-out the effect of growth in the mean value of each regressed-income component on total social welfare of private sector households. We are equally interested in knowing how each of our employment sectors under consideration

contribute in determining social welfare and how income growth in each sector affects total social welfare. To this end, we adopt the frameworks proposed in Mukhopadhaya (2001b) and Mukhopadhaya (2001a).

6.4.1. Decomposition of Social Welfare (W) by Regressed-Income Components

Our new analytical perspective to social welfare consists to use information contained in an income-generating equation to decompose social welfare. We propose to call this approach *'regression-base perspective to social welfare'*.[79] The regressed-income components or endowments retained here are direct decent employment, human capital, financial capital, household demographics, and indirect decent employment endowments. These regressed-income components will be further discussed below. We hinge on the framework proposed in Mukhopadhaya (2001b) to implement this analytical perspective.

According to Rao (1967), the Gini coefficient (G) of income inequality can be decomposed by components of income as follows:

$$G = \sum_{m=1}^{M} S_m C_m \tag{6.6}$$

Where $S_m = \frac{\mu_m}{\mu}$ stands for the factor share of the regressed-income component ; C_m is the concentration coefficient of the regressed-income component m; and M is the total number of regressed-income components. The concentration coefficient of the regressed-income component is calculated using the same formula as the Gini coefficient; the ranking will remain the same as in the case of the Gini coefficient[80]. The deviation of the Gini coefficient from the concentration coefficient, $C_m - G$, represents the direction of inequality augmenting or reducing effect of the regressed-income component m. Essentially, if certain regressed-

[79] This approach to social welfare that springs from a regression analysis is first of its kind; it has seen light thanks to this thesis. The appellation 'regression-based perspective to social welfare' is born in this thesis.

[80] When a specific factor income is arranged in ascending order of total income and the proportion of factor incomes are plotted against the proportions of income units, we get the concentration curve. One minus twice the area of the concentration curve is the concentration index. Unlike Lorenz curve, the concentration curve may lie above the 450 diagonal and in that case the concentration index will be negative. The value of the coefficient lies between (-1, 1) and, most importantly, it satisfies the Pigou-Dalton condition of transfer.

income components accrue relatively more to the poor households than the rich in the private sector (for example programmes like free education for all that favour the poor) the concentration coefficient will be negative. Conversely, if the regressed-income factor accrues more to the rich households (say investment income or loans) the concentration coefficient would be positive and will exceed the value of the Gini coefficient. This way, if the concentration coefficient of any regressed-income component is higher (lower) than the overall Gini, the component has an inequality augmenting (reducing) effect. Thus, an extra CFA franc directed to the component will increase (decrease) overall inequality.

According to Mukhopadhaya (2001b), total social welfare can be represented as a weighted sum of individual welfare of various regressed-income components as follows:

$$W = \sum_{m=1}^{M} a_m W_m \tag{6.7}$$

Where W_m is the welfare of the m^{th} regressed-income component and a_m is the weight attached to the individual component's welfare.

The generalised SWF can be represented as the weighted sum of individual component's welfare following the steps below. From equations (6.6) and (6.7), total social welfare, W, is given by the sum of the product between the weights attached to the M regressed-income components and the welfare of these components. Thus, we have:

$$\begin{aligned}
W &= \mu^{\beta}(1-G) \\
&= \mu^{\beta}\left(1-\sum_{m=1}^{M}\frac{\mu_m}{\mu}C_m\right) \\
&= \mu^{\beta}-\sum_{m=1}^{M}\frac{\mu_m}{\mu^{1-\beta}}C_m \\
&= \sum_{m=1}^{M}\frac{\mu_m}{\mu}\mu^{\beta}-\sum_{m=1}^{M}\frac{\mu_m}{\mu^{1-\beta}}C_m \quad (\text{as } \sum_{m=1}^{M}\frac{\mu_m}{\mu}=1) \\
&= \sum_{m=1}^{M}\frac{\mu_m}{\mu^{1-\beta}}(1-C_m) \\
&= \sum_m\left[\left(\frac{\mu_m}{\mu}\right)^{1-\beta}\right]\left[\mu_m^{\beta}(1-C_m)\right] \\
&= \sum_m a_m W_m
\end{aligned} \tag{6.8}$$

Where $a_m = \left(\frac{\mu_m}{\mu}\right)^{1-\beta}$ is the weight attached to the regressed-income component or endowment m and $W_m = \mu_m^{\beta}(1 - C_m)$ is the welfare that accrues to that regressed-income component.

Thus, the relative welfare due to this component is written as follows:

$$\frac{a_m W_m}{W} = \frac{\left[\left(\frac{\mu_m}{\mu}\right)^{1-\beta}\right]\left[\mu_m^{\beta}(1-C_m)\right]}{\mu^{\beta}(1-G)} = \left(\frac{\mu_m}{\mu}\right)\left(\frac{1-C_m}{1-G}\right) \quad (6.9)$$

When we are interested in measuring the relative contribution of a component to total social welfare (W), the question of trade-off between efficiency and equity does not arise; reason why β does not appear in equation (6.9). In equation (6.9), the last term in parenthesis on the right hand side, $\frac{1-C_m}{1-G}$, has an attractive economic interpretation and can be called 'relative equity of component m'. If the value of the relative equity of component m is greater (less) than 1 (one), the component will have an inequality reducing (augmenting) effect. Notwithstanding, the relative welfare share accruing to a regressed-income component depends on the relative mean income $\left(\frac{\mu_m}{\mu}\right)$ and the relative equity of the component (see equation 6.9).

The effect of growth (that is, growth in the mean value) in a component on the total social welfare of the population is an important policy question. It is answerable here by determining the elasticity of total social welfare with respect to a change in the mean amount or value of the component as in equation (6.10) below:

$$\epsilon_m^W = \frac{\partial W/W}{\partial \mu_m/\mu_m} = \left(\frac{\partial W}{\partial \mu_m}\right)\left(\frac{\mu_m}{W}\right)$$
$$= \left(\frac{\mu_m}{\mu}\right)\left(\frac{1-C_m}{1-G}\right) + \left(\frac{\mu_m}{\mu}\right)(\beta - 1) \quad (6.10)$$

Equation (6.10) is the elasticity of total social welfare, W, with respect to the a change in the mean amount of component m. This elasticity attempts to paint a scenario where this change is distributed proportionately among all private sector individuals so that no change occurs in terms of inequality. Importantly, this elasticity equals the relative share of the component when $\beta = 1$ (this is simply because the second term on the right hand side vanishes for $\beta =$

1). When $\beta < 1$, the elasticity is less than the relative share; since the second term on the right hand side becomes negative. If the factor share of the component is high, the second term of equation (6.10) will be large and will only reduce the elasticity more. Essentially, it is also true that if the factor share of the component is small the reducing effect will be small.

These elasticities have important policy guides; in comparing the elasticities of the different components, a policymaker or decision-maker may use her judgment for an equitable policy mix. With this procedure, we will be able to assess the effects of growth in decent employment (or the effects of an additional CFA franc directed to boost decent employment) on total social welfare. Equally, we will provide the decision-maker with sound knowledge on the effects of growth in human capital endowment, improvement in credit access, as well as better family planning schemes on total social welfare of private sector households in Cameroon. In this context, policy targeting to improve social welfare may prioritise components for which both the relative share of welfare and the elasticity with respect to the mean amount are high.

6.4.2. Decomposition of Social Welfare (W) by Sectors of Employment

In this section, the key interest is to evaluate the share of each employment sector (say informal/formal private and farm/nonfarm private sectors) in total social welfare and investigate the elasticity of social welfare with respect to economic growth in each of these sectors. According to Mukhopadhaya (2001a), total social welfare can be expressed as a weighted sum of individual welfare of various employment sectors as follows:

$$W = \sum_{k=1}^{K} a_k W_k \qquad (6.11)$$

Where W_k is the welfare of the kth sector of employment; a_k is the weight attached to the individual sector welfare; and we have K number of sectors. Here, k ranges from 1 to 2 (say 1 = informal and 2 = formal private on the one hand, or 1 = farm and 2 = nonfarm private on the other hand). This is because each set makes-up the whole private sector.

Employing the Podder method, the Gini coefficient can be decomposed by sectors as follows (Podder, 1993):

$$G = \sum_{k=1}^{K} \left(\frac{n_k}{n}\right)\left(\frac{\mu_k}{\mu}\right) C_k \qquad (6.12)$$

Where C_k is the concentration coefficient of sector k as defined in Podder (1993), n_k is the number of workers in sector k and μ_k is that sector's mean income. Again, n and μ represent the total size and mean income of the private sector population respectively. For Mukhopadhaya (2001a), since the concentration coefficient, C_k, lies in the interval (-1, 1) and satisfies the Pigou-Dalton condition of progressive transfer from a higher ranked individual to a lower ranked individual, it serves as an indicator of inequality of that group or sector.

To execute the Podder method, household per capita income is arranged in ascending order from the lowest to the highest. The resultant vector (say Z for example) contains n values or elements with the first element being the poorest household's per capita income and the last element is that of the richest household. Now, dividing the entire private sector population into K sectors, leads us to K additional vectors (say $Z(k)$ for example) of per capita income; one for each sector. Given that the number of workers or household heads in each sector (n_k) is smaller than the total n for the overall private sector and that in the vector $Z(k)$, the per capita income of the n_k workers are to be placed in positions exactly corresponding to their positions in the overall private population vector Z, we are faced with the problem of filling the sector vectors. Naturally, the horizontal summation of the vectors $Z(k)$ should equal the vector Z, thus the rest $n - n_k$ places in $Z(k)$ are filled by $n - n_k$ zeros.

To obtain the share of welfare accruing to sector k, we may simply replace m by k in equation (6.8) above and multiply the expression by the population share of sector k $\left(\frac{n_k}{n}\right)$. Thus, we have:

$$W = \sum_k \left[\left(\frac{n_k}{n}\right)\left(\frac{\mu_k}{\mu}\right)^{1-\beta}\right]\left[\mu_k^{\beta}(1 - C_k)\right]$$
$$= \sum_k a_k W_k \qquad (6.13)$$

Where $a_k = \left(\frac{n_k}{n}\right)\left(\frac{\mu_k}{\mu}\right)^{1-\beta}$ is the weight attached to sector k and $W_k = \mu_k^{\beta}(1 - C_k)$ is the welfare of sector k.

From equations (6.11) and (6.13), the relative welfare share due to sector k is written:

$$\frac{a_k W_k}{W} = \frac{\left[\frac{n_k}{n}\left(\frac{\mu_k}{\mu}\right)^{1-\beta}\right]\left[\mu_k^{\beta}(1-C_k)\right]}{\mu^{\beta}(1-G)} = \left(\frac{n_k}{n}\right)\left(\frac{\mu_k}{\mu}\right)\left(\frac{1-C_k}{1-G}\right) \tag{6.14}$$

The last term in parenthesis of the right hand side of equation (6.14) that is, $\frac{1-C_k}{1-G}$, is called the 'relative equity of sector k'. If the concentration coefficient of any sector is higher (lower) than the overall Gini coefficient, that sector has inequality augmenting (reducing) effect. This way, if the value of the relative equity of sector k is greater (less) than 1 (one), the sector has inequality reducing (augmenting) effect. Hence, the relative share of total welfare of any sector depends on: (i) its share of income; (ii) its relative equity; and (iii) its population share (see equation 6.14).

Remark that the relative welfare share of the k^{th} sector equals the elasticity of social welfare with respect to equity (that is $1 - C_k$) of that sector, holding its mean income unchanged (Mukhopadhaya, 2001a for details). Therefore, another interpretation of relative welfare share of a sector k is the elasticity of social welfare with respect to equity of that sector.

Given our interest to find the target sector for policy prioritisation, it may be further important to derive the elasticity of social welfare with respect to a proportional growth in mean income for each sector, maintaining income distribution constant. This elasticity if given by:

$$\epsilon_k^W = \frac{\partial W/W}{\partial \mu_k/\mu_k} = \left(\frac{\partial W}{\partial \mu_k}\right)\left(\frac{\mu_k}{W}\right)$$
$$= \left(\frac{n_k}{n}\right)\left(\frac{\mu_k}{\mu}\right)\left(\frac{1-C_k}{1-G}\right) + \left(\frac{n_k}{n}\right)\left(\frac{\mu_k}{\mu}\right)(\beta - 1) \tag{6.15}$$

Note that equation (6.15) could be also obtained by replacing m by k in equation (6.10) and multiplying its expression by the population share of the sector.

Discussions with respect to β are same as in the proceeding paragraph under equation (6.10). Like in the case with regressed-income components, the target sector would be that for which both relative share of welfare and elasticity with respect to mean income are high. That is, the sector where relative equity is high and relative income share is substantial.

6.5. Data used

The variables used in this chapter are solely inspired from the analysis in chapter 4. However, in the analysis of social welfare here, we preferably considered the complement of our vulnerable employment indicator to obtain a decent employment indicator. Importantly, since social welfare, characterised by efficiency and equity, is 'a utility' and not 'a tax', it is more appropriate for us to deal with decent employment and not vulnerable employment which is like a 'disutility' or 'a tax' to individuals. Now with decent employment, we estimated its reduced form and predicted the residual of decency and the interaction term (interaction between predicted residual of decency and decency indicator) to respect our preferred estimation approach (control function approach) as per chapter 4.

Table 6.1. Combined Income Components

Combined Income Components	Income Sources
Direct decent employment endowment	Decent employment indicator
Human capital endowment	Experience, experience square; years of schooling; and head of enterprise.
Financial capital endowment	Access to micro-credit
Household demographics	Children below five years old; currently married; male gender type; and urban residency
Indirect decent employment endowments	Predicted residual of decency and the interaction term (interaction between predicted residual of decency and decency indicator)
Other income sources	Residual term (sources not captured in the structural equation)

Source: Compiled by author

We then performed another structural regression where our vulnerable employment indicator is replaced by its complement. Here this structural regression is a simple linear model of the form: $Y = X\beta + \varepsilon$[81], since we are interested in obtaining income components. Given that the constant is not an income source per se, this regression was done without the constant term. Thereafter, we combine the regressed-income sources as in Table 6.1 to obtain the following components or endowments: direct decent employment endowment; human capital

[81] Y is household per capita monthly income, X is the vector of explanatory variables, β the vector of parameters and ε is the residual term of the structural equation.

endowment; financial capital endowment; household demographics; indirect decent employment endowment; and other income sources[82].

6.6. Empirical Results

6.6.1. Descriptive Statistics

The descriptive statistics of the combined income components or endowments of the dependent variable (per capita household monthly income) are submitted in Table 6.2.

Table 6.2. Descriptive Statistics of Combined Income Components

Variables	Number of observations	Mean	Standard deviation
Combined income components			
Direct decent employment endowments	9219	8368.495	11945.15
Human capital endowments	9219	10719.13	4493.137
Financial capital endowments	9219	414.958	641.0229
Household demographics	9219	2176.465	4785.521
Indirect decent employment endowments	9219	-596.530	8185.521
Other income sources	9219	427.312	17452.79
Total income	***9219***	***21509.83***	***20357.37***

Source: Computed by author

From Table 6.2, it is evident that in the private sector, human capital endowments have the highest share of the dependent variable, followed by direct decent employment endowments; this in the light of their means. However, household demographics and financial capital endowments are also potent when it comes to private sector household income. The negative mean value of indirect decent employment endowments is difficult to explain. Notwithstanding, it could be attributed to very low or deteriorating bargaining power of working conditions as well as the worsening inability to manage household shocks (unemployment, birth) among private sector households. These unobserved factors (bargaining power and ability to manage household shocks) as tracked by the residual of decency are expected to boost the household head's employment decency and hence income, if well handled. They can also dilute household income if they are lacking; reason why we have a negative mean value of indirect decent employment endowments.

[82] See appendix 6.1 for the regression results and a comprehensive note on generating and combining regressed-income sources.

6.6.2. Regression-based Analytical Perspective of the Generalised Class of Sen-SWF

6.6.2.1. Decomposition of the Generalised Class of Sen-SWF by Regressed-Income Components

Table 6.3 submits the necessary statistics to serve in the decomposition of total private sector welfare by regressed-income components or endowments. The first and second columns present the mean of each regressed-income component and its share in private sector total mean income and the last column hosts their concentration coefficients. The share of human capital endowments in total mean income is highest at about 49.8%, followed by that of direct decent employment endowment which stands at 38.9%. The shares of the other endowments in total mean income are marginal and can come in the following order: household demographics (10.1%); other income sources (2%); financial capital endowment (1.9%); and indirect decent employment endowments (-2.7%).

Table 6.3: Factor Shares of Income Components and Concentration Coefficients

Components	Mean value μ_m	Factor shares $\frac{\mu_m}{\mu}$	Concentration coefficients C_m
Direct decent employment endowment	8368.50	0.389	0.250
		(0.012)	(0.012)
Human capital endowment	10719.13	0.498	0.091
		(0.009)	(0.006)
Financial capital endowment	414.96	0.019	0.035
		(0.001)	(0.034)
Household demographics	2176.47	0.101	0.567
		(0.007)	(0.069)
Indirect Decent employment endowment	-596.53	-0.027	0.933
		(0.009)	(0.244)
Other income sources	427.31	0.020	0.324
		(0.014)	(7.087)
Overall private sector	21509.83	1.000	0.380*
		(0.000)	(0.006)

Source: Calculated by author from CHCS III Survey Data using DASP 2.1 Software for Distributive Analysis

*Note: * this is the Gini coefficient and standard errors are in parentheses.*

The Gini coefficient of total private sector household per capita income is estimated at 0.38 (Table 6.3). The values of the concentration coefficients of direct decent employment, human capital, financial capital endowments, and other income sources are less than the overall Gini coefficient, illustrating their inequality-reducing effects. However, it should be noted that good working conditions (direct decent employment), higher education and training facilities

(human capital) as well as access to micro-credit (financial capital) accrue relative more to the rich or privileged households than the poor or underprivileged in the private sector; reason why the values of their concentration coefficients though less than the Gini are positive. This is indication that though they have inequality-reducing effects, policy measures driven in their directions should consider their relative disparities between the rich and the poor private sector households in order to better tap these effects (inequality-reducing effects). These policy measures should ensure a level playing ground with equal opportunities.

In a nutshell, the values of the concentration coefficients of household demographics and indirect decent employment endowment are in excess of the Gini coefficient, indicating their inequality-augmenting effects. Concerning household demographics, this is implication that family planning measures (like birth control to target the number of young children in households) and geographic considerations (zone of residence) be made part and parcel of policy arrangements interested to affect inequality. For indirect decent employment, the very high value of its concentration coefficient indicates that the power to bargain better or good working conditions and the ability to manage household shocks (like unemployment and birth) accrue overwhelmingly to the rich households in the private sector[83]. This constitutes a major call for attention from trade unions and other bodies (government institutions, ILO just to mention a few) that militate to better working conditions of private sector workers or household heads.

Table 6.4 presents social welfare generated by regressed-income components, that is, social welfare attributable to each regressed-income endowment across the parameter $\beta \in [0,1]$. An equity seeking decision-maker will prefer $\beta = 0$ which sidelines the effects of mean incomes on social welfare and only focuses on equity. In this perspective, financial capital endowment is classified first followed closely by human capital and direct decent employment endowments in terms of social welfare. Thus, this decision-maker who is absolutely equity seeking may lay more emphasis on micro-credit access, education and training programmes, better working conditions as well as household demographics to obtain commendable social welfare outcomes. However, in a situation of limited resources, we may advise her to give

[83] Recall that indirect decent employment is standing to track the effects of unobservables like bargaining power for working conditions and ability to manage household shocks in our reduced-form decent employment equation.

priority to financial capital, human capital and direct decent employment endowments in that order.

Table 6.4: Decomposition of the Generalized Social Welfare Function by Regressed Income Components

	$W_m(\beta=0)$	$W_m(\beta=0.5)$	$W_m(\beta=0.75)$	$W_m(\beta=1)$
Direct decent employment endowment	0.75	68.61	656.22	6276.38
Human capital endowment	0.909	94.11	957.60	9743.69
Financial capital endowment	0.965	19.66	88.72	400.44
Household demographics	0.433	20.20	137.98	942.41
Indirect decent employment endowment	0.067	-	-	-39.97
Other income sources	0.676	13.97	63.53	288.86
Total social welfare	*0.62*	*90.93*	*1101.21*	*13336.09*

Source: Calculated from CHCS III Survey Data using DASP 2.1 Software for Distributive Analysis. W_m is the welfare share of endowment m

Note: the mean of 'Indirect decent employment endowments' is negative and the square root of a negative number is undefined; reason why we have undefined cells at the levels of $\beta=0.5$ and 0.75.

If the decision-maker mediates 50:50 between efficiency and equity ($\beta=0.5$), then human capital endowments are ranked first in terms of social welfare, with a numerical value in excess of total social welfare and it is followed by direct decent employment endowments. In this case, financial capital endowments rank fourth after household demographics in the third position. Thus, a decision-maker who gives the same degree of importance to efficiency and equity considerations in the quest to improve social welfare may be encouraged to prioritise policy measures that boost human capital and improve working conditions of household heads. This observation also holds for values of the parameter $\beta>0.5$ ($\beta=0.75$ and 1). Thus, an efficiency seeking policymaker may choose interventions to improve human capital and working conditions.

Importantly, when $\beta=1$, we have the Sen SWF, which blows the efficiency consideration over the equity consideration. With these findings, we can observe that changes in $\beta>0$ are not sensitive to the ranking of regressed income-components (Table 6.4). This observation is indicative of the trading of equity for efficiency as the parameter, β, is brought in. This way, efficiency considerations are more vital than equity considerations in determining social welfare. This finding verifies the first hypothesis in this chapter.

Table 6.5: Contributions of Regressed-Income Endowments to Social Welfare and its Components

	Factor share, $\left(\frac{\mu_m}{\mu}\right)$	Relative equity $\left(\frac{1-C_m}{1-G}\right)$	Relative share of social welfare, $\left(\frac{a_m W_m}{W}\right)$
Direct decent employment endowment	0.389	1.210	0.470
Human capital endowment	0.498	1.466	0.730
Financial capital endowment	0.019	1.556	0.029
Household demographics	0.101	0.698	0.070
Indirect decent employment endowment	-0.027	0.108	-0.003
Other income endowments	0.019	1.090	0.021

Source: Calculated from Table 6.3 using Excel

6.6.2.2. Relative Contributions of Regressed-Income Components to Social Welfare

Table 6.5 hosts the relative share of income, the relative equity, and the relative share of social welfare for each regressed-income component. The values of the relative equity of direct decent employment, human capital, and financial capital endowments are greater than one, further indicating that these components or endowments have inequality-reducing effects. This is implies that if an extra CFA franc goes to boost decent employment, and if proportionately distributed, inequality will reduce. This finding is in tandem with our fourth research hypothesis. Worthy to note is also the observation that household demographics and indirect decent employment endowments are inequality-augmenting; since the values of their relative equities fall below unity. These observations further confirm the analysis done so far.

In Table 6.5, the relative share of human capital endowments to overall private sector social welfare is outstanding, followed by that of direct decent employment. This result validates our second hypothesis of work in this chapter. Human capital alone accounts for about 73% and direct decent employment about 47%. Household demographics make about 7%, financial capital about 3%, other income sources about 2.1% while indirect decent employment endowments marginally dilutes overall social welfare by about 0.3%. These relative welfare shares are also interpreted as the elasticities of social welfare with respect to equity $(1 - C_m)$, maintaining the mean value of the component unchanged (Mukhopadhaya (2001a). Thus, policy efforts that focus on the twin goal of improving equality and boosting overall welfare among private sector household heads or workers are advised to prioritise human capital and direct decent employment endowments in their policy menu.

6.6.2.3. Elasticities of Social Welfare with respect to Growth in Regressed-Income Components

Table 6.6 addresses the elasticity of social welfare with respect to a change in the mean value of each income component for different values of β. These elasticities identify quantitatively the expected change in total welfare for a 1% increase in the mean amount of a given regressed-income endowment (apportioned proportionately among all private sector individuals so that no change occurs in terms of inequality). In Table 6.6, this elasticity is highest with human capital endowment across the different values of the parameter, β. This finding is in tandem with our third hypothesis which supposes that growth in human capital endowment produces the highest effects on social welfare. The elasticity of welfare with respect to direct decent employment endowment ranked second after human capital. This means that if an extra CFA franc goes to boost working conditions and is distributed proportionately to all private sector workers or household heads, social welfare will increase considerably. This finding verifies our fourth hypothesis of work.

Table 6.6: Elasticity of Social Welfare with respect to a Change in the Mean Value of each Regressed-Income Endowment

	$\epsilon_{\mu_m}^{W}(\beta = 0.5)$	$\epsilon_{\mu_m}^{W}(\beta = 0.75)$	$\epsilon_{\mu_m}^{W}(\beta = 0.9)$
Direct decent employment endowment	0.276	0.373	0.432
Human capital endowments	0.481	0.606	0.680
Financial capital endowment	0.020	0.025	0.028
Household demographics	0.020	0.045	0.060
Indirect decent employment endowments	0.011	0.004	0.000
Other income endowments	0.011	0.016	0.019

Source: Calculated from Tables 6.3 and 6.5 using Excel. $\epsilon_{\mu_m}^{W}$ is the elasticity of social welfare (W) with respect to a change in the mean value of an endowment or a component (μ_m)

The numerical values of these elasticities are non-negligible for financial capital endowments and household demographics, but very low with indirect decent employment endowment for all values of β. Thus, a decision-maker who is either midway between efficiency and equity ($\beta = 0.5$) or more efficiency seeking than inequality averse ($\beta = 0.75$ and 0.9) in the quest to improve social welfare, may be advised to prioritise human capital and direct decent employment endowments in a situation of tight budgetary resources. The prominent elasticities of welfare registered with human capital and direct decent employment

endowments are attributable more to total income share than to relative equity. This is because their rankings in terms of elasticity mimic that in terms of income share and not relative equity. This finding further substantiates our first hypothesis of study. In terms of income share, human capital ranks first and direct decent employment comes second; obeying their elasticity rankings, whereas in terms of relative equity, they come in the second (human capital) and third (direct decent employment) positions after financial capital endowment (Table 6.6). Thus, if target endowments or components were needed for policy purpose, they will be human capital and direct decent employment.

Table 6.7: Sectoral Population Shares, Income Shares and Concentration Coefficients

Sectors	Mean income μ_k		Population shares $\frac{n_k}{n}$	Income shares $\frac{\mu_k}{\mu}$		Concentration coefficients C_k	
	With D	*Without D*		*With D*	*Without D*	*With D*	*Without D*
Formal-private	43586.31	1807.96	0.075	2.026	0.132	0.407	0.871
			(0.005)	(0.010)	(0.011)	(0.013)	(0.017)
Informal	19707.84	11929.9	0.924	0.916	0.868	0.353	0.475
			(0.005)	(0.010)	(0.011)	(0.003)	(0.006)
Overall private	*21509.83*	*13737.86*	*1.000*	*1.000*	*1.000*	*0.380**	*0.527**
			(0.000)	*(0.000)*	*(0.000)*	*(0.006)*	(0.871)
Nonfarm-private	30346.82	7017.70	0.374	1.410	0.511	0.367	0.690
			(0.016)	(0.018)	(0.019)	(0.006)	(0.011)
Farm	15903.95	6528.27	0.625	0.739	0.475	0.316	0.345
			(0.016)	(0.018)	(0.019)	(0.004)	(0.012)
Overall private	*21509.83*	*13737.86*	*1.000*	*1.000*	*1.000*	*0.380**	*0.527**
			(0.000)	*(0.000)*	*(0.000)*	*(0.006)*	*(0.007)*

Source: Calculated from CHCS III Survey Data using DASP 2.1 Software for Distributive Analysis. Measure of income is household per capita monthly income

*Note: * this is the Gini coefficient; with D and without D represent with employment decency and without employment decency, respectively.*

6.6.3. Sectoral Analysis of the Generalised Class of Sen-SWF

6.6.3.1. Decomposition of the Generalised Class of Sen-SWF by Employment Sectors

Table 6.7 hosts the statistics vital for social welfare decomposition by sectors of employment. These statistics indicate that the mean income among formal-private sector households as opposed to that among informal sector households is in excess of the overall private sector mean income, with employment decency. The mean income when calculated without

decency[84] drops considerably among the sectors considered. Equally, the mean income among households employed in nonfarm-private activities as opposed to that of those in farm activities is well over the overall private sector mean income. A greater proportion of private sector household heads are employed in the informal sector compared to those in formal private employment. The informal sector employs about 92% of private sector workers while the formal-private sector holds only 7.5% of these private sector workers.

Table 6.7 also show that majority of private sector workers are in farming activities compared to nonfarm-private activities. The farm sector harbours close to 62.5% of private sector household heads and the nonfarm-private sector employs about 37.5% of these private sector workers. From the above analysis, with respect to mean income and population shares, we observe that a large proportion of private sector household heads earn averagely low; for instance close to 92% are stocked in informal activities where the average monthly income of about 19 700 CFA francs is relatively low.

Table 6.7 also presents the numerical values of the concentration coefficients for the sectors of employment considered for this analysis as well as the overall Gini coefficient. It indicates that the value of the concentration coefficient for the formal-private sector is in excess of the overall Gini coefficient, illustrating that the formal-private employment sector has inequality augmenting potentials. In the contrary, the value of the concentration coefficient in the informal sector is lower than the Gini coefficient, indicating that the informal sector has an inequality-reducing effect. These observations are maintained when total income is measured with and without employment decency. These findings validate the fifth hypothesis which states that the formal-private employment sector is more inequality-augmenting than the informal sector.

In a nutshell, for income with decency, the numerical value of the concentration coefficients in the farm and nonfarm-private sectors are all lower than the overall Gini coefficient, implicating that farm and nonfarm employment sectors both have inequality-reducing effects. This finding fails to verify the hypothesis that nonfarm-private employment sector is inequality-augmenting while the farm sector is inequality-reducing. However, this hypothesis (hypothesis 5) is only relatively verified in that the farm sector with a concentration

[84] Income without employment decency is calculated by simply removing decent employment related variables from total income, that is, '*total income - (direct + indirect decent employment endowments)*'.

coefficient of 0.316 is more inequality-reducing than the nonfarm private sector with a concentration coefficient of 0.367. This way, farm and nonfarm employment sectors can be targeted disproportionately in the quest to reduce income inequality or preserve a degree of equality in overall income. Nevertheless, when income is measured without decency, this hypothesis is verified. Interestingly, when income is measured without decency, all the concentration coefficients of the employment sectors go up and overall inequality also increases. This is further indication of the inequality-reducing potentials of good working conditions.

Hinging on the above findings, it is evident that any extra effort to improve income in the formal private sector will only help to increase overall private sector income inequality substantially. In the contrary, the same extra effort if directed to the informal and farm sectors will produce marked results in terms of dampening overall private sector income inequality. Worthy of note, the observation that none of the employment sectors (informal/formal private and farm/nonfarm private) registered a negative concentration coefficient is illustrative of a relative degree of homogeneity of the overall private sector.

Table 6.8: Sectoral Decomposition of the Generalised Social Welfare Function

Sectors	$W_k(\beta=0)$		$W_k(\beta=0.5)$		$W_k(\beta=0.75)$		$W_k(\beta=1)$	
	With D	*Without D*	*With D*	*Without D*	*With D*	*Without D*	*With D*	*Without D*
Formal-private	0.593	0.127	123.803	5.400	1788.823	35.212	25846.682	229.610
Informal	0.647	0.525	90.829	57.343	1076.177	599.289	12750.972	6263.198
Overall social welfare	*0.62*	*0.473*	*90.931*	*55.440*	*1101.208*	*600.206*	*13336.095*	*6498.007*
Nonfarm-private	0.633	0.300	110.271	25.131	1455.421	230.021	19209.537	2105.31
Farm	0.684	0.655	86.260	52.922	968.690	475.707	10878.302	4276.016
Overall social welfare	*0.62*	*0.473*	*90.931*	*55.440*	*1101.208*	*600.206*	*13336.095*	*6498.007*

Source: Calculated from CHCS III Survey Data using DASP 2.1 Software for Distributive Analysis. W_k is the welfare share of sector k. Measure of income is household per capita monthly income

Note that with D and without D represent with employment decency and without employment decency, respectively.

Table 6.8 submits results of the sectoral decomposition of the generalise social welfare for values of the parameter $\beta \in [0,1]$. A complete equity-seeking decision-maker will choose

$\beta = 0$, which does not consider the effects of mean incomes on social welfare and only emphasises on equality. In this case, the informal employment sector is ranked first in terms of social welfare and the formal-private employment sector comes after. This finding is maintained when social welfare is measured with and without employment decency. However, as the importance of efficiency in our welfare function increases ($\beta > 0$), the formal-private sector is now ranked first in terms of social welfare measured with decency. This switch-over between the informal and formal-private sectors as β changes have interesting implications for policymaking. First, this is further illustration that the informal sector as opposed to the formal-private sector in Cameroon is more equity enhancing. Second, it is clear indication that the formal-private employment sector, though inequality-augmenting, should be the priority in social welfare maximisation if the decision-maker is either halfway between efficiency and equity ($\beta = 0{,}5$) or is more efficiency seeking than inequality averse ($\beta = 0{,}75\ and\ 1$). In such a situation, limited budgetary resources should be channelled more to the formal-private sector to achieve better social welfare outcomes. Notwithstanding, if employment decency was to be removed from social welfare enhancing measures, we would advise the decision-maker to channel limited budgetary resources to the informal sector.

A decision-maker may also want to consider the ordering of farm and nonfarm-private employment sectors in terms of social welfare maximisation. An absolute equity-seeking decision-maker ($\beta = 0$) will rank the farm sector first in terms of social welfare, with employment decency, compared to the nonfarm-private sector. Essentially, as the importance of efficiency (mean income) in our social welfare increases ($\beta > 0$), the nonfarm employment sector now takes the first position. Thus, an efficiency seeking decision-maker is encouraged to prefer the nonfarm-private employment sector while an equity-seeking decision-maker is encouraged to concentrate efforts in the farm employment sector. However, if employment decency was to be removed from social welfare enhancement, we may likely advise the decision-maker to direct limited budgetary resources to the farm sector, irrespective of the value of the parameter β. An interesting finding is that, when employment decency is not considered, social welfare across the parameter β and in all the sectors as well as at the overall level drops considerably. This further implies the social welfare enhancing potentials of good working conditions.

Table 6.9: Sectoral Decomposition of the Generalised Social Welfare Function

Sectors	Total income share, $\left[\left(\frac{n_k}{n}\right)\left(\frac{\mu_k}{\mu}\right)\right]$		Relative equity $\left(\frac{1-C_k}{1-G}\right)$		Relative share of social welfare, $\left(\frac{a_k W_k}{W}\right)$	
	With D	*Without D*	*With D*	*Without D*	*With D*	*Without D*
Formal private	0.152	0.010	0.956	0.268	0.145	0.003
Informal	0.846	0.802	1.044	1.110	0.883	0.890
Nonfarm private	0.527	0.191	1.021	0.634	0.538	0.121
Farm	0.462	0.297	1.103	1.385	0.510	0.411

Source: Calculated from Table 6.7 using Excel. Measure of income is household per capita monthly income

Note that with D and without D represent with employment decency and without employment decency, respectively.

6.6.3.2. Relative Contributions of Employment Sectors to Social Welfare

Table 6.9 presents the relative share of income, relative equity, and relative share of welfare for each sector of employment. The relative contribution of the informal sector in terms of total income share is outstanding compared to that of the formal private sector. The mean income share, with decency, is higher in the formal private sector, with a numerical value of 2.026, than in the informal sector, with a numerical value of 0.916 (Table 6.7). However, when we bring into the story the proportion of household heads that depend on these sectors for their livelihoods, we realise the overwhelming contribution of the informal sector in determining total income. The informal sector scores a numerical value of 0.846 in terms of total income share, with decency, compared to only 0.152 for the formal private sector. This marked contribution of the informal sector is maintained in the case of total income share without decency.

Concerning the farm and nonfarm-private sectors, the nonfarm-private sector while registering a higher mean income share, with decency, (a numerical value of 1.410) still maintains her position in terms of total income share (Tables 6.7 and 6.9). This is simply because this sector holds a significant portion of private sector individuals (more than 37%) as opposed to the above case where the formal-private sector employs only 7.5% and the informal sector about 92%. These observations offer lessons and also signals to decision-makers who most often than not only concentrate on mean income shares of sectors or regions and ignore the population effect or the capacity of these sectors or regions to reach people.

However, the formal sector looses this ranking when employment decency is removed. This is because when employment decency is removed, the informal sector now scores a higher mean income share compared to the formal sector.

Table 6.9 presents results for the relative welfare share for each sector of employment in the last column. Essentially, the relative welfare share in the informal employment sector is more than that in the formal-private sector. This finding, coined with results on mean income shares, indicates that higher mean income shares do not necessarily guarantee a higher share of social welfare because relative equity and population shares are also crucial. This finding is in tandem with the sixth hypothesis of study in this chapter. Baluch and Razi (2007) and Baye (2011), though focusing on regions, equally found the same results for Cameroon and Pakistan, respectively. Moreover, when measured with decency, the main contributing components of informal sector welfare share are relative equity and population share than mean income share. Conversely, the welfare share of the formal-private sector is overly attributable to mean income than relative equity and population share. Notwithstanding, when measured without decency, the main contributing components of informal sector welfare share are relative equity, mean income and population shares.

Table 6.9 also hosts the relative welfare shares for farm and nonfarm-private sectors. In terms of relative social welfare share, with decency, the nonfarm-private sector ranks first followed by the farm sector. The main contributing factor of nonfarm-private social welfare share is total mean income share than relative equity compared to the case of the farm employment sector, where relative equity and population shares are more crucial than mean income. However, when employment decency is not considered, the farm sector ranks first followed by the nonfarm sector. Concerning farm and nonfarm-private sectors, the decision-maker may be required to employ her judgement in promoting social welfare policy targeting; though the nonfarm sector is relatively more social welfare enhancing than the farm sector, the latter that holds the lion's share of the population is still very close to the former in terms of social welfare. The nonfarm-private sector registers a numerical value of 0.538 in terms of relative social welfare and the farm sector records a value of 0.510. Without replacing the decision-maker, we will encourage her to favour a policy-mix that leaves no sector indifferent.

Table 6.9 again submits relative equities for the different employment sectors in the second column. Recall that any employment sector with relative equity greater (less) than one has an

inequality-reducing (augmenting) effect. The informal sector, as opposed to the formal-private sector, registers a value of relative equity in excess of unity; further illustrating that this sector has inequality-reducing effect. In the contrary, the formal-private sector has numerical value of relative equity less than one, further indicating that this sector has inequality-augmenting effects. These findings are maintained in the cases with and without employment decency. These findings further verify our fifth hypothesis of study. In the case with decency, the farm and nonfarm employment sectors all registered a numerical value of relative equity greater than one, further illustrating their inequality-reducing potentials. However, in the case without decency, only the farm sector is inequality-reducing.

Table 6.10: Sectoral Elasticity of Social Welfare with respect to Mean Income growth

Sectors	$\epsilon_{\mu_k}^{W}(\beta = 0.5)$		$\epsilon_{\mu_k}^{W}(\beta = 0.75)$		$\epsilon_{\mu_k}^{W}(\beta = 0.9)$	
	With D	*Without D*	*With D*	*Without D*	*With D*	*Without D*
Formal private	0.069	-0.002	0.107	0.0005	0.130	0.002
Informal	0.460	0.489	0.672	0.689	0.799	0.810
Nonfarm private	0.275	0.026	0.407	0.073	0.486	0.102
Farm	0.279	0.263	0.394	0.337	0.463	0.381

Source: Calculated from Tables 6.7 and 6.9 using Excel. $\epsilon_{\mu_k}^{W}$ is the elasticity of social welfare (W) with respect to a change in the mean income of sector k (μ_k). Measure of income is household per capita monthly income

Note that with D and without D represent with employment decency and without employment decency, respectively.

6.6.3.3. Elasticities of Social Welfare with respect to Mean Income Growth in each Sector of Employment

Table 6.10 hosts the sectoral elasticities of social welfare with respect to mean income for different values of β. Recall that these elasticities depict the expected effect on total social welfare for a 1% increase in the mean income of a given sector (distributed proportionately among all private sector households so that no change occurs in terms of inequality). Generally, the expected effect on total social welfare for a 1% increase in the mean income of any employment sector is downsized when employment decency is removed. This indicates that in a situation of poor working conditions, the ability of income growth to enhance social welfare in any employment sector can be undermined. This elasticity is highest in the informal sector compared to the formal private sector for all values of the parameter β. This

finding is maintained as to whether employment decency is removed or not. This finding validates the seventh hypothesis of study which states that a proportionately distributed income growth in the informal employment sector is more welfare enhancing than the same growth in the formal private employment sector. This implies that an extra CFA franc that goes to the informal sector and is proportionately distributed to all households therein will increase total social welfare considerably. This result is true whether a decision-maker is midway between efficiency and equity considerations ($\beta = 0.5$) or whether she is more efficiency seeking than inequality averse ($\beta = 0.75$ *and* 0.9).

Concerning farm and nonfarm-private sectors, in the case with decency, a decision-maker who gives the same importance to efficiency and equity considerations ($\beta = 0.5$) should be indifferent between the two sectors in her policy menu. In other words, this decision-maker may usher the same policy resources to the farm and the nonfarm-private sectors of employment in her quest to boost social welfare. But when decency is removed, a decision-maker who is 50:50 between efficiency and equity considerations ($\beta = 0.5$) should channel limited resources to the farm sector. Nevertheless, if efficiency considerations grow in importance in her policy menu ($\beta = 0.75$ *and* 0.9), priority may be given to the nonfarm-private sector in her policy preference when decency is involved. However, it is worthy to note that the gap between their numerical elasticity values is not very significant; nonfarm-private sector (0.486) and farm sector (0.463). Thus, if target sectors were required for policy purpose, they will be the informal sector, as opposed to the formal sector, and the farm as well as the nonfarm-private sectors.

6.7. Concluding Remarks and Policy Implications

This chapter (chapter 6) allowed us to reconcile our thesis in the same framework that is, bringing together household income, inequality, regressed-income sources, and the employment sectors under consideration in the same framework based on social welfare. The chapter conducted the analysis of social welfare received by private sector households on the basis of mean income and income distribution. The chapter proposed a new analytical perspective of social welfare that decomposed it as a weighted sum of individual welfare of various regressed-income components or endowments. This way, the chapter employed the information contained in an income generating equation to account for total social welfare in the private sector in Cameroon. For this purposed, it combined the regressed-income sources

used in the previous chapters into the following endowments or components: direct decent employment, human capital, financial capital, household demographics, and indirect decent employment endowments. This chapter attempted to evaluate the share of each regressed-income component in social welfare and tease-out the effect of growth in each regressed-income component on total social welfare of private sector households. It went further to investigate how each of our employment sectors under consideration contribute in determining social welfare and how income growth, with and without employment decency, in each sector affects total social welfare.

The share of human capital endowments in total mean income was highest at about 49.8% followed by that of direct decent employment endowments which stood at 38.9%. Direct decent employments, human capital, and financial capital endowments were found to have inequality-reducing effects, as their concentration coefficients fell well below the overall Gini coefficient. Our analysis further noted that good working conditions (direct decent employment), education and training facilities (human capital) as well as access to micro-credit (financial capital) accrue relatively more to the rich or privileged households than the poor or underprivileged households in the private sector; reason why the values of their concentration coefficients though less than the Gini were positive. This finding indicated that policy measures focused on driving private sector working conditions, education and training facilities as well as improve micro-credit access should consider their relative disparities between the rich and the poor private sector households in order to better tap inequality-reducing effects. In the contrary, the values of the concentration coefficients of household demographics, indirect decent employment endowment and other income sources were in excess of the Gini coefficient, indicating their inequality-augmenting effects. This result implied that family planning measures (like birth control to target the number of young children in households) and geographical considerations (zone of residence) be made an essential part of policy arrangements geared at addressing inequality.

We found that for an equity seeking decision-maker who prefers $\beta = 0$, financial capital endowment was classified first followed closely by human capital and direct decent employment endowments in terms of welfare. This result implied that a decision-maker who is absolutely equity seeking may be encouraged to lay more emphasis on micro-credit access, education and training programmes as well as better working conditions to obtain commendable welfare outcomes. For a decision-maker who is midway between efficiency

and equity ($\beta = 0.5$), human capital endowments was ranked first in terms of social welfare, with a numerical value in excess of total welfare, and was followed by direct decent employment endowments. This finding implied that a decision-maker who gives the same degree of importance to efficiency and equity considerations in the quest to improve social welfare should be encouraged to prioritise policy measures that boost human capital and improve working conditions of household heads. This observation and policy implication was also maintained for values of the parameter $\beta > 0.5$ ($\beta = 0.75$ and 1). We found that changes in $\beta > 0$ were not sensitive to the ranking of regressed income-components and further indicated that efficiency considerations were more vital than equity considerations in determining social welfare. This finding verified the first hypothesis of this chapter.

In terms of relative social welfare share, human capital endowments registered the highest share to overall private sector social welfare, followed by that of direct decent employment. This result validated our second hypothesis of work in this chapter. Household demographics and financial capital also contributed positively in determining social welfare whereas indirect decent employment endowments and other income sources only helped to dilute overall social welfare. These findings again implied that policy efforts that focus on the twin goal of improving equality and boosting overall social welfare among private sector household heads or workers be advised to prioritise human capital and direct decent employment in their policy menu.

The elasticity of welfare with respect to human capital was highest across the different values of the parameter, β, confirming our third hypothesis. That of welfare with respect to direct decent employment ranked second after human capital. This finding indicated that if an extra CFA franc goes to boost working conditions and is distributed proportionately to all private sector workers, social welfare would increase considerably. This finding verified our fourth hypothesis of work. The numerical values of these elasticities were also considerable with financial capital endowments and household demographics, but very low with indirect decent employment endowment for all values of β. This result further implied the importance of human capital and good working conditions in determining social welfare. The prominent elasticities of social welfare registered with human capital and direct decent employment were found to be attributable more to total income share than to relative equity.

Concerning our employment sectors, the value of the concentration coefficient for the formal-private sector was in excess of the overall Gini coefficient. This illustrated that the formal-private employment sector has inequality-augmenting potentials. In the contrary, the value of the concentration coefficient in the informal sector was lower than the Gini coefficient, indicating that the informal sector has an inequality-reducing effect. These findings validated our fifth hypothesis of study. In a nutshell, the numerical values of the concentration coefficient in the farm and nonfarm-private sectors were all lower than the overall Gini coefficient, excepting the case where decency is removed. This implied that farm and nonfarm employment sectors both have inequality-reducing effects. This finding implied that any extra effort to improve income in the formal-private sector will only help to increase overall private sector income inequality substantially.

In terms of social welfare, we observed that a complete equity-seeking decision-maker who chooses $\beta = 0$, should direct more policy resources to the informal employment sector to achieve more social welfare outcomes. Notwithstanding, if employment decency was to be removed from social welfare enhancing measures, we would advise the decision-maker to channel limited budgetary resources to the informal sector. However, the formal-private employment sector, though inequality-augmenting, was found to be more social welfare enhancing if the decision-maker is either halfway between efficiency and equity ($\beta = 0{,}5$) or is more efficiency seeking than inequality averse ($\beta = 0{,}75$ and 1). The farm employment sector was ranked first for an equity-seeking decision-maker ($\beta = 0$), but as the importance of efficiency (mean income) in our social welfare increased ($\beta > 0$), the nonfarm employment sector took the first position. This implied that an efficiency seeking decision-maker would be encouraged to give priority the nonfarm-private sector while an equity-seeking decision-maker be encouraged to concentrate efforts in the farming sector. However, if employment decency was to be removed from social welfare enhancement, we may likely advise the decision-maker to direct limited budgetary resources to the farm sector, irrespective of the value of the parameter β.

In terms of the relative share of social welfare, the informal sector registered the highest value compared to that of the formal-private sector. This finding indicated that higher mean income shares do not necessarily guarantee a higher share of social welfare because relative equity and population shares are also crucial. This finding confirmed the sixth hypothesis of study in this chapter. The nonfarm-private sector ranked first in terms of relative social welfare

followed by the farm sector. However, further analysis implied that the decision-maker be required to employ her judgement in promoting social welfare policy targeting, giving the tiny gap between their relative social welfare shares and marked population share differences.

Generally, the expected effect on total social welfare for a 1% increase in the mean income of any employment sector reduced as employment decency is removed. This indicated that in a situation of poor working conditions, the ability of income growth to enhance social welfare in any employment sector may be undermined. It further implied that growth that does not factor-in decent employment may witness its ability to reduce poverty and inequality undermined. The elasticity of social welfare was highest in the informal sector compared to the formal-private sector for all values of the parameter β. In the contrary, these elasticities in the farm and nonfarm-private sectors were only slightly different. This implied that an extra CFA franc that goes to improve income in the informal sector and is proportionately distributed to all household heads or workers therein will increase total social welfare considerably. Thus, if target endowments and sectors were required for policy purpose, they will be human capital and decent employment on the one hand and the informal sector (as opposed to the formal sector) as well as the farm and nonfarm private sectors on the other hand.

CHAPTER 7
General Conclusion

7.1. Recap of the Study

The increasing use and importance of the terminology "working poor" and/or "vulnerable workers" by the ILO has caused debates on employment to go beyond the standard sense of "having a job". Employment, undeniably, is a shield against deprivation or poverty, but being fairly or meaningfully employed in the labour market may be a breakthrough against these ills. There is growing consensus that if growth, albeit strong and sustainable, does not generate decent jobs or reduce vulnerable jobs, it would not be of satisfactory quality as it might induce wage inequalities and social strife (National Institute of Statistics, 2011). Most workers, especially private sector workers, in Sub-Saharan Africa in general and Cameroon in particular work in highly insecure conditions; these workers are vulnerable. The dynamic, equity and social cohesion elements of labour market policies are important elements of redistributive and growth policies (Van-der-Hoeven, 2000). Thus, including these elements of labour market policies (for instance dynamic efficiency: increasing the quality of the labour force; and maintaining a sense of equity and social justice: reducing vulnerability among labour force participants) are necessary to reduce deprivation and income inequality. However, given that in the labour market employment vulnerability does not level-up across employment sectors and other sub-groups (for instance, gender and location), changes in labour market policies may have, at the very least, different consequences for particular sectors, groups or households. Thus, understanding the distribution of employment vulnerability in Cameroon should be one of the main policy issues of the stakeholders involved with the GESP.

It is on the above premise that the main goal of this thesis was to assess the implications of employment quality for private sector household income distribution and social welfare in Cameroon. The specific objectives were: (1) to construct and study the configuration of indicators of employment quality in Cameroon; (2) to identify the major determinants of private sector household income in Cameroon, overall and by employment sectors; (3) to

evaluate the relative importance of employment vulnerability in explaining measured private sector income inequality in Cameroon; (4) to study the private sector social welfare shares and impacts of employment decency among other regressed-income sources in Cameroon; and (5) to identify policy options on the basis of the findings.

In relation to the analysis, the thesis combined a series of analytical and methodological frameworks that permitted the fulfilment of our objectives. First, after the introductory chapter (Chapter 1), Chapter 2 attempted to establish a link between employment quality, household income distribution and social welfare in a conceptual framework. Chapter 3 employed the indicator approach of the Multiple Correspondence Analysis (MCA), given the qualitative nature of the initial indicators of employment vulnerability. On investigating the role of employment vulnerability in determining private sector household income, Chapter 4 adopted the control function approach that purges parameter estimates of endogeneity bias and unobserved heterogeneity of employment vulnerability. The Heckman/Control function approach that considers selectivity bias was also tested in this chapter to check whether the sampling-in of unemployed, discouraged unemployed and inactive household heads had significant effects on parameter estimates. Econometric results were substantiated by performing a joint distribution surface of employment vulnerability and private sector income; this allowed further investigation of the behaviour of private sector income at different vulnerability intensities.

In order to track the contributions of regressed-income sources in explaining measured private sector household income inequality, Chapter 5 employed the Regression-based Decomposition approach. This approach carries out its decomposition in a way that the variation of income, gauged for example by an inequality measure, is broken down into the various determinants of private sector income retained in Chapter 4. In addition, this framework generates marginal contributions, based on the Shapley value approach, for each income inequality source. Chapter 5 further employed the approach developed in Araar (2006a) and used by Baye (2008) to account for the within- and between-sector contributions of income inequality, with and without vulnerability.

Finally, Chapter 6 allowed us to design closures of our thesis, that is, bring together household income distribution, regressed-income sources, and the employment sectors under consideration in the same framework based on social welfare analysis. The chapter suggested

a variant of social welfare analysis that decomposed it as a weighted sum of individual welfare of various regressed-income components or endowments. This way, the chapter employed the information contained in our income generating equation to account for private sector social welfare in Cameroon. For this purpose, Chapter 6 borrowed the frameworks developed by Mukhopadhaya (2001b) and Mukhopadhaya (2001a). In this light, it combined regressed-income sources used in previous chapters into the following endowments or components: direct decent employment, human capital, financial capital, household demographics, and indirect decent employment endowments. This chapter endeavoured to evaluate the share of each regressed-income component in social welfare and teased-out the effect of growth in the mean amount of each regressed-income component on private sector social welfare. It went further to assess how each of our employment sectors under consideration contribute in determining social welfare and how income growth in each sector affects overall private sector social welfare.

7.2. Summary of Findings and Conclusions

The analysis of the initial indicators of employment vulnerability showed that payslip and social security made the highest contributions followed by paid leaves, remuneration stability and housing allowance. However, the contributions made by labour status, job satisfaction and employment contract were non-negligible. Under-employment and union membership made the smallest contributions, with union membership being the least. This analysis has potentials to assist policy targeting, as it provides policy makers with the knowledge of some key indicators that can be given priority in the struggle to promote decent employment in Cameroon.

The decomposition analysis of the employment quality indicator indicated that vulnerable employment is predominant among private sector household heads in Cameroon. Household heads employed in the private sector are more vulnerable compared to those in the public sector. Thus, a greater proportion of public sector workers have decent employment status compared to their private sector counterparts, as interpreted in terms of contract security, social security, job satisfaction, underemployment, remuneration stability, labour status and job-related fringe benefits. It was equally found that employment vulnerability does not level-up across private sub-sectors. For instance, we observed that informal and farm sectors household heads are more vulnerable compared to those in the formal-private and nonfarm-

private employment sectors, respectively. This way, employment vulnerability is more widespread among informal sector household heads and those in the farm employment sector.

Stochastic dominance analysis confirmed the net dominance of the private sector on the public sector in terms of employment vulnerability. Within the private sector, we observed the net dominance of informal sector employment on formal sector employment in terms of the indicator of vulnerability and also the net dominance of farm employment on nonfarm employment. This is clear evidence that its incidence is more serious among household heads in informal and farm employment sectors in Cameroon. Geography and gender also appeared to be important in determining employment vulnerability. We observed a net dominance of rural dwellers on urban dwellers in terms of employment vulnerability and only a fair dominance of female household heads on their male counterparts. These analyses illustrated the underprivileged position of rural dwellers and female household heads in the labour market, and require particularly attention. Our analyses also showed that employment vulnerability decreases with household well-being in Cameroon whereas "decent employment" increases with well-being. Dominance test indicated that the poor dominates the rich in terms of employment vulnerability in Cameroon. In this perspective, the poor are necessarily more vulnerable in employment than the rich in Cameroon.

Concerning the econometric results, the density of formal institutions which represents the institutional coverage in each region was found to be negatively and significantly associated with employment vulnerability. This implies that decision making to reduce vulnerable employment among private sector workers in Cameroon may also be seen from the angle of formal institutional coverage in regions. Geography and gender as well as years of schooling and microcredit access appeared to be important in determining employment vulnerability among household heads. Male household heads, household heads residing in urban areas, educated household heads and those who access credit were less likely to be vulnerable.

We observed that employment vulnerability dilutes private sector household income and also that household heads in more vulnerable employments sectors were more exposed to losses in income due to this ill. Employment vulnerability was found to be negatively and significantly related with household per capita monthly income irrespective of the approach used. This result corroborated the observation that in developing countries where the labour is highly unskilled and unspecialised, employment vulnerability is likely to weigh negatively on

labourers. However, we found that above a given level of vulnerability (greater than or equal to 0.96) private sector workers receive pecuniary compensations for their adverse working conditions. This result was more appealing among private sector workers in informal, farm and nonfarm activities.

Results also showed that household heads in the informal and farming sectors suffered the adverse effects of vulnerability more than their formal and nonfarm sector counterparts respectively. These indicated that formal and nonfarm private sector workers receive some relative pecuniary compensation for their adverse working conditions, though not enough to translate into gains. We also recorded evidence of compensations for managerial and supervisory duties at work, confirming part of our second hypothesis. Thus, the assumption that average gains may compensate for a certain level of vulnerability was therefore verified with vulnerability intensities above 0.96 and only relatively confirmed in the formal and nonfarm private sectors.

Work experience and years of schooling related positively with household income. These results affirmed the potential of human capital in improving household income. We observed that being male gender type was not an important consideration to reward labour in the private sector in Cameroon. Urban residency and access to microcredit were crucial inputs in enhancing household income. The number of younger children aged between 0-4 years and number of married household heads captured as cluster means were found to weigh negatively on household per capita income.

Concerning the regression-based decomposition results, employment vulnerability was found to increase income inequality among private sector household heads. The years of schooling and labour market experience were also found to increase income inequality in the private sector. These results indicated that education programmes and capacity building workshops largely benefit the rich than the poor. Holding a managerial position and having access to microcredit were found to be inequality increasing. This result simply implied the differential access to managerial positions and to microcredit that prevails between the privileged or rich and the less privileged or poor in the Cameroon private sector. Regressed human capital sources (years of schooling, labour experience and leadership skills, attributable to managerial position) overly accounted for observed inequality. They jointly accounted for about 21% of observed private sector inequality. Residing in an urban area, number of young children

below 5 (five) years old in a household and the number of married people at the cluster level were also inequality increasing. This is indication that birth control and family planning should be an integral part of poverty alleviation and inequality reduction measures.

Concerning the sectoral decomposition of inequality, the within-sector components largely accounted for measured inequality in the formal/informal and farm/nonfarm sub-sectors compared to the between-sector contributions. The bulk of the within-sector income source inequality was registered in the informal and farm employment sectors. This indicated that more targeted policy objectives that focus on reducing income source inequality among household heads working in the informal and farm employment sectors may have considerable effects on overall private sector income inequality. The sectoral decomposition of income inequality without vulnerability, recoded an S-Gini coefficient of 36.1% at the overall level compared to 38% when measured including vulnerability; further confirming that employment vulnerability is inequality increasing. The within-sector component still prevailed in explaining overall income inequality without vulnerability in both the informal/formal and farm/nonfarm private sectors. Worthy to note, in the farm/nonfarm employment sectors, is the observation that the between-group contributions were non-negligible in both dimensions, but more considerable in inequality with vulnerability than in that without vulnerability. Employment vulnerability was found to worsen income inequality among household heads working in the informal and farm sectors compared to those in the formal and nonfarm sectors, respectively.

Concerning the analysis of social welfare, we observed that direct decent employment, education human capital, financial capital endowments and other income sources had inequality-reducing effects, as their concentration coefficients fell well below the overall Gini coefficient. Our analysis further underlined that good working conditions (direct decent employment), education and training facilities (human capital) as well as access to micro-credit (financial capital) accrued relative more to the rich households than the poor households in the private sector, as the values of their concentration coefficients though less than the Gini were positive. Conversely, the value of the concentration coefficient of household demographics and indirect decent employment were in excess of the Gini coefficient, indicating their inequality-augmenting effects. This result implied that family planning measures (like birth control to target the number of young children in households)

and geographical considerations (zone of residence) may have to constitute an essential part of policy interventions to address inequality.

We found that for an equity seeking decision-maker, financial capital endowments ranked first followed closely by human capital and direct decent employment endowments in terms of social swelfare. This result implied that a decision-maker who is completely equity-seeking may be persuaded to lay more emphasis on micro-credit access, education and training programmes as well as better working conditions to obtain laudable social welfare outcomes. In like manner, we observed that for a decision-maker who mediates between efficiency and equity ($\beta = 0.5$), human capital endowments ranked first in terms of social welfare, with a numerical value in excess of total social welfare, and was followed by direct decent employment endowments. This finding implied that a decision-maker who gives the same degree of importance to efficiency and equity considerations in the quest to improve social welfare should be encouraged to prioritise policy measures that boost human capital and improve decent employment of household heads. This observation remained consistent for values of the parameter $\beta > 0.5$ ($\beta = 0.75$ and 1). We found that changes in $\beta > 0$ were not sensitive to the ranking of regressed income-components, as indication that efficiency considerations were more dominant than equity considerations in determining social welfare.

In terms of relative share of total social welfare, human capital endowments registered the highest share to overall private sector social welfare, followed by that of direct decent employment. Household demographics and financial capital contributed positively in determining welfare whereas indirect decent employment only helped to dilute overall social welfare. These findings again implied that policy efforts that focus on the twin goal of improving equality and boosting overall welfare among private sector household heads or workers be advised to prioritise human capital and direct decent employment endowments in their policy menu. The elasticity of social welfare with respect to human capital was highest across the different values of the parameter, β. That of social welfare with respect to direct decent employment endowment ranked second after human capital. These findings implied that if an extra CFA franc goes to boost human capital or decent employment and is distributed proportionately to all private sector workers, social welfare will increase considerably.

The formal-private employment sector, though inequality-augmenting, was found to be more social welfare enhancing if the decision-maker is willing to mediate between efficiency and equity ($\beta = 0{,}5$) or is more efficiency seeking than inequality averse ($\beta = 0{,}75$ and 1). The farm sector was ranked first for an equity-seeking decision-maker ($\beta = 0$), but as the importance of efficiency (mean income) in our social welfare grew ($\beta > 0$), the nonfarm employment sector took the first position. This implied that an efficiency seeking decision-maker be encouraged to give more priority to the nonfarm-private sector, while an equity-seeking decision-maker may be encouraged to concentrate efforts in the farm sector. However, if employment decency was to be removed from social welfare enhancement, we may likely advise the decision-maker to direct limited budgetary resources to the farm sector, irrespective of the value of the parameter β.

In terms of relative social welfare, the informal sector registered the highest value compared to that of the formal-private sector. This finding indicated that higher mean income shares do not necessarily guarantee a higher share of social welfare because relative equity and population shares are also crucial. The nonfarm-private sector ranked first in terms of relative social welfare followed by the farm sector. Generally, the expected effect on total social welfare of an increase in the mean income of any employment sector reduced as employment decency is not considered. This indicated that in a situation of poor working conditions, the ability of income growth to enhance social welfare in any employment sector may be undermined. It further indicated that growth that does not factor-in decent employment may witness its ability to reduce poverty and inequality undermined. We observed that the elasticity of welfare was highest in the informal sector compared to the formal private sector for all values of the parameter β. Conversely, these elasticities in the farm and nonfarm private sectors were almost similar, when decent employment is included. This implied that an extra CFA franc that goes to boost incomes in the informal sector and is proportionately distributed to all household heads or workers therein will increase total social welfare considerably. Therefore, if target income components and employment sectors were needed for policy purpose, they will be human capital and decent employment on the one hand and the informal sector as well as the farm and nonfarm private sectors on the other hand.

7.3. Recommendations

On the basis of the ensuing findings, the following package of policy options may be targeted to improve the working conditions of private sector workers; this will likely improve their income, alleviate poverty, and reduce income inequality while enhancing social welfare. Policy recommendations can be earmarked on seven key poles.

The first pole stresses on some key determinants or indicators of employment vulnerability to allow for policy targeting. Given the limited or constrained budget, carefully guided strategies to ensure access to social security (for instance, NSIF), guarantee remuneration stability and fringe benefits (family and housing allowances) as well as paid leaves for private sector workers may considerably raise their decent employment status. The above selected initial indicators contributed highest in the employment vulnerability indicator, so prioritising them for a start may produce desirable effects on the employment decency of private sector household heads.

The second pole of options is addressed to the authorities involved with the GESP on sectoral targets for better results. The GESP addresses the issue of employment from three key points of view, namely: (i) increasing the number of decent positions, (ii) matching demand to supply of jobs; and (iii) enhancing efficiency of the job market (Government of Cameroon, 2009; p. 83-85)[85]. This current effort to improve decent employment in Cameroon, as enshrined in the GESP, may receive greater and commendable impacts if the informal and farm employment sectors as well as the rural sector and the underprivileged or poorer household heads are prioritised, without comprising the efforts to update employment standards in the better-off sectors. Conventions, like the one signed in 2006 between Cameroon and ILO to improve the working conditions of security agents, albeit not effective, is a good initiative that should be extended to other private sectors, especially the worse affected ones. In a nutshell, the government of Cameroon should continue to develop the investment climate to boost the private sector and more especially, develop a strategy to support socioeconomic and geographic and sectoral mobility of workers from informal to formal-private activities; given the prevalence of vulnerability in informal activities. Programs to support commercial agriculture, especially for rural dwellers, are highly commendable.

[85] Where youths, women, disabled persons, and indigenous minority groups are prioritized

The third pole of options emphasises the place of government institutions in curbing employment vulnerability. Regional institutions like civil and municipal administrations, law and order and ministerial delegations can play a vital role in encouraging a general attitude among private sector workers about the quality of work and favourable working conditions. Regional delegations of labour and social security as well as those in charged of promoting employment and professional training harbour crucial inputs in promoting quality employment among private sector workers at the regional level. These organs can assist in building and guaranteeing a win-win interaction between the private sector employers and the employees. In addition, civil society organisations, trade unions and employers can improve their own efforts to reduce vulnerable employment. Trade union strategies for increasing membership amongst vulnerable workers, assessing the current availability of employment advice provision, and considering how good employers can better share practice and promote change with and amongst others are to be encouraged and geared towards the most vulnerable (in farming, informal activities and rural areas as well as the female workers).

Moreover, institutions like the National Employment Fund (NEF) should extend their activities - training of jobseekers, orientation of jobseekers, jobs prospects and provision of self employment - by opening other regional centres; as with the recent case of Bamenda. Each region in Cameroon should be endowed with a NEF branch to guarantee the fight against employment vulnerability to subsequently improve private sector household income and reduce poverty. In addition, newly opened centres like the National Civic Service for Participation in Development (NCSPD), set up during the first half of 2011, can also ensure participation of youths and vulnerable social groups in development. Finally, the 1992 Cameroon Labour Code may be revised to consider recent concepts like decent employment, social justice and youth employment. Good enough, the Labour Ministry and Social Security already started talks with respect to this in June 2012.

The fourth pole of options advocates a policy-mix of sectoral measures to reduce vulnerability or improve decency with measures to enhance capacity building and improve credit access. Improving working conditions among private sector workers would go a long way to complement their income, especially among household heads in the informal and farm sectors. However, it is important to highlight that all efforts to improve working conditions should be done in line with initiatives to improve credit access as well as training/capacity

building and education programmes for private sector workers to ensure better outcomes. Thus, struggles to reduce employment vulnerability may be accompanied by agricultural training programmes to enhance agricultural productivity in the farm employment sub-sectors. As a result, region-based agricultural development programmes like the SOWEDA in the South Western region and the MIDENO in the North Western region may be replicated in other regions of Cameroon. However, the slow-down of the activities of SEMRY (Société d'Expansion et de Modernisation de la Riziculture) in Yagoua should be checked and the complete shut-down of the agricultural research programme PNVRA (Programme National de Vulgarisation et Recherche Agricole) in the Northern region is a call to the government to find an alternative programme.

Essentially, it is vital to underscore that the rural area is interested not only in agricultural techniques but also in more complex enhancements such as biotechnology, climate change and agricultural policies. Attempts to cover these issues that affect agricultural productivity have to be made by either the government or some private organisation or better still through a Public-Private Partnership (PPP) to inform rural dwellers with often limited public education on these issues. Equally, agricultural partnerships like the recent one between the government of Cameroon with the Food and Agricultural Organisation (FAO) to put in place a viable seed system that can meet the aspirations of public authorities to boost agricultural production and ensure food sufficiency in the country, are to be encouraged. This partnership, drawn at the closing of 2011, is through a support project for capacity building on the control and certification of seedlings[86]. Vocational schools and universities should revise their training programmes and adapt them to meet market needs.

In cognisance with the underprivileged position of rural dwellers and female household heads in the labour market, the NEF and the U-PAJER should increase their outreach in terms of micro-activities, junior enterprises and training (for instance business development, health care administration, food services, managers, hotel and catering) for these categories. This initiative should endeavour to reach the worse affected rural areas of the country and treat women and young girls disproportionately with respect to their male counterparts; this especially for those in informal and farming activities, for better results and healthier coverage. Training in income generating activities, in the management of micro-financial

[86] This partnership had as caption, Agricultural Productivity: Government, FAO in Quest of Quality Seedlings

institutions and capacity upgrading of those already in private employment is a way forward. Such endeavours of training and capacity upgrading may be piloted through a public-private partnership (PPP); funded and operated through a partnership of government and one or more private sector companies or organisation.

The fifth pole of options highlights the synergy of vulnerability reducing or decency improving measures with household characteristics. Given the adverse effects of employment vulnerability on income inequality, it is advised that growth initiatives should be designed to generate decent/less vulnerable jobs. Growth initiatives geared towards improving the working conditions of household heads should be accompanied by social measures such as birth control and family planning. In other words, birth control and family planning measures should be integrated in poverty alleviation and inequality reduction measures.

The sixth pole of options stresses on economic growth that factors-in decent jobs. The quality of economic growth, in terms of decent jobs, should be at the forefront of current policy undertakings in Cameroon to boost income growth, reduce income inequality and hence poverty. Thus, ongoing efforts like the recruitment of 25 000 educated youths in the public sector, with relatively commendable working conditions, should be encouraged or replicated in time. Notwithstanding, the public sector cannot singlehandedly curb or cushion the problem of vulnerable employment in Cameroon, efforts to encourage private sector development through the creation of new industries and promotion of a good business environment are worthy to consider. Moreover, the poor might gain more from redistribution, but also may suffer more from economic contraction (Almas, 2004). In this perspective, measures to improve decent employment should be accompanied by those that boost employment in the private sector in Cameroon; since vulnerable workers might gain more from equity policies on working conditions, but also may suffer more from economic contraction in the private sector. They are the first to be dropped by enterprises in the face of an economic contraction.

In this light, the government should endeavour to create an overall enabling environment for employment creation around small and medium enterprises (SMEs) and private enterprises. This is achievable through the dismantling of institutional constraints to private sector development and the development of SMEs in Cameroon, especially institutional constraints related to the business environment, access to markets, basic infrastructure and access to

investment funding and loans. In a situation of tight budgetary resources, human capital and decent employment policy boosting measures should be prioritised on the one hand and private employment sectors like the informal sector and the nonfarm-private sectors should be privileged on the other hand. These policy targets will go a long way to reduce overall private sector income inequality while enhancing total social welfare among private sector households.

In conclusion, unequal access between the privileged or rich and the less privileged or poor to education programmes, capacity building or technical training and financial capital, in terms of access to loans or credit, are crucial components that should be incorporated into the policy package to enhance the fight against deprivation. The above access insurance, if paired-up with measures to improve decent employment may have desirable inequality and poverty reducing outcomes among private sector households. In this perspective, it is clear that a greater positive impact on private sector household income inequality and poverty can only be secure with the combination of decent employment, human capital and financial capital boosting measures with measures to ensure that the privileged and the less privileged are treated fairly in terms of access to these endowments. The government may even go beyond mere access to education programmes to invest in a system of education that reduces the number of dropouts at primary and secondary levels; this should probably be a system of education that meets labour market requirements. In consequence, measures to generate decent jobs or reduce vulnerable jobs can produce better results in terms of poverty and income inequality reduction, if they work in conjunction with measures that enhance human and financial capital.

7.4. Limitations of the Study

Data limitations as we all know plague most developing economies, but the ideas put-up in this thesis and their empirical verifications find good support in the 2007 Cameroon household consumption survey. Notwithstanding, the absence of an adequate panel source limits our analysis, as a panel source could allow for more robust interpretations and better policy orientations. In addition, the lack of a panel source made our study unable to totally get rid of the firm and individual heterogeneity components. Lastly, the use of the expenditure data as proxy for income sets some limitation, as interpretations have to be done with some care.

7.5. Suggestions for Future Research

Our reading of the evidence is that the effect of employment vulnerability on household income is generally negative. Importantly, we found that employment vulnerability is inequality increasing and also that decent employment is inequality-reducing and social welfare enhancing. This shows that if vulnerable employment is allowed to worsen among private sector workers or employed household heads, social welfare outcomes as well as overall income inequality may take the worse trend.

Reducing employment vulnerability and poverty through appropriate strategies are at the forefront of worldwide major current objectives. Thus, helping those who are already vulnerable to escape from vulnerability is vital. Preventing the non-vulnerable from falling into vulnerability – or the vulnerable from getting more vulnerable – when they are faced with extreme difficulties may also be a complementing action or solution. This second perspective is not frequently raised despite the increase of uncertainty and insecurity in a rapidly changing world. Most countries, if not all, in the developing world, are encountering regular internal and external shocks, which have considerable effects on the employment status and living standards of their people. Therefore, individual workers or household heads may see their job status depreciate and the risk of income inequality and poverty traps appear, with adverse long-term consequences on future generations. This highlights the need to put in place preventive measures (that is, ex-ante policy actions) for future generations. In this perspective, designing preventive ex-ante policy actions to prevent workers, especially private sector workers, from falling into vulnerable employment is a call for future research.

Such a focus on employment vulnerability implies identifying the threats and, more generally, the risks that private sector household heads in Cameroon encounter in their jobs and daily lives. Then, assessing their capacity to overcome the social consequences related to the realisation of such risks, that is, their capacity of resilience to employment vulnerability. Efforts in this direction may help define the appropriate preventive measures for the non-vulnerable from falling into vulnerability – or the vulnerable from getting more vulnerable. Thus, future endeavours in Cameroon may focus on researching measures that can prevent the decent from falling into vulnerability or the vulnerable from getting more vulnerable; to secure future job status for private sector workers in particular and the nation as a whole.

In a nutshell, our study has been unable to totally get rid of the firm and individual heterogeneity components. For such endeavours, panel data and larger sub-samples of household heads or workers in the private sector are needed. We have also been constrained by data insufficiencies regarding measures of cross-firm differences in factor productivity that would be useful for testing new hypotheses of the existence of wage dispersion among similar workers due to informational asymmetries in the job search process (Burdett and Mortensen, 1998; Pissarides, 2000; Mortensen, 2003). While there is a vast literature which evidences the relevance of inter-industry wage differentials (that is, non-competitive wage compensations), informed knowledge on the origins and causes of this important stylised fact remains therefore an important issue for future empirical research in developing countries as a whole and Cameroon in particular. All the aforementioned issues suggest several implications for future research as more household surveys and firm level data become available.

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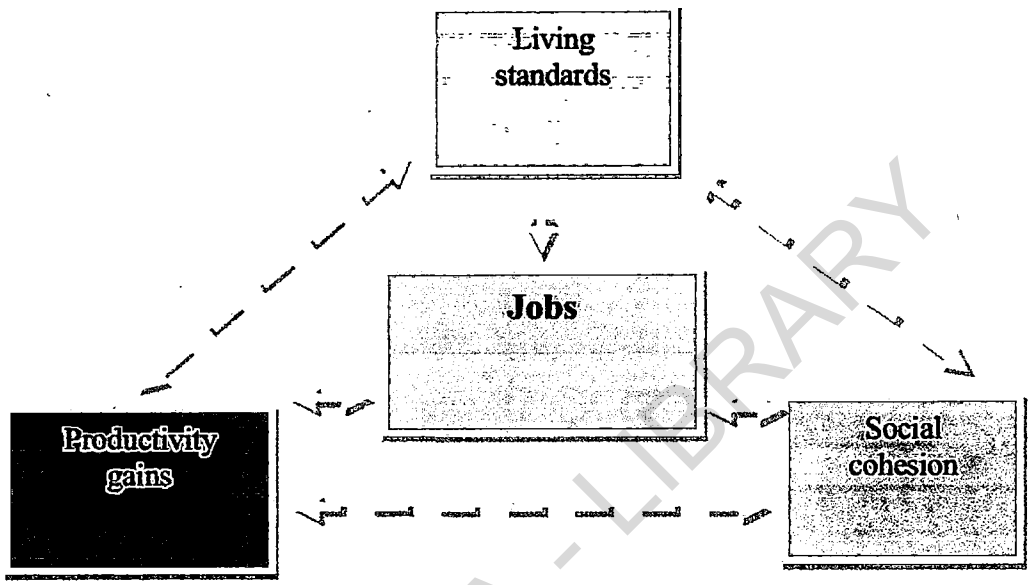
Appendix 1.1

Jobs as the "hinge" of development



Source: World Development Report 2013

Concerning *living standards*, growth in labour earnings leads to improvements in households' material and subjective wellbeing. But growth in earnings cannot be taken for granted and who gets those earnings matters. As for *Productivity*, job creation, destruction and reallocation matter more in developing countries, where the dispersion of labour productivity is wide. Some jobs lead to sizeable productive externalities. Lastly, with *Social cohesion*, employment status is correlated with trust and with civic engagement, which suggests a possible impact on social cohesion. But some jobs may have a greater impact on cohesion than others.

Appendix 2.1

Appendix 2.1A: KILM indicators, fifth edition, 2007

A major recent development has been the release by ILO of a new publication, *Key Indicators of the Labour Market* (KILM), which is now in its fifth edition. The objective in publishing the KILM is to present a core set of labour market indicators for countries and accompanying analysis, on a global basis, and to improve the availability of the indicators needed for monitoring new employment trends. The KILMs are:

KILM 1. Labour force participation rate
KILM 2. Employment-to-population ratio
KILM 3. Status in employment
KILM 4. Employment by sector
KILM 5. Part-time workers
KILM 6. Hours of work
KILM 7. Employment in the informal economy
KILM 8. Unemployment
KILM 9. Youth unemployment
KILM 10. Long-term unemployment
KILM 11. Unemployment by educational attainment
KILM 12. Time-related underemployment
KILM 13. Inactivity rate
KILM 14. Educational attainment and illiteracy
KILM 15. Manufacturing wage indices
KILM 16. Occupational wage and earning indices
KILM 17. Hourly compensation costs
KILM 18. Labour productivity and unit labour costs
KILM 19. Employment elasticities
KILM 20. Poverty, working poverty and income distribution

Appendix 2.1B: The original list of MDGs includes (United Nations 2000):

(1) Eradicate extreme poverty and hunger;
(2) Achieve universal primary education;
(3) Promote gender equity and empower women;

(4) Reduce child mortality;

(5) Improve maternal health;

(6) Combat major diseases;

(7) Ensure environmental sustainability; and

(8) Develop global partnership for development.

Appendix 3.1

Appendix 3.1A: Specificities of the Multiple Correspondence Analysis (MCA)

Technically MCA is obtained by using a standard correspondence analysis on an indicator matrix (that is, a matrix whose entries are 0 or 1). MCA is mainly employed to analyze the pattern of relationships among observations, described by a set of nominal variables (Asselin, 2002). Essentially, each nominal variable has several levels, and each of these levels is coded as a binary variable. For instance job satisfaction, (Yes *vs.* No) is one nominal variable with two levels. The pattern for a satisfied respondent will be 0 1 and 1 0 for an unsatisfied respondent. The complete data table is composed of binary columns with one and only one column taking the value "1" per nominal variable. It is also worthy to note that the MCA can also accommodate quantitative variables by recoding them as binary variables and no information is lost in this process, but rather we have an advantage to unveil the specificities of the modalities considered individually. The idea or principle behind the MCA is to extract a first factor which retains maximum information contained in this matrix. The goal of the MCA, besides data reduction, is to generate a composite indicator for each household head.

In order to understand the MCA technique let's suppose the following notations: there are K category indicators (I^k) with J categories (Jk) respecting the FAOC, that is, obeying the rule according to which employment vulnerability of employed household heads improves (or employment decency deteriorates) along the first factorial axis. Thus, the total number of categories is given by $J = \sum_{k=1}^{K} Jk$.

There are N observations and the $N \times J$ indicator matrix is denoted Z. Let N_j be the absolute frequency of category j; which is the sum of column j of the indictor matrix, Z. Suppose N_T is the sum of all the elements of the indicator matrix, then $g_j = \frac{N_j}{N_T}$ is the relative frequency of category j. As a follow up, $g_j^i = \frac{Z(i,j)}{Z(i)}$ is thus the conditional frequency of category j, given the unit (household head) i. Worthy to note, $Z(i)$ is the sum of row i in the indicator matrix.

Performing correspondence analysis on the indicator matrix will provide two sets of factor scores: one for the rows and the other for the columns. We can possibly define the MCA as a

PCA process applied to the indicator matrix, but with the χ^2-metric on the row/column profiles, instead of the usual Euclidean metric. The χ^2-metric is a special case of the Mahalanobis metric. This metric has been used in the Generalized Canonical Analysis approach (Saporta, 1980; Masson, 1974; Mckeon, 1966). Concerning MCA, the distance between two observed profiles i and i' in the R^j dimensional space is given by:

$$d^2(g_j^i, g_j^{i'}) = \sum_{j=1}^{J} \frac{1}{g_j}(g_j^i - g_j^{i'})^2 \quad (3.1A)$$

The difference between the Euclidean and indicator matrix resides in the term $\frac{1}{g_j}$. This term permits small categories to receive a higher weight in the computation of distances. Talking of development analysis, the difference between the MCA and the PCA regarding deprivation analysis (like employment vulnerability analysis) is very meaningful in terms of numerical results.

In showing the superiority of the MCA over the PCA in studying deprivation related issues, Asselin (2005) identify two key properties, that of marginalization bias and reciprocal bi-additivity or duality. With the first property, the MCA overweighs smaller categories within each primary indicator. Consider for example the case of a binary indicator; since smaller categories have the same covariance as larger categories, their relative weights are higher. Concerning deprivation analysis (vulnerability analysis), attributing factorial weights to smaller groups, and arguing that deprivation analysis are viewed in relative terms, allows these weights to translate societal prioritization. These weights can be expressed as follows:

$$W_{jk}^{\alpha,k} = \frac{N_T}{N_{jk}^k} cov(W_\alpha^*, I_{jk}^k) \quad (3.1B)$$

where $W_{jk}^{\alpha,k}$ represents the score of category j_k on the non-normalized factorial axis α ; $I_{j_k}^k$ the binary variable which takes the value 1 when the population unit (household head) has the category j_k; W_α^* is the normalized score on the factorial axis α ; $N_{j_k}^k$ the frequency of category j_k of the indicator k; and *cov* stands for covariance.

With the second property (duality) indicates that the MCA can be applied on the indicator matrix either to observations (row-profiles) or categories (column-profiles). For the row-profile of unit (household head) i, this property is expressed as follows:

$$W_{\alpha}^{i} = \frac{\sum_{k=1}^{K} \sum_{jk=1}^{Jk} \frac{W_{jk}^{\acute{\alpha},k}}{\lambda_{\alpha}} I_{i,jk}^{k}}{K} \quad (3.1C)$$

Where, K stands for the number of categorical indicators; Jk the number of categories of indicator k; $W_{jk}^{\acute{\alpha},k}$ the score of category Jk on the non-normalized factorial axis α; I_{i,j_k}^{k} the binary variable taking the value 1 when the unit (household head) i has the category Jk; λ_{α} is the inertia (eigenvalue) of factorial axis α and W_{α}^{i} the score (non-normalized) of observation i on the factorial axis α.

For the column-profile, the score of a category is expressed as below:

$$W_{jk}^{\acute{\alpha},k} = \frac{\sum_{i=1}^{N_{jk}} \frac{W_{\alpha}^{i}}{\lambda_{\alpha}}}{N_{jk}^{k}} \quad (3.1D)$$

Importantly, since the first axis ordering consistency principle is respected, we can consider the first axis as the composite indicator of employment vulnerability (equation 3.1C), $C_i = W_1^i$ (Asselin, 2002; Kamgnia Dia et al., 2008 and Epo, 2012). Where C_i is the value of the indicator for a household head i. The key point here is to extract a first axis that contains maximum information and hence, better describes employment vulnerability/decency of household heads.

Appendix 3.1B: Theoretical Approach of Stochastic Dominance: Main rules

For empirical investigations with discrete data, Araar (2006b) had developed the main rules that can be used to consistently check the stochastic dominance for the three widely used orders (first, second and third). Lets denote the value of vulnerability v of a household head i, that belongs, for example, to distribution C, by v_i^C and its proportion in the population by π_i^C, this distribution, C, is expressed as follows:

$$C(V,\pi) = \{v_i^C,\ \pi_i^C\ /i \in C\} \quad (3.1A')$$

Lets now suppose that we have two distributions A and B that are combined and are sorted by the vector of employment vulnerability V, to form one data set, T, which assumes the following form:

$$T = \{A,B\} = \left\{v_i,\ \pi_i^{A/T}, \pi_i^{B/T}/i \in T\right\} \quad (3.1B')$$

Where $\pi_i^{C/T} = \pi_i^C$ if $i \in C$ and zero otherwise.

The final stage for the treatment of the data is to aggregate them by summing proportions $\pi_i^{C/T}$ according to V. With this procedure, we ensure that there is only a unique value for each $v_i \in T$.

Lemma 1

We have:

$$I_C(r) = I_T^C(r) \quad (3.1C')$$

Where $I_T^C(r)$ is the employment vulnerability indicator when the distribution $\{v_i,\ \pi_i^{A/T}\}$ is used. This lemma implies that employment vulnerability indicator does not change with the rearrangement of the data.

Lemma 2

$$\Delta(v) > 0\ \forall\ v \in [v_{min}^T, v_{max}^T] \Leftrightarrow \Delta(v) > 0\ \forall i \in [1, N_T - 1] \quad (3.1D')$$

Where N_T is the size of the combined distributions T, v_{min}^T *and* v_{max}^T are the minimum and maximum level of employment vulnerability respectively. This lemma identifies that checking the stochastic dominance condition within the range $(v_{min}^T, v_{\max}^T)$ is tantamount to checking this stochastic dominance between ranges, formed by the discrete data.

Appendix 3.1C: Chi Square Statistic

The value of the test-statistic is:

$$X^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(n_{ij} - e_{ij})^2}{e_{ij}} \qquad (3.1E')$$

where there are r rows and c columns in the table. The "theoretical frequency" or expected frequency, e_{ij}, for a cell is given by:

$$e_{ij} = \frac{\sum_{k=1}^{c} n_{i,k} \sum_{k=1}^{r} n_{k,j}}{n} \text{ or simply } e_{ij} = \frac{n_{i.} \times n_{.j}}{n}$$

where n is the total sample size (the sum of all cells in the table).

Concerning the test of independence, also known as the test of homogeneity, a chi-squared probability of less than or equal to 0.05 critical point is commonly interpreted as rationalization for rejecting the null hypothesis that the row variable is independent of the column variable. The alternative hypothesis supposes an association or relationship where the structure of this relationship is not specified.

Appendix 3.1D: Gaussian Kernel Estimator of the Joint Density Function

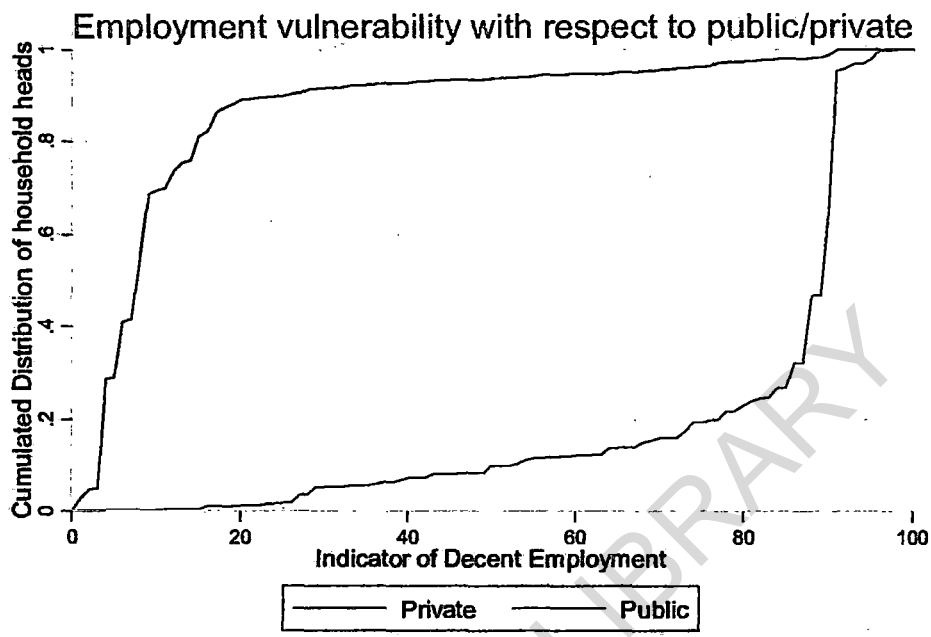
The Gaussian kernel estimator of the joint density function $\hat{f}(x, y)$ is defined as:

$$\hat{f}(x,y) = \frac{1}{2\pi h_x h_y \sum_{i=1}^{n} w_i} \sum_{i=1}^{n} w_i exp\left(-\left(\frac{1}{2}\right)\left(\left(\frac{\bar{x}-x_i}{h_x}\right)^2 + \left(\frac{\bar{y}-y_i}{h_y}\right)^2\right)\right)$$

Where x *and* y stand for employment vulnerability and per capita expenditure respectively, h is a bandwidth that acts as a "smoothing" parameter, n is the number of observations, i statistical unit (household head).

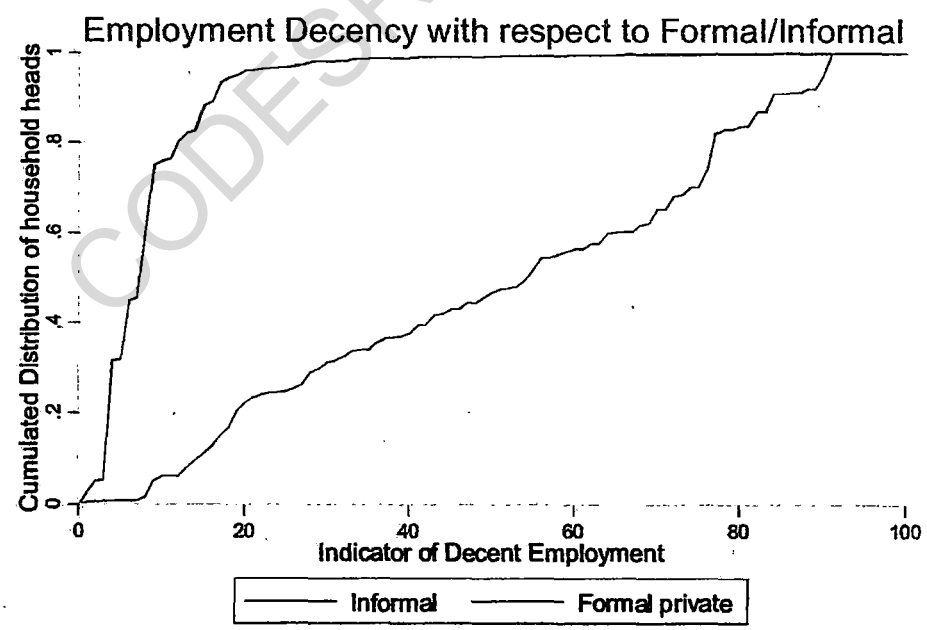
Appendix 3.1E: Dominance Curves of Employment Sectors and other Subgroups with respect to Decent Employment

Figure 3.1A: Dominance Curve of the Indicator of Decent Employment with respect to Public/Private Sectors



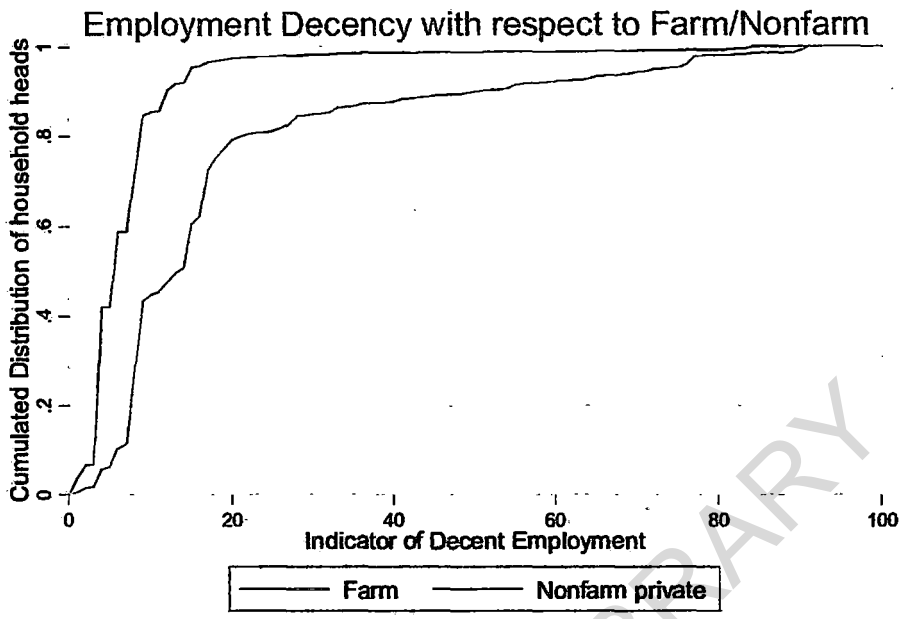
Source: Constructed by author using CHCS III

Figure 3.1B: Dominance Curve of the Indicator of Decent Employment with respect to Formal-Private/Informal sectors



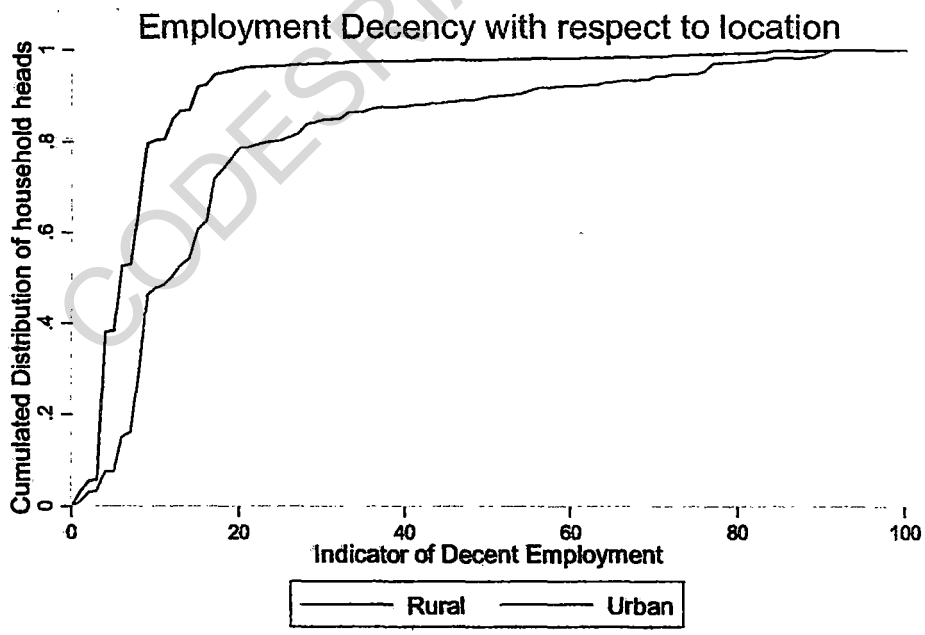
Source: Constructed by author using CHCS III

Figure 3.1C: Dominance Curve of the Indicator of Decent Employment with respect to Farm/Nonfarm Private Sectors



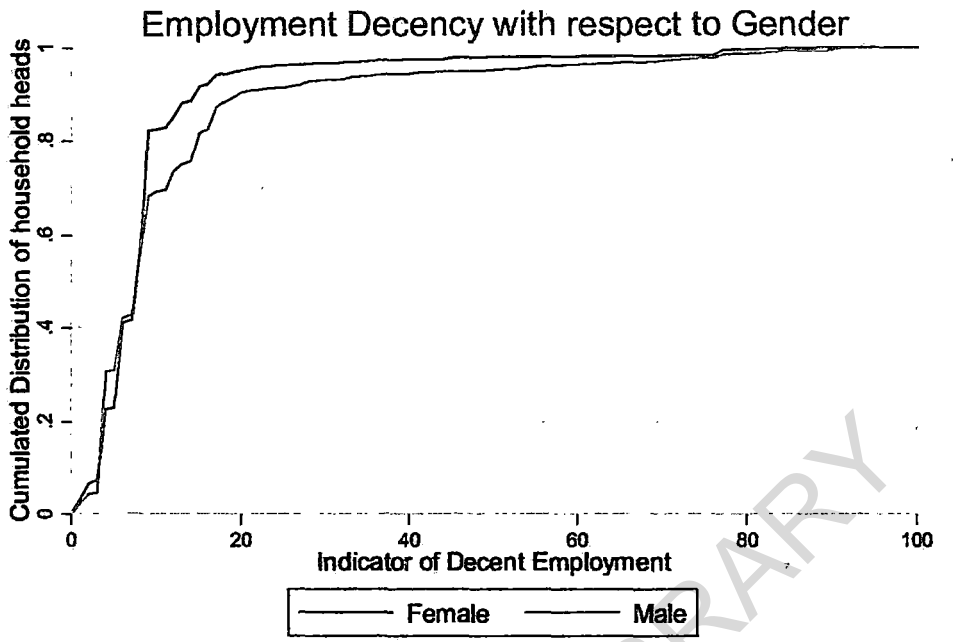
Source: Constructed by author using CHCS III

Figure 3.1D: Dominance Curve of the Indicator of Decent Employment with respect to Location



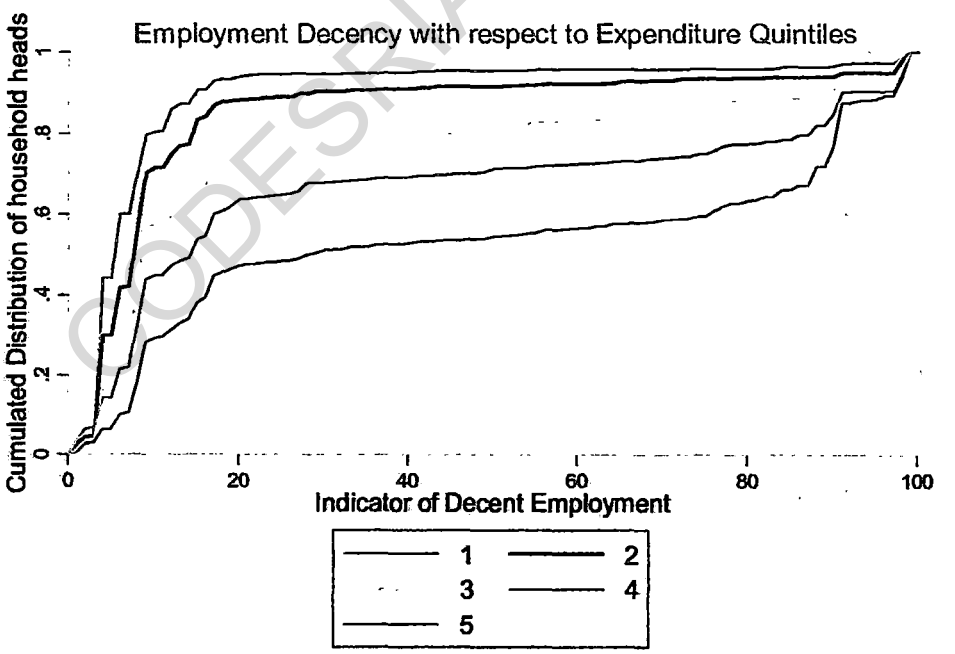
Source: Constructed by author using CHCS III

Figure 3.1E: Dominance Curve of the Indicator of Decent Employment with respect to Gender



Source: Constructed by author using CHCS III

Figure 3.1F: Dominance Curve of the Indicator of Decent Employment with respect to Expenditure Quintiles



Source: Constructed by author using CHCS III

NB: 1 to 5 represents the first expenditure quintile to the fifth expenditure quintile

Appendix 4.1

Appendix 4.1A: Density of Institutions per Region

Adamawa	Centre	East	Far North	Littoral	North	North West	West	South	South West
17	51	23	43	30	17	33	36	26	29

Appendix 4.1B: Heckman/Control Function

Table 4.1A: Selection Equation of Employment Vulnerability

Explanatory Variables	Selection Indicator G = (=1 if the private sector household head's employment vulnerability status is observed; = 0 if the household head is unemployed, discouraged unemployed or inactive)	t-values
Identification variables		
Density of institutions (per region)	-0.221***	-3.16
Access to professional/vocational training (cluster level)	0.116**	2.48
Included variables in the structural equation		
Labour experience	0.049***	9.94
Labour experience squared	-0.0009***	-15.34
Years of education	-0.047***	-8.14
Seniority in the enterprise	6.742	0.00
Access to microcredit (cluster level)	0.222	0.84
Number of younger children (cluster level)	0.057**	2.36
Number of married household heads (cluster level)	0.785***	6.88
Gender of household head (male = 1)	0.294***	6.04
Location of household head (urban = 1)	-0.696***	-14.76
Constant	1.035***	8.19
Log likelihood	-2821.526	
LR chi2(11) – Chi2(df;p-value)	1225.31(0.0000)	
Pseudo R2	0.1784	
Observations	10289	

Source: computed by author using ECAM III
Note: ***, ** and * represent 1%, 5% and 10% levels of significance respectively

Table 4.1A hosts the correlates of the selection indicator. The selection indicator takes the value 1 (one) if the private household head's employment vulnerability status is observed and 0 (zero) if the household head's employment vulnerability situation is unobserved, that is, the

head is either unemployed, discouraged unemployed[87] or inactive. Here we only focus on the identification variables that affect the selection indicator. Access to professional/vocational training at the cluster level[88] is positively and significantly correlated to the selection indicator. This, at first sight, indicates that most professionally trained and qualified workers are not ignorant of their employment situation compared to those with no professional qualification or training. Such skilled workers know their rights and can freely express themselves with respect to their employment situation; since it is common knowledge that most unqualified or unskilled workers git to provide information on their employment situation because they are afraid to lose their jobs. Equally skilled workers are most often than not eager to share their employment situation, say with a survey agent, especially if they are not wholly satisfied with their working conditions.

The density of institutions per region associates negatively and significantly to the selection indicator. This is implication that in regions where the density of institutions is higher, workers are more inclined not to report their employment situation. This observation is probable as in most big regions, with high densities of institutions, tidings other than their jobs interlock with their professional lives. Some because of too much involvement in political issues may find it unsecure to provide information on their employment.

[87] As a recall, we assume that if these unemployed and discouraged unemployed household heads were to work, they will do so in the private sector.
[88] Note that cluster level access to professional/vocational training is not a household decision variable.

Table 4.1B: Income Production Function: under Alternative Assumptions - Dependent Variable is log of Household Per Capita Monthly Income

Variables	Estimation			
	OLS (1)	IV 2SLS (2)	Control function (3)	Heckman/Control function (4)
		Correcting for endogeneity	*Correcting for endogeneity and unobserved heterogeneity*	*Checking for selectivity bias*
Employment vulnerability intensity	-0.005***	-0.028***	-0.030***	-0.030***
	(-13.4)	(-6.03)	(-7.58)	(-7.77)
Labour experience	-0.013***	-0.018***	-0.018***	-0.019***
	(-8.54)	(-8.63)	(-10.2)	(-10.53)
Labour experience squared	0.00016***	0.0002***	0.0002***	0.0003***
	(8.08)	(8.28)	(9.81)	(10.08)
Years of education	0.030***	0.010**	0.011***	0.011***
	(20.7)	(2.26)	(2.96)	(3.10)
Seniority in the enterprise	0.298***	0.184***	0.192***	0.178***
	(15.3)	(5.65)	(7.05)	(6.52)
Access to microcredit (cluster level)	0.394***	0.402***	0.397***	0.397***
	(6.89)	(5.87)	(6.95)	(7.07)
Number of younger children (cluster level)	-0.111***	-0.103***	-0.104***	-0.104***
	(-27.3)	(-20.40)	(-24.6)	(-24.93)
Number of married household heads (cluster level)	-0.299***	-0.235***	-0.231***	-0.239***
	(-10.4)	(-6.38)	(-7.54)	(-7.84)
Gender of household head (male = 1)	-0.053***	-0.121***	-0.121***	-0.128***
	(-3.93)	(-5.73)	(-6.89)	(-7.29)
Location of household head (urban = 1)	0.417***	0.272***	0.268***	0.279***
	(33.0)	(8.31)	(9.81)	(10.31)
Predicted vulnerability residual			0.027***	0.0277***
			(6.72)	(6.89)
Interaction of vulnerability and its residual			-0.00006***	-0.0001***
			(-3.46)	(-3.44)
Inverse of the Mills ratio				-0.090**
				(2.60)
constant	10.44***	12.776***	12.909***	12.968***
	(203.0)	(27.13)	(32.8)	(33.35)
R-squared / Uncentred R-squared (for 2SLS)/ log likelihood	0.4095	0.9963	0.4126	-8844.661
ρ (Correlation of welfare residual with sample selection residual)				-0.184** (-2.63)
σ (Sigma of welfare residual)				0.492*** (164.0)
Wald test for independent equations – Chi2(df;p-value)				5990.56(0.0000)
LR test of independent Equations – Chi2(df;p-value)				4.36(0.0369)

Partial R-squared (on excluded instruments)		0.0108		
Weak identification test: Cragg-Donald F-statistic [10% maximal IV relative bias]		41.086 [19.93]		
Underidentification test (Anderson canon. Corr. LR statistic – Chi2 [df;p-value]		81.913 [2;0.0000]		
Sargan statistic (overidentification test of all instruments) – Chi2[df;p-value]		3.028 [1; 0.0819]		
Durbin-Wu-Hausman Chi2 test for exogeneity of the potential endogenous variable [df;p-value]		35.973 [1;0.0000]		
Number of observations	9219	9219	9219	10289
Censored observations				1070

Source: computed by author using ECAM III

*Note: ***, ** and * represent 1%, 5% and 10% levels of significance, respectively.*

Note: t-statistics in parentheses, except otherwise specified

In Table 4.1B column (4), an additional regressor arises: the inverse of the Mills ratio (IMR) is generated in censored samples through the Heckman ML approach to account for selectivity bias (Card, 2001 and Mwabu, 2009). The inverse of the Mills ratio is significant, showing that selection is econometrically necessary. Accounting for potential endogeneity, unobserved heterogeneity and sample selection problems through the Heckman/control function approach, the estimate of employment vulnerability on household income is same as that obtained when we only check for potential endogeneity and unobserved heterogeneity biases (0.30).

Table 4.1C: Income Production Function and Different Levels of Employment Vulnerability - Dependent variable is log of Household Per Capita Monthly Income

Variables	Levels of Employment Vulnerability			
	At 0.93 and above	At 0.94 and above	At 0.95 and above	At 0.96 and above
Employment vulnerability intensity	-0.055***	-0.011	-0.007	0.022
	(-6.75)	(-0.78)	(-0.53)	(1.00)
Labour experience	-0.019***	-0.017***	-0.016***	-0.016***
	(-8.00)	(-5.91)	(-5.7)	(-4.74)
Labour experience squared	0.0003***	0.0002***	0.0002***	0.0002***
	(8.22)	(6.69)	(6.44)	(5.06)
Years of education	0.014***	0.01	0.01	0.016**
	(2.68)	(1.55)	(1.59)	(2.14)
Seniority in the enterprise	0.177***	0.141***	0.142***	0.223***
	(4.43)	(3.17)	(3.2)	(4.26)
Access to microcredit (cluster level)	0.357***	0.39***	0.391***	0.371***
	(4.34)	(4.15)	(4.14)	(3.05)
Number of younger children (cluster level)	-0.085***	-0.081***	-0.081***	-0.075***
	(-15.5)	(-13.1)	(-13.1)	(-10.7)
Number of married household heads (cluster level)	-0.268***	-0.291***	-0.294***	-0.211***
	(-5.88)	(-5.32)	(-5.35)	(-3.04)
Gender of household head (male = 1)	-0.134***	-0.172***	-0.171***	-0.118***
	(-5.45)	(-6.03)	(-5.99)	(-3.19)
Location of household head (urban = 1)	0.297***	0.205***	0.208***	0.309***
	(7.09)	(4.08)	(4.13)	(4.63)
Predicted vulnerability residual	-0.245***	-0.033	-0.006	-0.236
	(-3.33)	(-0.264)	(-0.046)	(-1.16)
Interaction of vulnerability and its residual	0.003***	0.001	0.001	0.003
	(3.62)	(0.485)	(0.261)	(1.23)
constant	15.29***	10.997***	10.663***	7.734***
	(19.3)	(8.16)	(7.81)	(3.62)
Fisher Test-statistic (df;p-value)	168.11(12, 4376; 0.0000)	106.90(12, 2868; 0.0000)	105.79(12, 2842; 0.0000)	57.77 (12, 1826; 0.0000)
Adj R-squared	0.3137	0.3062	0.3059	0.2704
Number of observations	4389	2881	2855	1839

Source: computed by author using ECAM III

*Note: ***, ** and * represent 1%, 5% and 10% levels of significance, respectively.*

Note: t-statistics in parentheses, except otherwise specified

Table 4.1D: Income Production Function and Employment Vulnerability at 0.96 and Above by Employment Sectors - Dependent variable is log of Household Per Capita Monthly Income

Variables	Employment Vulnerability at 0.96 and above		
	Informal	Farm	Nonfarm
Employment vulnerability intensity	0.024	0.015	0.017
	(1.08)	(0.639)	(0.239)
Labour experience	-0.015***	-0.016***	-0.013
	(-4.58)	(-4.58)	(-1.34)
Labour experience squared	0.00021***	0.00023***	0.00013
	(4.89)	(4.97)	(0.948)
Years of education	0.017**	0.010	0.012
	(2.31)	(1.25)	(0.57)
Seniority in the enterprise	0.232***	0.217***	0.033
	(4.44)	(3.89)	(0.194)
Access to microcredit (cluster level)	0.378***	0.374**	-0.082
	(3.11)	(2.89)	(-0.215)
Number of younger children (cluster level)	-0.076***	-0.071***	-0.157***
	(-10.8)	(-9.71)	(-4.72)
Number of married household heads (cluster level)	-0.223***	-0.235***	0.176
	(-3.21)	(-3.09)	(1.02)
Gender of household head (male = 1)	-0.116***	-0.133***	-0.025
	(-3.15)	(-3.3)	(-0.261)
Location of household head (urban = 1)	0.332***	0.149*	0.258*
	(4.95)	(1.79)	(1.71)
Predicted vulnerability residual	-0.268	-0.360	0.061
	(-1.32)	(-1.53)	(0.13)
Interaction of vulnerability and its residual	0.003	0.004	0.000
	(1.38)	(1.60)	(-0.068)
constant	7.563***	8.414***	8.109
	(3.55)	(3.63)	(1.18)
Fisher Test-statistic (df;p-value)	58.60(12, 1823; 0.0000)	37.82(12, 1547 ; 0.0000)	13.93(12, 264 ; 0.0000)
Adj R-squared	0.2736	0.2208	0.3598
Number of observations	1836	1562	277

Source: computed by author using ECAM III

*Note: ***, ** and * represent 1%, 5% and 10% levels of significance, respectively.*

Note: t-statistics in parentheses, except otherwise specified

Remark: Results for the Formal Private Sector for Vulnerability Intensity at 0.96 and above are not feasible because the sample size, n =3, is too small)

Appendix 4.1B: Joint Distribution Function

The estimator of the joint distribution function $\hat{F}(x, y)$ is defined as:

$$\hat{F}(x, y) = \frac{\sum_{i=1}^{n} w_i I(x_i \leq \bar{x}) I(y_i \leq \bar{y})}{\sum_{i=1}^{n} w_i}$$

where x *and* y stand for employment vulnerability and monthly income respectively, n is the number of observations, i statistical unit (household head), and $I(.)$ refers to probability function.

Appendix 5.1

Characteristics of the Shapley Value

The fundamental questions of distributive analysis are that of how each factor contributes to an observed level or change in a measure of living standard. These preoccupations are similar to those raised in cooperative game theory and concerns may be based on how to exactly account for an observed change in a measure of living standard in terms of its contributors. Recent literature in distributive analysis is proposing an attribution according to the Shapley Value (see Shorrocks, 1999; Kaboré, 2002; Rongve, 1995; Araar, 2003; Baye, 2006a). To better understand the concept of the Shapley Value and its characteristics, let $K=(1,2,3,.....,k,...,m)$ be a finite set of players. Non-empty sub-sets of K are called coalitions, such that we have:

$$v(S)=v(K\cap S) \qquad \forall S$$

Here S represents any coalition or sub-set formed including player k. The strength of each coalition is expressed as characteristic function v. For any coalition or sub-set $S\subset K$, $v(S)$ measures the share of the gain or loss that the coalition, S, is capable of obtaining without resorting to agreements with players belonging to other coalitions.

Player k receives the extra amount that he brings to the existing coalition of players $S-\{k\}$, that is, $v(S)-v(S-\{k\})$ is the marginal contribution of player k to the sub-set S. this way, when player k makes part of a forming grand coalition, player k and the players who are already members make up some coalition S, of size s, which contains player k.

If $\phi_k^S(K,v)$ is player k's expected share in a game with characteristic function v, it should satisfy the following characteristics:

- $\phi_k^S(K,v)$ should be symmetric or anonymous, that is, it should be independent of the factor's label, $1,2,3,.....,m$. Equally, $\phi_k^S(K,v)$ should be symmetric and anonymous as the reward a player k gets in the initial game is actually what the player deserves in a restructured game.
- the decomposition should be efficient, that is, it should be exact and additive, so that, for $\forall k\in K$ and $\forall k+1\in K$,

$$\phi_k^S(K,v) \cap \phi_{k+1}^S(K,v) = \phi \quad \text{and} \quad \sum_{k \in K} \phi_k^S(K,v) = v(K) \tag{5.1A}$$

This axiom tells us that the sum of the rewards got by each coalition in play gives the value of the game. That is, the decomposition exempts all pessimistic play; an individual player k who plays, does so because he believes the others will cooperate against him. In other words, appealing contributing factors should form a partition, so as to eliminate the need for vague concepts such as the residual or interaction terms to establish the identity of the decomposition (see Shorrocks, 1999).

We have a unique value function that satisfies the Shapley's axioms, this function is given by the Shapley Value (Shapley, 1953; and Baye, 2006a):

$$\phi_k^S(K,v) = \sum_{s=1}^{m} \sum_{\substack{S \in K \\ k \in S \\ |S|=S \\ |K|=m}} \frac{(s-1)!(m-s)!}{m!} [v(S) - v(S - \{k\})] \tag{5.1B}$$

Where by convention 0!=1 and $v(\phi) = 0$

The Shapley Value supposes that players join the game in a random manner. The weight associated with each coalition S is equal to the probability to obtain, in a random partitioning of $K - \{k\}$ between sequence 1 and sequence 2. The marginal contributions $v(S) - v(S - \{k\})$ of player k for sub-set S occur for exactly the same orderings in which k is preceded by $s-1$ other players in S, and followed by the $m-s$ players not in S.

The number of orderings (permutations) for player k to join the coalition S, is $(s-1)!(m-s)!$. The total number of possible orderings is given by $m!$, which is the number of permutations of m players taken at a time. All the players then have the same weight or probability in the game:

$$\text{Probability} = \frac{(s-1)!(m-s)!}{m!} \text{ (see equation 5.1B above)}$$

Conventionally, $v(\phi) = 0$, in the sense that there exist no empty coalition and that the value of the aggregate indicator is zero when all the factors are extracted.

Appendix 6.1

Appendix 6.1A: Income Production Function - Dependent Variable is log of Household Per Capita Monthly Income

Variables	Coefficient Estimates
Employment decency indicator	778.01
	(5.56)
Labour experience	271.12
	(5.53)
Labour experience squared	-2.38
	(-3.41)
Years of education	763.82
	(5.92)
Seniority in the enterprise	9105.98
	(9.43)
Access to microcredit (cluster level)	7061.49
	(3.48)
Number of younger children (cluster level)	-2460.62
	(-16.4)
Number of married household heads (cluster level)	6929.00
	(7.24)
Gender of household head (male = 1)	-1727.62
	(-2.78)
Location of household head (urban = 1)	7126.56
	(7.34)
Predicted decency residual	-400.55
	(-2.84)
Interaction of decency and its residual	-3.12
	(-5.52)
Fisher Test-statistic (df;p-value)	1440.85 (12, 920; 0.0000)
Adj R-squared	0.6521
Number of observations	9219

Source: computed by author using ECAM III

Appendix 6.1B: Combined income components

Given the following linear regression, with no constant (as per Table 6.1A above):

$$y_i = \beta_1 x_{i,1} + \beta_2 x_{i,2} + --- + \beta_m x_{i,m} + \varepsilon_i \qquad m = 1,2,\ldots\ldots,M \text{ and } i = 1,2,\ldots\ldots,n \quad (6.1A)$$

Where, Y_i is per capita monthly income of household i; β_0, β_1, ..., β_m are parameters to be estimated; x_i $(i = 1,2,\ldots,n)$ the set of independent variables; and ε is the error term.

It is possible from the regression results to generate the estimated income flows attributable to the various explanatory variables. These estimated income flows are obtained from $\hat{y}^m = X\hat{\beta}_m$. It then follows that total income is the sum of these income flows plus the residual:

$$y_i = \sum_{m=1}^{M+1} \hat{y}_i^m \qquad \text{where } \hat{y}_i^m = \begin{cases} \hat{\beta}_m x_i^m & \text{for m = 1.....M} \\ \hat{\varepsilon}_i & \text{for m = M + 1} \end{cases} \tag{6.1B}$$

The regressed-income source '1', C_1, is obtained as follows:

$$C_1 = y_i - \sum_{m \neq 1}^{M} \hat{y}_i^m \tag{6.1C}$$

Which can also be written:

$$C_1 = y_i - \left[\sum_{m \neq 1}^{M-1} \hat{y}_i^m - \hat{\varepsilon}_i \right]$$

The other regressed-income sources (C_2, C_3, ……,C_M, C_{M+1}) are obtainable in the same manner. Thus we have:

$y = \hat{y} + \varepsilon$
Where $\hat{y} = C_1 + C_2 + C_3 + \ldots\ldots + C_M$ and $\varepsilon = C_{M+1}$

These regressed-income sources can now be combined in groups of regressed-income components according to the needs of the study. For instance, $C_1 + C_2$ could form a component, $C_3 + C_4$ another component and so on.