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Towards Sustainable Food Security: The Role of Decent Work and Poverty Alleviation in Cameroon

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ABSTRACT

This paper attempts to establish a relationship between decent work and poverty on food security in Cameroon. The study, conducted on cross-sectional data of the fourth round of the Cameroon Household Consumption Survey, used the two-stage-least squares estimation technique and found out that the interactive effect of decent work and poverty has a negative and insignificant effect on food security in Cameroon. This therefore means that when decent work interacts with poverty, it negatively and insignificantly affects food security. Given the negative direct effect observed in the interactive regression between decent work and poverty on food security, policymakers should adopt comprehensive approaches that go beyond individual interventions. This involves recognizing the complex interactions and trade-offs between different policy goals and designing integrated strategies that simultaneously address poverty reduction, decent work, and food security. Such approaches can involve coordination and collaboration across sectors, including agriculture, labour, social welfare, and economic development, to ensure synergistic outcomes. Regular monitoring and evaluation can guide evidence-based policy adjustments and ensure that efforts to enhance decent work and reduce poverty have a positive and sustainable impact on food security.

Key Words: Decent Work, Poverty, Sustainable

1. Background

Food security, poverty, and decent work are critical components of socio-economic development globally, yet they remain persistent challenges that interlink and exacerbate one another, particularly in developing regions like Cameroon. This intricate relationship necessitates a comprehensive exploration to devise effective strategies that can mitigate these issues and foster sustainable development, (FAO, 2023; ILO, 2023; WHO,2023; Abeh & Ahmad, 2023).

Globally, food security is a fundamental goal, defined by the Food and Agriculture Organization (FAO) as the state in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs for an active and healthy life. Despite significant international efforts, such as the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs), food insecurity persists (Mabuza & Mabuza 2020). As of 2019, nearly 690 million people were undernourished, with projections indicating that this number could exceed 840 million by 2030 if current trends continue (FAO, 2020). The causes of food insecurity are multifaceted, encompassing economic instability, climate change, conflicts, and inadequate infrastructure, which collectively hinder the availability and accessibility of food.

Poverty, which the World Bank defines as living on less than $2.15 a day (in 2022 purchasing power parity terms), affects billions of people globally and is both a cause and consequence of food insecurity. Poverty limits access to resources necessary for food production and purchase, leading to malnutrition, which in turn reduces productivity and perpetuates the cycle of poverty (World Bank, 2020). This cyclical nature underscores the need for interventions that simultaneously address both poverty and food security.

Decent work, a concept promoted by the International Labour Organization (ILO), is central to this discussion. Decent work entails opportunities for employment that are productive and deliver fair income, ensure workplace security, provide social protection for families, and offer better prospects for personal development and social integration. It is a crucial driver in reducing poverty and enhancing food security, as stable and fair employment enables individuals to afford nutritious food and other essentials, thereby improving their quality of life (ILO, 1999).

The relationship between food security, poverty, and decent work can be explained through several theoretical frameworks. The Capability Approach, developed by Amartya Sen, emphasizes enhancing individuals' capabilities to achieve the kinds of lives they value, including access to adequate food and decent employment (Sen, 1993). Human Capital Theory posits that investments in education and skills development enhance productivity and income potential, thereby reducing poverty and improving food security (Becker, 1964). The Theory of Relative Deprivation highlights how economic inequalities can lead to social and psychological stress, further impacting food security and overall well-being (Merton, 1958).

Historically, various global initiatives have recognized the intertwined nature of these issues. The MDGs and SDGs, for instance, underscore the eradication of poverty and hunger and the promotion of decent work as essential for sustainable development (UN, 2015). Despite these efforts, significant challenges remain, particularly in developing regions.

In the Sahel region, recurrent droughts, conflicts, and economic instability severely impact food security. These challenges are compounded by high poverty levels and limited opportunities for decent work. The region's dependence on agriculture makes it vulnerable to climate change, which affects crop yields and food availability (FAO, 2018). Within the Economic and Monetary Community of Central Africa (CEMAC), which includes countries like Cameroon, Chad, and the Central African Republic, similar issues prevail. High poverty rates, political instability, and inadequate infrastructure hinder efforts to achieve food security. The informal economy, employing a significant portion of the population, often provides inadequate income and poor working conditions, exacerbating poverty and food insecurity (INS, 2015).

In Cameroon, the link between food security, poverty, and decent work is particularly pronounced. The country's agricultural sector, crucial for food production and employment, faces numerous challenges such as low productivity, inadequate infrastructure, and the impacts of climate change. According to the National Institute of Statistics, approximately 37.5% of the population lived below the poverty line in 2014, and food insecurity remains a significant issue (INS, 2015). The informal sector, which constitutes a large part of Cameroon’s labour market, typically offers low wages, job insecurity, and poor working conditions. These factors limit workers’ ability to afford nutritious food, perpetuating the cycle of poverty and food insecurity. Improving labour laws and social protection measures are critical for enhancing food security and reducing poverty (ILO, 2013).

The intricate links between food security, poverty, and decent work underscore the need for a comprehensive study to inform effective policy interventions in Cameroon. This study aims to explore these relationships in depth, providing empirical evidence and theoretical insights to support policy formulation. By examining the effectiveness of various interventions and identifying best practices, the research seeks to contribute to the development of comprehensive policies that can break the cycle of poverty and food insecurity and promote decent work in Cameroon.

2. Statement of the Problem

Poverty and hunger persist as urgent and formidable development challenges globally. Despite significant strides in reducing poverty, food security and under nutrition remain critical issues, particularly in less developed regions (Mishra, 2024). While global efforts led to the Millennium Development Goal of halving poverty between 1990 and 2015 being met in many regions, Sub-Saharan Africa (SSA) lags, remaining the world's most food-insecure area. The Food and Agriculture Organization (FAO, 2019) reports that over one-fourth of the SSA population (over 230 million), are undernourished. This is not just a statistic, but a call to action for immediate and sustained efforts to combat these pressing issues. The need for action is urgent and cannot be overstated. We all have a responsibility to act now.

The situation in SSA, specifically in Cameroon, is further complicated by recent global events, particularly the COVID-19 pandemic, on-going conflicts, and climate shocks. These events have dramatically increased the number of people facing hunger. The 2023 edition of the State of Food Security and Nutrition in the World report reveals a staggering rise in hunger, with between 691 and 783 million people affected in 2022, an increase of 122 million people compared to 2019. Moreover, the report indicates that 2.4 billion people experienced moderate to severe food insecurity, 900 million faced severe food insecurity, and over 3.1 billion people could not afford a healthy diet (Onyancha, 2024).

In Cameroon, food insecurity is a multifaceted problem influenced by various factors, including poverty, indecent work conditions, climate change, political instability, and inadequate infrastructure. Approximately 11% of the population, or about 3 million people, face acute food insecurity, particularly in the Far North, North-West, and South-West regions. These areas are severely impacted by armed conflict, disputes over natural resources, flooding, and limited access to essential services such as healthcare. The consequences of the Ukraine-Russia conflict have further worsened food security in Cameroon by driving up the prices of essential goods, including wheat-based products (Nweke et al., 2022).

Empirical evidence suggests a strong link between decent work, poverty alleviation, and food security. Decent work, characterised by stable employment and fair wages, has the potential to impact household income and food security directly. Stable employment increases purchasing power, enabling households to access nutritious food and reduce food insecurity. Conversely, poverty remains a significant barrier to food security, with low-income households more likely to experience food insecurity. Studies also show that promoting decent work in the agricultural sector can enhance food production and improve the livelihoods of farmers and their families (Esuka & Eho, 2024).

Despite these findings, several challenges persist. Economic instability can undermine job security and wages, making it difficult for households to maintain stable income levels necessary for food security. Political instability and conflicts disrupt agricultural production and market access, exacerbating food insecurity. Climate change poses additional threats, with adverse weather conditions affecting crop yields and food availability. Infrastructure deficits further hinder food distribution and access, particularly in remote areas.

The Cameroonian government has taken significant steps to address household food insecurity and promote decent work practices. These measures include investing in education and training, supporting small businesses and entrepreneurship, promoting gender equality, encouraging trade, and advocating for fair wages and working conditions to increase household incomes. In 2022, humanitarian partners provided food assistance to 520,000 people, representing 63% of the target population. The Food Security Sector has requested US$100.9 million in the 2023 Humanitarian Response Plan to assist 1.1 million individuals, including internally displaced persons, refugees, and vulnerable local populations, through food and cash hand-outs, sustainable livelihood projects, and initiatives to enhance community resilience to climate change.

Despite various government and international interventions, several specific challenges persist that this study aims to address. Economic instability and fluctuating income levels undermine job security and wages, making it difficult for households to maintain the stable income necessary for food security. Political instability and conflicts disrupt agricultural production and market access, further exacerbating food insecurity. Climate change poses significant threats, with adverse weather conditions affecting crop yields and food availability. Additionally, infrastructure deficits, particularly in remote areas, hinder the efficient distribution and access to food. These challenges create a complex environment where poverty and food insecurity remain prevalent despite efforts to promote decent work.

Focusing on these specific challenges, the study aims to uncover how decent work can enhance household incomes, improve access to nutritious food, and ultimately reduce poverty and food insecurity. The research will investigate how stable employment with fair wages can mitigate the adverse effects of economic and political instability. It will also examine the role of sustainable agricultural practices and infrastructure improvements in supporting food security. The findings of this study have the potential to provide crucial and actionable insights for policymakers, stakeholders, and practitioners working towards achieving sustainable development and zero hunger in Cameroon. Situating the study within the broader context of these challenges underscores the necessity of integrated approaches that address the root causes of poverty and food insecurity through the promotion of decent work. This research is not just an academic exercise but a beacon of hope for a better future.

3. Theoretical and Empirical Literature Review

The theoretical foundation of this study on decent work, poverty, and food security in Cameroon is built on several key theories that offer insights into the complex interplay of these variables.

Theory of Relative Deprivation

Developed by Samuel Stouffer and later expanded by Robert Merton and Walter Runciman, the Theory of Relative Deprivation posits that individuals feel deprived when they perceive themselves to be worse off compared to others within their reference group. This deprivation is not solely based on an actual lack of resources but on perceived disparities in access to essential resources necessary for a good quality of life. The theory emphasizes the subjective nature of deprivation, where individuals feel inferior relative to others in their social circle or community, regardless of their absolute material conditions.

The relevance of this theory to the current study is significant, as it highlights how feelings of deprivation can exacerbate poverty and food insecurity, particularly when individuals compare their situations to those who are better off within the same society. Indecent work, leading to insufficient income, can intensify feelings of deprivation, thus worsening food insecurity.

However, the Theory of Relative Deprivation has its critiques. While it highlights the psychological and social dimensions of deprivation, it may overlook structural factors that contribute to inequities. The theory primarily focuses on individual perceptions rather than objective measures of deprivation and may not fully account for systemic issues that cause poverty and food insecurity. Despite these critiques, this theory is pertinent as it underscores the role of perceived deprivation in understanding poverty and food insecurity, which is crucial for this study.

The Capability Approach

The Capability Approach, developed by Amartya Sen and Martha Nussbaum, assumes that the true measure of well-being is the capability of individuals to achieve the kind of lives they value. It emphasizes the importance of enabling people to develop their abilities and opportunities. This approach focuses on enhancing individual capabilities to function effectively in society, highlighting the significance of employment in providing not just income but also opportunities for skill development, participation in decision-making, and leading dignified lives.

The Capability Approach is crucial for understanding how employment quality impacts individuals' ability to escape poverty and achieve food security. It connects decent work with enhanced individual capabilities, which can help people escape poverty and access food. However, the Capability Approach can be challenging to operationalize due to its abstract nature and the difficulty in measuring capabilities. It also requires comprehensive data to assess various dimensions of capabilities, which may not always be available. Despite these challenges, the Capability Approach provides a valuable framework for understanding how employment can improve life quality and food security, essential for analysing the impact of decent work on poverty and food security in Cameroon.

The Entitlement Approach to Food Security

Amartya Sen's Entitlement Approach assumes that access to food is determined by individuals' entitlements to commodity bundles, which include food. It focuses on the socio-economic conditions that enable or constrain these entitlements. The approach views starvation as resulting from a failure to access adequate food rather than an overall shortage of food supply, emphasizing the importance of economic and physical access to food, influenced by factors such as income, assets, and social security.

The Entitlement Approach is essential for understanding how economic conditions and employment impact food security. It highlights the access dimension of food security, which is closely linked to income and employment. However, the approach has been critiqued for not fully addressing structural issues at the national level that affect food security, such as political and policy decisions. Critics argue that it may overlook broader systemic factors that contribute to food insecurity. Despite these critiques, the Entitlement Approach is relevant as it helps in examining how decent work can improve access to food, which is a key aspect of this study.

Empirical studies reinforce the theoretical linkages between food security, poverty, and decent work. In Sub-Saharan Africa, social protection programs that enhance employment opportunities have significantly improved food security and reduced poverty. For example, initiatives providing stable employment with fair wages enable individuals to purchase nutritious food and invest in health and education, leading to long-term improvements in well-being (Haini et al., 2023). In Cameroon, studies show that households with access to decent work are more likely to be food secure and less likely to experience poverty. Research by Bekele (2019) indicated that improving agricultural productivity and providing better working conditions in rural areas can enhance food security outcomes. Similarly, initiatives supporting small businesses and promoting fair wages have been linked to poverty reduction and improved food security (FAO, 2018).

These empirical studies provide a foundation for understanding the complex relationships among decent work, poverty, and food security. However, little has been done on the moderating role of decent work on the poverty food security nexus especially in the context of Cameroon. This study aims to build on this foundation by examining these interrelationships in the context of Cameroon, using a comprehensive approach that includes both quantitative and qualitative data to provide a nuanced understanding of how decent work can alleviate poverty and enhance food security.

4. Methodology

4.1 Data Description

The study makes use of cross-sectional secondary data from the fourth round of the Cameroon Household Consumption Survey (ECAM 4) conducted in 2014 by the National Institute of Statistics (NIS). It aims to produce indicators on the living conditions of the populations. These indicators should enable the updating of the poverty profile, monitoring and evaluation of the national development strategy (NDS30) and progress towards achieving the Sustainable Development Goals (SDGs). This objective can only be achieved if the data collected in the farm are of good quality. The study covers a sample of approximately 10,303 households consisting of 2,980 female-headed household and 7,323 male-headed households. The survey made use of the simple random sampling technique as each household had the same probability of being selected for the interview. All household members drawn are registered in the household questionnaire. The survey questionnaire contained principally thirteen (13) sections numbered 00-12 which addressed all households residing in urban, semi-urban and in the rural areas (NIS, 2014). The questions used from the questionnaire targeted variables regarding the food expenditure, total household consumption, unemployment status, age of house hold head, sex of household head level of education of household head, revenue status, migration status, marital status, occupational sector, religion, house hold size (number of persons), composition in terms of share of age group, possession of farmland, home ownership status, place of residence, etc.

Food security is measured by a normalised index constructed as inspired by the works of Jeder et al., (2020); Bougema, (2023). Based on these prior empirical studies, economic theories, and the available data, the study uses Multiple Correspondence Analysis (MCA) to construct an index of food security based on five variables which include: (i) to take three meals daily every day; (ii) to eat cereals or tubers every day; (iii) to eat vegetables every day; (iv) to eat meat or fish at least every three days and (v) to take good meal on feasting days (Sunday, ceremony, etc.). These variables assess the level of dietary diversity in households and their economic access to food. In general, an increase in dietary diversity in a home indicates that the nutrition of the household has improved (Kennedy et al., 2010). This study makes use of the Household Dietary Diversity Score (HDDS) indicator to measure food security as inspired by the work of Bougema (2023) as it reflects a household's economic ability to access different food options. It also provides an indication of the nutritional adequacy of the diet consumed by a household. A higher dietary diversity score is associated with a more balanced and nutrient-rich diet, which is essential for maintaining good health and well-being. It offers insights into the overall dietary quality of a household. A diverse diet is often associated with better dietary quality, as it implies consumption of a wider range of nutrients from different food groups.

consumption of a wider range of nutrients from different food groups.

Table 4.1: Variables Used in Constructing the Food Security Index (MCA)

SN	Variables	Categories
i	To take three meals daily every day	1 (If Yes), 0 (If No)
ii	To eat vegetables every day	1 (If Yes), 0 (If No)
iii	To eat cereals or tubers every day	1 (If Yes), 0 (If No)
iv	To eat meat or fish at least every three days	1 (If Yes), 0 (If No)
v	To take good meal on feasting days (Sunday, ceremony, etc.),	1 (If Yes), 0 (If No)

Source: Author's conceptualization, (2024)

Poverty is captured here as the total household expenditure per adult equivalence. It is given as total household expenditure proxy to household income divided by adult equivalent or size of household.

Decent work is measured by an index constructed as inspired by the works of Duffy et al. (2017); Ferraro et al. (2017); Anweh & Ndamsa (2018); Oppong (2019) and Bougema (2023). Here, Principal Component Analysis (PCA) is used to construct a composite index of decent work, comprising of

the following primary variables; (i) worker has a social security number; (ii) enterprise where individual works is registered with social insurance; (iii) individual has a contract or agreement; (iv) possession of a payslip; (v) does the household head belong to any syndicate or a similar association of employees; (vi) number of hours per week devoted to work; (vii) paid annual leave; (viii) worker is satisfied with his job and (ix) paid sick leave. The selection of indicator variables to be used is based on previous empirical works, economic theories, and dataset in hand. Our composite index is built using categorical variables, inspired from Pagès (2003, 2005) and Bocquier et al. (2010) to track different aspects of decent work.

Table 4.2: Variables Used in Constructing the Decent Work Index (PCA)

SN	Variables	Categories
i	Worker has a social security number	Yes, No, Don't know
ii	Enterprise where individual works is registered with social insurance	Yes, No, Don't know
iii	Individual has a contract or agreement	Written, Verbal, Other
iv	Possession of a payslip	Yes, No, Don't know
v	Does the household head belong to any syndicate or a similar association of employees	Yes, No, Don't know
vi	Number of hours per week devoted to work (Willing to work more than 40 hours per week)	Yes, No
vii	Paid annual leave	Yes, No
viii	Worker is satisfied with his job	Yes, No
ix	Paid sick leave	Yes, No

Source: Author's conceptualization, (2024)

4.2 Model and Estimation Techniques

The main estimation technique used here is the Two-stage least squares (2SLS). The 2SLS is a statistical method used in econometrics to address endogeneity, which occurs when an independent variable is correlated with the error term in a regression model. This correlation can lead to biased and inconsistent estimates of the coefficients. 2SLS is particularly useful in situations where instrumental variables are available to address endogeneity and it provides consistent estimates of the parameters, which converge to the true population values (Wooldridge, 2012).

In this model, food security is the main dependent variable with decent work, poverty and their interaction as the main independent variables. This model equally includes some control variables and presents the joint effect of decent work and poverty in explaining food security as shown in equation (3.1).

$$FS_i = \alpha_0 + \alpha_1 DW_i + \alpha_2 Pov_i + \alpha_3 \mathfrak{B} + \alpha_4 DW_i * POV_i + E_{1i} \ldots\ldots\ldots\ldots\ldots (4.1)$$

$$DW_i = \varrho_0 + \varrho_i \Phi_i + \Psi_i \mathfrak{B}_i + E_{2i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.2a)$$

$$Pov_i = \Theta_0 + \Theta_i \hbar_i + g_i \mathfrak{B}_i + E_{3i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.2b)$$

$$DW_i * Pov_i = \beta_0 + \beta_i Z_i + \mathfrak{B}_i \gamma_i + E_{4i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.2c)$$

Where:

FS_i Represents the food security status of household *i*

DW_i Represents the decent work status of household *i,*

Pov_i Represents the poverty status of household *i,*

$\mathfrak{B}_i$, represents a vector of control variables (age, gender, marital status, level of education, occupation status of household head, religion of household head, household size, and place of residence, dependency ratio),

$\Phi, \hbar$ *and* Z Represents a vector of instrumental variables (amount of exceptional and occasional incomes received in cash or in kind, benefits from social insurance contributions on main job, benefits from medical facilities from main job) to correct for endogeneity bias,

$DW_i * Pov_i$ Represents the combined effect of decent work and poverty on food security (interactive term),

$\alpha, \varrho, \Psi, \Theta$ *and* γ Represents the parameters to be estimated, and

E_i, Represents the error term

Equation (4.1) is shows the combined effect of decent work and poverty on food security while equation $(4.2a)$, $(4.2b)$ and $(4.2c)$ are the reduced forms of decent work poverty and the interactive term between decent work and poverty, respectively, as functions of both the included and excluded

instruments, due to their endogenous nature in the model. Hence, to resolve the problem of endogeneity, the endogenous covariates (decent work and poverty) are regressed on a set of included and excluded instruments as shown in equations $(4.2a)$, $(3.2b) and$ $(4.2c)$ which are the reduced form (first stage) equations.

In the pre-tests, decent work, poverty and together with their combined effect are each endogenous to food security. For instance, decent work directly influences an individual's purchasing power and also fosters social stability and resilience within communities, while food security and adequate nutrition is essential for physical and cognitive development, which directly impacts an individual's capacity to perform effectively in the workplace. Similarly, poverty is endogenous to food security. For instance, poverty limits individuals' and families' ability to access an adequate and nutritious diet while, inadequate access to nutritious food can lead to malnutrition and various health problems, which can further perpetuate poverty by reducing individuals' ability to work and earn a living. The combined influence of decent work and poverty on food security poses a similar bi causality. Hence, to resolve the problem of endogeneity arising between decent work and poverty on food security, the endogenous covariate (decent work * poverty) is regressed on a set of included and excluded instruments as shown in equation $(4.2c)$, which is the reduced form (first stage) equation.

The study makes use of the following estimation techniques as summarized in table 4.3: Wald/Chi2 test to assesses the significance of individual coefficients in a model, particularly when dealing with generalized linear models (GLMs); Cragg-Donald F-statistic to assess the strength of instruments used in the regression models since there is concern about endogeneity; Stock-Yogo Test, equally used to assess the strength of instrumental variables (IVs). When combined, the Cragg-Donald and Stock-Yogo tests provide a comprehensive framework for assessing instrument strength in econometric models; Sargan Test, determine whether the instruments used are uncorrelated with the error term and thus valid for identifying causal relationships; Durbin-Wu-Hausman X^2 Test (DWH) to assess whether the ordinary least squares (OLS) estimators are biased due to omitted variable bias or measurement error in the independent variables; Two-Stage Least Squares (2SLS) which addresses endogeneity by using instrumental variables that are correlated with the endogenous independent variable but uncorrelated with the error term; the Ordinary Least Squares (OLS) Regression which is used for estimating the relationships between the dependent and independent variables by minimizing the sum of squared residuals; and Beta Regression Analysis which is suitable for modelling continuous response variables constrained to the interval (0, 1), proportion, or rate data such as our normalised indices of decent work and food security.

Table 4.3 Estimation Techniques

Diagnostic Tests	
Estimation Technique	**Description**
Durbin-Wu-Hausman X^2 Test (DWH)	Primary used to check whether an endogenous regressor can be treated as exogenous. If the null hypothesis of the DWH test is rejected, it indicates that OLS estimates are biased due to endogeneity, and thus IV methods should be employed.
Cragg-Donald F-statistic	Particularly used in the context of instrumental variable (IV) estimation, it serves as a diagnostic measure to assess the strength of instruments used in regression models, especially when dealing with endogeneity issues.
Stock-Yogo Test	Used primarily to assess the strength of instrumental variables (IVs) in the context of linear regression models and is particularly relevant when dealing with endogeneity issues
Wald/Chi2 Test	It is used primarily in the context of estimating parameters in statistical models, particularly in regression analysis and generalized linear models. It assesses the significance of individual coefficients in a model by comparing the estimated coefficient to its standard error. It is a test for the overall significance of the model.
Regression Tests	
Two-Stage Least Squares (2SLS)	This approach addresses endogeneity by using instrumental variables that are correlated with the endogenous independent variable but uncorrelated with the error term. The first stage involves regressing the endogenous variable on the instrumental variables to obtain predicted values, which are then used in the second stage regression.
Ordinary Least Squares (OLS) Regression	Estimates relationships between dependent and independent variables by minimizing the sum of squared residuals. Key

	assumptions include linearity, independence, homoscedasticity, and normality of residuals
Beta Regression Analysis	This technique is suitable for modelling continuous response variables constrained to the interval (0, 1), proportion, or rate data. It is also appropriate for modelling data that may be skewed or have different variances.

Source: Author's conceptualization, (2024)

4.2.1 The Moderating Effect of Decent Work on the Poverty-Food Security Nexus

Taking into account the presence of endogeneity from the Durbin-Wu-Hausman X^2 Test (DWH) between the interactive term of decent work and poverty on food security, a two stage least square approach is employed. The first stage of 2SLS involves regressing the endogenous independent variable (in this case decent work and poverty) on a set of instrumental variables (in this case: benefits from social insurance contributions on main job, benefits from medical facilities from main job & Amount of exceptional and occasional incomes received in cash or in kind) that are correlated with the endogenous variable but uncorrelated with the error term. The fitted values from this first stage regression are then used as a proxy for the endogenous variable in the second stage regression, where the dependent variable is regressed on these fitted values along with other exogenous variables.

To proceed with this estimation technique, the equation is first stated in its general form as shown in equation (3.12) below;

$$\boldsymbol{Y_i = \alpha_0 + \alpha_1 A_i + X_i \delta_i + u_{1i}} \quad \boldsymbol{(4.3)}$$

Where,

$\boldsymbol{Y_i}$ is the dependent variable, in this case food security

$\boldsymbol{A_i}$ is the main independent variable here and in this case the endogenous variable (the interactive term between decent work and poverty in this case)

$\boldsymbol{X_i}$ is the vector of economic control variables which are exogenous variables,

$\boldsymbol{u_{1i}}$ Is the error term,$\boldsymbol{\alpha_0}$ $\boldsymbol{\alpha_1}$ and $\boldsymbol{\delta_i}$ are parameters to be estimated.

The variable $\boldsymbol{A_i}$ here is the endogenous variable, meaning it correlates with the error term. The first stage of 2SLS involves estimating the endogenous variables using their instrumental variables. This is done by regressing the endogenous variables on the instrumental variables and any exogenous variables as shown in equation (3.13). The resulting predicted values from this regression are then used in place of the original endogenous variables in the second stage.

$$\boldsymbol{A_i = \Upsilon_0 + \Upsilon_i Z_i + X_i \vartheta_i + u_{2i}} \quad \boldsymbol{(4.4)}$$

Where;

$\boldsymbol{A_i}$ is the endogenous variable (in this case the interactive term between decent work and poverty,

$\boldsymbol{Z_i}$ is the vector of instrumental variables

$\boldsymbol{X_i}$ are the exogenous variables

$\boldsymbol{u_{2i}}$ is the error term and $\boldsymbol{\Upsilon_0, \Upsilon_i, \vartheta_i}$ are parameters to be estimated.

In the second stage, the predicted values obtained from the first stage are used as regressors in the main regression model. This allows for consistent estimation of the coefficients of interest, as it effectively eliminates the endogeneity issue by replacing the endogenous variables with their predicted values as shown in equation (3.14).

$$\boldsymbol{Y_i = \beta_0 + \beta_1 \widehat{A}_i + X_i \phi + u_{3i}} \quad \boldsymbol{(4.5)}$$

Here,

$\boldsymbol{Y_i}$ is the dependent variable,

$\boldsymbol{\widehat{A}_i}$ is the predicted residuals,

$\boldsymbol{X_i}$ are the exogenous variables,

$\boldsymbol{u_{3i}}$ is the error term and $\boldsymbol{\beta_0 \beta_1}$ *and* $\boldsymbol{\phi}$ are parameters to be estimated.

5. Findings and Discussions

Table 5.1 presents the results of the OLS results in column (1), the first stage or reduced form of the modified 2 stage least squares estimates in column (2) and the second stage of the modified 2 stage least squares in column (3).

To assess the validity of the results presented, econometric tests were conducted. Endogeneity constitutes a fundamental problem in econometric analysis. Failure to address this problem leads to bias results, (Ullah et al., 2018). Looking at the Durbin-Wu-Hausman χ^2 test for endogeneity in table 5.1, the coefficient stands at 3.177, significant at 10%. This shows that there are problems of endogeneity in the data. As such, the OLS estimates are bias. We therefore focus on the modified two stage least squares estimates. To assess the validity and strength of the instruments, we conducted the Cragg-Donald F-Stat [Stock-Yogo at 10% relative bias]. The above tests stand at 269.728[19.93]. Given that the Cragg-Donald F-Stat is greater than the Stock-Yogo at 10% relative bias, we conclude that the instruments are valid and strong.

Since we have one endogenous regressor and three identifying instruments for decent work and poverty, there is a need to check whether over-identification restrictions hold. To test for the identification, we conducted the Sargan–Hansen test. An equation is considered over-identified when there are more instrumental variables (IVs) than endogenous variables in a structural equation model (Bastardoz et al., 2023). The Sargan test conducted has a value of 0.756 with p-value of 0.3847 as shown in table 5.1. Given that the p-value of the Sargan test is insignificant, we conclude that the over identifying restrictions are valid, meaning that the instruments are uncorrelated with the error term in the model.

The model's goodness of fit such as the adjusted R-squared for the moderating role of decent work and poverty on household food security in Cameroon is 0.566. This indicates that 56.6% of variations in household food security in Cameroon are accountable for by variations in decent work and poverty combined, and the other control variables included in the model. Also, the Wald/Chi^2 test for the overall significance of the model is 134.44, significant at 1%. This shows that the model is globally significant at the 1% level. As such, the regression coefficients can be used for forecasting and for policy recommendations on how promoting decent work contributes to poverty reduction in Cameroon. This is summarised in table 5.1

Table 5.1 Effect of Decent Work on the Relationship between Household Poverty and Food Security in Cameroon (Food Security id the Dependent Variable)

VARIABLES	**(1)**	**(2)**	**(3)**
	(OLS)	**(First Stage)**	**(Second Stage)**
	normal_FS1	**interactive_term**	**normal_FS**
Main Independent Variables			
Decent Work	-0.00920		
	(0.0209)		
Poverty	-0.0467		
	(0.0796)		
Interactive term (DW*Pov)	0.000641		
	(0.00153)		
Predicted Variables			
Predicted Decent Work			0.00301
			(0.0368)
Predicted Poverty			78.7***
			(0.0214)
Predicted Interactive Term			-0.000624
			(0.00265)
Instrumental Variables for Decent Work			

Benefits from social insurance		198.8***	
		(36.95)	
Benefits from medical facilities		377.1***	
		(32.24)	
Instrumental Variable for Poverty			
Amounts of exceptional income		-1.672	
		(1.550)	
Control Variables			
Household size	0.0195	-1.167	9.419***
	(0.0134)	(3.822)	(0.0113)
Age of household head	-0.00611*	2.002**	-0.396***
	(0.00331)	(0.930)	(0.00269)
Male	-0.0639	-35.83	8.887***
	(0.103)	(27.21)	(0.0965)
Married household head	0.0348	31.83	-4.445***
	(0.0967)	(24.69)	(0.0796)
Christian	0.0814	-28.54	20.45***
	(0.122)	(32.84)	(0.130)
Muslim	0.0927	-19.92	-5.621***
	(0.0882)	(22.55)	(0.0776)
Primary education	-0.0743	48.94	-10.69***
	(0.119)	(39.58)	(0.0979)
Second education	-0.241*	140.2***	-32.20***
	(0.133)	(40.70)	(0.117)
Tertiary education	-0.217	307.1***	-70.03***
	(0.183)	(48.58)	(0.212)
Urban milieu of residence	-0.122	96.51***	-37.94***
	(0.104)	(26.64)	(0.0932)
Private Sector	0.130	168.2***	8.659***
	(0.158)	(36.37)	(0.251)
Informal non-agricultural sector	0.178	-175.1***	26.95***
	(0.152)	(35.03)	(0.242)
Informal agricultural sector	0.220	-246.1***	45.78***
	(0.185)	(42.69)	(0.334)
Dependency ratio	-0.0382	-88.97	68.35***
	(0.224)	(59.08)	(0.185)
Littoral Region	0.318**	-12.28	-7.629***
	(0.134)	(28.72)	(0.114)

Adamawa Region	0.458** (0.210)	17.73 (51.69)	8.277*** (0.147)
East Region	0.211 (0.189)	142.8*** (51.44)	-0.953*** (0.180)
Extreme north region	0.561***	-64.55	39.34***
	(0.171)	(47.66)	(0.147)
North Region	0.172 (0.181)	-57.21 (43.99)	19.34*** (0.144)
North west Region	0.335* (0.176)	154.1*** (48.25)	45.47*** (0.165)
West Region	0.417** (0.189)	15.63 (46.16)	10.47*** (0.142)
South Region	-0.243 (0.203)	169.0*** (48.44)	-0.524*** (0.192)
South West Region	0.195 (0.191)	102.5** (43.07)	-1.628*** (0.166)
Constant	0.471 (1.106)	305.3*** (87.20)	-1,647 (0)
R^2 Pseudo	0.5682		0.5657
Wald/Chi2 test	123.22***		134.44***
Cragg-Donald F-Stat [Stock-Yogo at 10% Relative bias]	--	--	269.728[19.93]
Sargan Statistics[P-Value]	--	--	0.756 [0.3847]
Durbin-Wu-Hausman χ^2 test	--	--	3.177 [0.0747]
Observations	2,511		2,511

Robust standard errors in parentheses

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

Source: Computed by the researcher, (2024)

From table 5.1, the OLS results in column (1) are not appropriate for inference; this is partly explained by the fact that the interactive effect of decent work and poverty on food security is insignificant. Further, looking at the direct effect of poverty on food security from column (1) of the OLS results, a percentage increase in the incomes of household heads will reduce their food security score by 0.0467 units. This relationship is insignificant possibly due to bi-causality between poverty and food security and partly due to the interactive effect of decent work and poverty included in the model.

The modified two stage regression analysis is out to solve the problem of endogeneity resulting from the data. However, looking at the results from column (3) of table 5.1, the interactive effect of decent work and poverty instead has a negative and insignificant effect on food security. This begins by throwing some light on the fact that when decent work is present in the model as a moderator; the effect on food security instead worsens. This can be confirmed from the direct effect of poverty on food security judging from column (3) which is the second stage regression estimates, and shows better and significant results at 1%.

In this same light, the direct effect of poverty on food security from the second stage in column (3) reveals a positive and significant relationship. Here, a percentage increase in the incomes of household heads will result in 78.7 units increase in their household food security score. This then confirms that decent work does not moderate poverty to have any positive effect on food security in Cameroon. It leads to a negative and insignificant coefficient of 0.000624 units.

Since the main objective of this study is to determine the moderating role that decent work plays on the nexus between poverty and food security in Cameroon, the second stage results of this inter relationship reveals a negative and insignificant interaction of 0.000624. This therefore means that when decent work interacts with poverty, it negatively and insignificantly affects food security. It is on this basis that we fail to reject the null hypothesis and conclude that decent work does not moderate poverty to have any better effect on food security in Cameroon.

According to the results presented on Table 5.1, the OLS results in column (1) are not appropriate for inference; this is partly explained by the fact that the interactive effect of decent work and poverty on food security is insignificant. The problem is attributed to be caused mainly by endogeneity among other factors. Paying attention to the second-stage regression estimates in column (3) that have been corrected for endogeneity, there is a negative and insignificant relationship between decent work-poverty interactions and food security. Initially, from column (3) on table 5.1, the direct effect of poverty on food security reveals a positive and significant relationship.

This was initially confirmed where the findings revealed that improvements in income levels lead to improvements in food access and hence household food security, in accordance with the findings of Khaleque (2023), Nawaz et al. (2022) and Debebe & Zekarias (2020). Though with different coefficients, this relationship was positive and significant.

When decent work is interacted with poverty and regressed to check their joint effect on food security, the coefficient drops, revealing a negative and insignificant effect on food security.

The findings from the interactive regression, showing that the interaction between decent work and poverty produces a negative and insignificant effect on food security in Cameroon, suggest that the combined effect of these two variables on food security is less favourable than their individual effects.

While decent work is generally seen as a positive factor in improving livelihoods, reducing poverty and enhancing food security, there are instances where it can interact with poverty in ways that negatively affect food security.

Low wages are one-way decent work can interact with poverty to negatively impact food security. In many cases, individuals engaged in decent work may still earn insufficient wages to meet their basic needs, including access to an adequate and nutritious diet. This can lead to food insecurity among workers and their families despite being formally employed (Saget, 2001; Bell & Newitt, 2010).

Furthermore, there are situations when the nature of decent work itself exacerbates food insecurity. For instance, individuals engaged in formal employment may face long working hours or precarious employment conditions that limit their ability to access and prepare nutritious meals. This can result in poor dietary choices and inadequate food intake, further exacerbating food insecurity.

In addition, the cost of accessing decent work opportunities, such as transportation to workplaces or childcare services, can strain household budgets and incomes, leaving less money available for purchasing food. This economic burden can push already vulnerable households into situations of food insecurity despite having regular employment (Boushey, 2001).

In some cases, the lack of social protection measures within decent work arrangements can also leave workers vulnerable to shocks such as illness or job loss, which can further exacerbate poverty and food insecurity. Social protection is one of the pillars of decent work. Without adequate safety nets, individuals engaged in decent work may struggle to cope with unexpected events that impact their ability to afford food.

The findings may also reflect specific contextual factors in Cameroon. For instance, the country's economic structure, level of development, or governance may influence the relationship between decent work, poverty reduction, and food security. In some cases, structural factors such as limited access to productive resources, inadequate infrastructure, or market distortions can hinder the positive effects of decent work and poverty reduction on food security (Barrett et al., 2001). These contextual factors may explain the regression results' lack of a significant interactive effect.

In this same light, we conclude that while decent work is generally considered a positive force for improving livelihoods and reducing poverty to access nutritious food, its interaction with existing socio-economic conditions can sometimes lead to negative effects on food security, as our analysis shows.

5. Conclusion and Policy Suggestions

Looking at the results from column (3) of table 5.1, the interactive effect of decent work and poverty instead has a negative and insignificant effect on food security in Cameroon. This therefore means that when decent work interacts with poverty, it negatively and insignificantly affects food security.

Given the negative direct effect observed in the interactive regression between decent work and poverty on food security, policymakers should adopt comprehensive approaches that go beyond individual interventions. This involves recognizing the complex interactions and trade-offs between different policy goals and designing integrated strategies that simultaneously address poverty reduction, decent work, and food security. Such approaches can involve coordination and collaboration across sectors, including agriculture, labour, social welfare, and economic development, to ensure synergistic outcomes.

The findings from the regression analysis provide valuable insights, but further research and monitoring are necessary to deepen the understanding of the relationships amongst, decent work, poverty and food security in Cameroon. Continued data collection and analysis can help policymakers refine their strategies, identify potential challenges, and evaluate the effectiveness of interventions over time. Regular monitoring and evaluation can guide evidence-based policy adjustments and ensure that efforts to enhance decent work and reduce poverty have a positive and sustainable impact on food security.

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