

Full Length Research Paper

The determinants of subjective well-being among subsistence farmers in the Northern Region of Ghana

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Accepted 2 January, 2015

Subjective well-being is gaining prominence as an alternate measure of poverty and deprivation. This study examines determinants of subjective well-being among subsistence farmers in the Northern Region of Ghana. The study uses cross-sectional data from 346 households. Since subjective well-being has an inherent ordering, an ordered logit procedure is employed in analysing the determinants of subjective well-being among subsistence farmers. Four livelihood strategies were commonly adopted by subsistence farmers comprising: Agriculture only, Agriculture and nonfarm, Agriculture and off-farm, and the Mixed strategy. Food insecurity and the adoption of Agriculture and off-farm strategy lowered the subjective well-being of subsistence farmers, while household income, social capital, belief in Idol or Islamic worship and human capital increased the subjective well-being of subsistence farmers. It is recommended that policies in the future aimed at addressing deprivation and low subjective well-being should among other things target subsistence farmers who depend on the sale of agricultural labour as a livelihood strategy.

Key words: Subjective well-being, subsistence farmers, livelihood strategy.

INTRODUCTION

Globally, livelihood studies and/or appraisal have been linked to poverty. According to the World Bank (2008), three-quarters of the world's poor people live in rural areas with majority of them having their livelihoods propped by subsistence agriculture. In Ghana, the story is not different; agriculture contributes 22.70% of the nation's Gross Domestic Product (GDP), with 90% of the nation's agriculture being subsistence (Ghana Statistical Service, 2013). Subsistence farmers, who are seldom prosperous, are usually synonymously referred to as traditional, smallholder, subsidiary, peasant or low input farmers (Ellis, 1993).

In constructing their livelihoods, subsistence farmers in Ghana often have to choose one or a cocktail of strategies including: on farm, off-farm, and nonfarm activities. All in a bid mitigate the effects of exposure of their livelihoods: to the vagaries of the weather which precipitates crop failures, ill-health and its attendant effect on labour and market failures (Scoones, 1998). The presumption throughout literature is that subsistence farmers choose such patterns so as to achieve the best

possible standard of living (Ellis, 1998).

The livelihood strategies are usually constructed towards achieving specific end objectives or outcomes. To the subsistence farmer, the most likely outcome to any livelihood strategy include but not exclusively, food security, reduced vulnerability, increased work days/opportunities and finally improved wellbeing (DFID, 2000). Wellbeing according McGregor (2007) comes under three main dimensions (3D's) including what people have (objective), what people can do (relational) and what people feel about what they have and can do (subjective). Objective and relational wellbeing which forms core wellbeing, captures household income and others like knowledge, life expectancy, assets and food security.

Subjective wellbeing as an end in life which evaluates

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people's satiation with their life situations, is emerging as a complement to the more traditional and material ways of measuring poverty and deprivation. It stands at the heart of the argument for a more human-centred approach to development and helps us to rethink indicators and policies for pro-poor policy (Diener et al., 1999).

Recent studies on satisfaction with life in Sub Saharan Africa reveal that, on the average subjective wellbeing has increased by 5%, while life satisfaction in Europe and Asia has been experiencing the reverse. Absolute growth in GDP, increasing social support and increased perceptions of freedom in Sub Saharan Africa being rationalisation is behind the increasing levels of satisfaction with life (Helliwell et al., 2013).

With one of the ultimate ends of any human endeavour being to achieve satisfaction, it implies that what people do for a living would implicitly or explicitly have a bearing on their feeling of satisfaction. Ferrer-i-Carbonell (2005) relays that aside household income, demographic characteristics like household size, gender, age, type of occupation and number of children also influence subjective wellbeing (SWB).

There have been some theories on the determinants of subjective wellbeing or overall happiness with life in literature. These research findings are discussed here under the following headings: (i) income/wealth factors, (ii) demographic factors, (iii) belief system factors, and (iv) personal/genetic factors.

Income/wealth factors

Unequivocal evidence from literature suggests that subjective wellbeing is positively related to income or wealth. Thus richer individuals or nations usually record higher levels of subjective wellbeing relative to poor people or nations.

Diener et al. (1999) report that the substitution effects of income with basic needs like food, shelter, clean water and health is the reason why it relates positively with subjective wellbeing. Implicitly poverty affects subjective wellbeing in as far as it affects basic needs. Further, the perception of one's incomes being enough among his peers also determines SWB (Ferrer-i-Carbonell, 2005). Evidence from Easterlin (1995) supported by Clark and Oswald (1994) relates that SWB varies directly with individuals' income and inversely with the income of others. McBride (2001) and Argyle (2001) both found a negative co-efficient between SWB and the income of others (reference group).

The *multiple discrepancy* or the *social comparison* or *keeping up with the Joneses* theory supported by Easterlin (1995) and Michalos (1985) argue that peoples SWB is motivated by a comparison to a particular standard in life, with the most satisfied individuals being those who feel their life situations put them above the standard.

Demographic factors

Demographic characteristics like education, gender, age, whether the individual works or not, and number of children also influences SWB. On age, Veenhoven (2006) relays that age has a concave relationship with subjective wellbeing. People then are happier in their early life's (twenties) and latter life's (after fifty years) and less happy in the mid years when they are involved in work. This view on age and subjective well-being is contradicted by Michalos (1985) who opine that SWB increases or at least does not reduce with age. Diener et al. (1993) found that education had a marginal but significant effect on SWB with the effect being more pronounced in Low Income Countries. Though some studies on subjective wellbeing concur that women are relatively happier than men, empirical findings suggest no significant effect of gender on subjective wellbeing.

Belief system factors

Religion according to Pollner (1989) and Ellison (1991) correlates positively with subjective well-being. Studies have found religiosity to be high among lower income groups relative to higher income groups. The paradox however is that lower income from literature presumably correlates negatively with happiness. The rationalization here is that religion gives psychological and social meaning to life, especially to people who have lost all forms of social support (Inglehart, 1999).

Personality and genetic factors

Studies have found out that highly motivated people, extroverts and people who have the tendency of smiling often are more inclined to be happy with their life as a whole. There is strong evidence regarding genetic influences on life satisfaction. Research findings using monozygotic twins in America found similar levels of subjective wellbeing in twins even when they are raised apart. Based on these findings, Lykken and Tellegen (1996) assert that 80% of long term subjective wellbeing is heritable, implying that subjective wellbeing seldom change with time or circumstance. However, evidence from countries in the former Soviet Union, Belgium and Italy were subjective levels that have risen and fallen over the years, suggesting strongly that there is more to subjective wellbeing than the genetic make-up of the individual (Inglehart, 1999).

Other determinants of subjective wellbeing

Subjective wellbeing (SWB) is supported by several other theories. The *liking, needing and wanting* theory propounded by Inglehart (1990) and supported by Paterson (2005) relays that subjective well-being is influenced overly by liking what you get or getting what

you like. Dolan et al. (2011) support a theory described as the *top down and bottom up* approach. The theory seeks refuge in the concept that SWB is influenced by macro social factors like wealth, freedom and equality. The *mental health continuum* theory propounded by Keyes (2002) argues that the most satisfied individuals are those with complete or sound mental state of health. Durayappah (2010) propounds that subjective wellbeing is influenced by the 3P's theory being: individuals' *past* experience with life, their *present* life situation and the *prospects* they have about the future. Veenhoven (1999) found that job satisfaction positively influenced satisfaction with life. According to Veenhoven (2006), intrinsic motivation, person-fit organizations and social benefits are important precursors to life satisfaction, while job complexity, compulsory extra hours and work home conflict negatively influenced happiness with life as a whole.

METHODOLOGY

Data collection

Data for this study are cross-sectional data obtained from 346 respondents engaged in subsistence agriculture from 40 communities in Tamale metropolis, West Mamprusi, Kpandai and Central Gongga Districts in the Northern Region of Ghana. A multistage sampling procedure was adopted to make sample as representative as possible. The data collection technique employed was semi-structured interview and the instrument for the data collection was a semi-structured questionnaire.

Data analysis

Subjective wellbeing (SWB) on the other hand has been measured in literature using a cross section of statistical tools including simple averages, linear regression models, logit and ordered probit models employing data sources varying from time series, panel, cross-section macro empirical and cross-section micro empirical data (Ferrer-i-Carobonell, 2005). The use of time series is weakened by the fact that comparisons cannot be objectively made from findings since the determinants of SWB vary with time and also over disparity in incomes. The use of cross-sectional macro empirical data which consist of comparing SWB between countries is constrained by the effects of major cultural differences. The caveat of the above data sources informs the use of cross-sectional micro data which examines SWB within a country or a particular section of a country in a bid to reduce the effects of variations in culture on SWB. Subjective wellbeing (SWB) for the study was measured using a scale of 0 to 10 with zero representing those who are totally unhappy (low subjective well-being) and ten representing those who are totally happy (high subjective well-being) with the ends in their life. The eleven point scale is further categorized into low subjective wellbeing

or unhappy with the ends of one's livelihood (0-4), medium subjective well-being or happy with the ends of one's life (5-6) and high subjective wellbeing, that is very happy with the ends of one's life as a whole (7-10). The methodology used to elicit the determinants of subjective wellbeing involved producing correlation coefficients of life satisfaction (subjective wellbeing) of the study with key socio-economic variables like demographic characteristics, capital assets and the livelihood strategy adopted. This revealed the explanation of variables which significantly correlated with life satisfaction in either direction. Finally using maximum likelihood estimator through an ordered logit procedure, the determinants of life satisfaction (SWB) was expressed since SWB has an inherent ordering that limits the use of multinomial logit procedures (McBride, 2001). The probability of an individual having a high, low or medium SWB is influenced by a vector of explanatory variables, so that:

$$\text{Subjective Wellbeing}_i (y^*) = \alpha + \beta \text{Sex}_i + \gamma \text{Number of income sources}_i + \delta \text{Household food insecurity}_i + \theta \text{Annual income per capita}_i + \lambda \text{Social capital}_i + \phi \text{Human capital}_i + \omega \text{Physical capital}_i + \phi \text{Natural capital}_i + \rho \text{Location}_i + \Omega \text{Livelihood strategy adopted}_i + \varepsilon_i$$

where Y_i^* is a latent variable and it represents the unobserved level of SWB. Thus $Y_i = 2$ if $\text{SWB} \geq 7$; $Y_i = 1$ if $5 \leq \text{SWB} \leq 6$; $Y_i = 0$ if $\text{SWB} \leq 4$.

RESULTS AND DISCUSSION

Demographic characteristics of subsistence farmers

Demographic characteristics are important in assessing farmers' faculties as it relates their feeling of satisfaction (subjective well-being) with the ends of their livelihoods. The annual income per capita of subsistence farmers from the study was four hundred and eighty four Ghana Cedi's (GH ₵ 484), approximately one hundred and fifty-one US dollars. According to Easterlin (1995) and Clark and Oswald (1994), income has a positive relationship with subjective well-being though the relation is said to be curvilinear with growing income. In order to mitigate the effect of uncertainty on their livelihoods, subsistence farmers in the Northern region of Ghana drew their household income from a myriad of sources including: Agriculture (crops and animals), Off-farm (opportunity cost of labour), Nonfarm, Remittance and other sources. At 42%, nonfarm activities contributed more to household income than any other income source. Agriculture's share of household income was 36%, while at 2% off-farm activities contributed least to household income of subsistence farmers. Results from the study also revealed the following livelihood strategies adopted by subsistence farmers in the Northern region of Ghana, they comprised: Agriculture Only (20.52%), Agriculture and Off-farm (29.19%), Agriculture and Nonfarm (26.59%) and the Mixed strategy (23.70%). As postulated by Veenhoven (2006), the intrinsic motivation, social benefits, job complexity, compulsory extra hours and

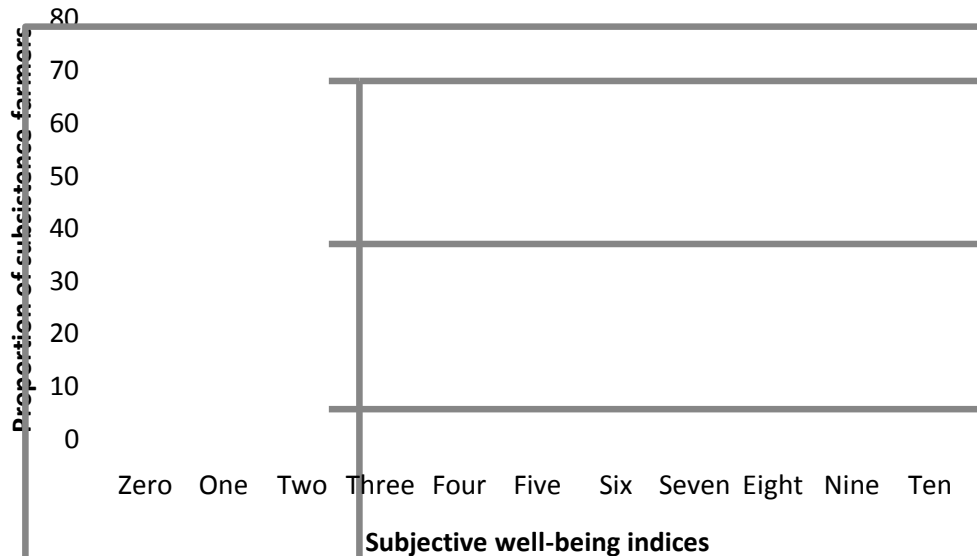


Figure 1. Subjective wellbeing indices of subsistence farmers.

work home conflict are factors which relate what people do for sustenance to their feeling of satisfaction with life. Food insecurity was ubiquitous in the households of subsistence farmers in the study. Ninety-three percent of subsistence farmers in the study were male with 7% being female. Although literature has not found any significant difference in SWB as it relays to gender, men according to Pollner (1989), are slightly more satisfied with the ends of their livelihoods than women. As much as 66% of subsistence farm households were food insecure, only 34% of them are food secure. Food insecurity predisposes farmers to a myriad of challenges including ill-health, loss of labour days and the attendant effect of loss of household income which lowers their subjective well-being (Diener et al., 1999).

Subjective well-being indices of subsistence farmers

Subjective well-being has been measured in the past using individuals satisfaction with various domains of life like health, marriage, work and leisure. Then there is the emotional measure of subjective well-being which looks at respondent’s joy and contentment now or yesterday. Another measure of subjective well-being relates to respondents’ satisfaction with life as a whole. Implicit in the life as a whole methodology is the fact that respondents’ satisfaction or otherwise with any faculty of life would invariably affect their subjective well-being (Helliwell et al., 2013; Ferrer-i-Carobonell, 2005).

The study measured subsistence farmers in the Northern region of Ghana’s overall satisfaction life as a whole to better understand the trade-offs between subjective well-being and different livelihood outcomes. Figure 1 reveals that 29% subsistence farmers recorded low (0-4) subjective wellbeing indices. Paradoxically,

seven out of every ten inhabitants of the Northern region of Ghana are poor (live under one dollar a day), as much as 32% of them felt their livelihoods left them very happy (SWB index of 7 and above). Similarly 39% of respondents of the study were happy (SWB index of 5-6) with their livelihood as a whole. In other words, seven out of every ten subsistence farmers were at least happy with the ends of their lives as a whole, suggesting strongly that other factors influence subjective wellbeing aside the hedonic pleasures of the world. The average subjective wellbeing index of study (5.40) was however lower relative to most European or Scandinavian countries which average subjective wellbeing indices are usually above seven. This is however in tandem with literature which stipulates that on the average prosperous people then record higher subjective well-being indices relative to poorer people. The phenomenon however, is more pronounced under cross-sectional data.

Determinants of subjective wellbeing in subsistence livelihoods

The correlation coefficients presented in the first column of Table 1 generally support the findings of international literature. Subjective wellbeing correlated positively with social capital, human capital and physical capital, the rest being living in an urban area, annual income per capita. Adopting *Agriculture and Nonfarm* as a livelihood strategy positively correlated with satisfaction with life. Conversely, natural capital, sex, food insecurity and depending on the sale of agricultural labour as a livelihood strategy negatively influenced satisfaction with life.

From Table 2, the Brant test of parallel regression assumption is insignificant implying that results of the

Table 1. Independent variables determining subjective well being.

Variable	Description of variables expected	Sign
ResTamale	Residential dummy living in Tamale Metro (1=yes, 0= no)	+
AlIncome	Annual household income per capita	+
NIS	Number of income sources	+/-
AgricOnly	Agriculture Only livelihood strategy (1= yes, 0= no)	-
AgricOfam	Agriculture and Off-farm strategy (1= yes, 0= no)	-
AgricNfam	Agriculture and Nonfarm strategy (1= yes, 0= no)	+
Mixed	Agriculture: Off-farm and Nonfarm strategy (1= yes, 0= no)	+/-
NatCapital	Natural capital	-/+
PhyCapital	Physical capital	+
SoCapital	Social capital	+
HuCapital	Human capital	+
Sex	Sex of respondents (1=male, 0= female)	+/-
FoodInsec	Experienced food insecurity (1=yes, 0=no)	-
Idol worship	Belief in idol worship (1=yes, 0= no)	+
Christian	Christian (1=yes, 0=no)	+
Islam	Muslim (1=yes, 0=no)	+

Table 2. Determinants of subjective wellbeing.

Variable	Coefficient correlation	Ordered logit	Odds (logit)
Resides in an urban area	0.245***	0.445	1.560
Sex	-0.107**	-0.074	0.928
Number of income sources	-0.050	-0.186	0.830
Annual income per capita	0.227***	0.001**	1.001
Experienced food insecurity	-0.430***	-1.762***	0.171
Natural capital	-0.156**	-0.011	0.989
Human capital	0.134**	0.183**	1.201
Physical capital	0.140**	0.025	1.025
Social capital	0.162**	0.118*	1.125
Agriculture and Nonfarm	0.180**	2.268***	9.669
Agriculture and Off-farm	-0.270***	- 0.718*	0.488
The Mixed strategy	0.009	-0.159	0.852
Agriculture only	0.096*	Dropped	Dropped
Idol worship	-0.097*	0.841**	0.841
Christian	-0.158**	Dropped	Dropped
Islam	0.202**	2.273**	0.821
Cut 1	-1.769		
Cut 2	1.129		
Log likelihood = -256.788 LR	Prob> Chi2 = 0.000		
Chi2(14) = 198.19	Pseudo R2 = 0.278		
Brant test	18.62		
Degree of freedom	14		
Significance	0.180		

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

ordered logit model are fit to be discussed. Also the log likelihood ratio of -256.788 of the ordered logit model is significant at the level of 1% indicating that the

coefficients in the model are different from the null (zero). This demonstrates the model's goodness. Significant variables which determine the subjective wellbeing of

subsistence farmers include food insecurity, annual income per capita, social capital, human capital. The rest comprising: adopting the *Agriculture and Nonfarm* livelihood strategy, adopting the *Agriculture and Off-farm* livelihood strategy, and belief in Islam or idol worship.

Experiencing food insecurity had a negative coefficient and was significant at 1%. This implied that the odds of a unit increase in the food insecurity situation of subsistence farmers having a very high subjective wellbeing is 0.17 times lower relative to that having a medium to low subjective wellbeing holding all other independent variables constant. In other words, food insecurity increases the probability of subsistence farmers in having low subjective wellbeing. Inability to achieve food security as one of the ends in life negatively affects the mood of households who are unable to accomplish this primary end of life. If the food insecurity situation persists inveterately, a reminiscence of the food insecurity situation of the past and the prospect of a bleak future for food has the tendency of keeping subsistence farmers in a vicious cycle of low subjective wellbeing.

Overwhelming majority of inhabitants of the Northern region of Ghana have strong religious belief which positively influences their subjective wellbeing. Holding other variables constant, belief in Islam and idol worship positively influenced subsistence farmers in the Northern region of Ghana's satisfaction life. That is, belief in Islam and idol worship increases the probability of subsistence farmers having a high subjective wellbeing by twice juxtaposed to them having a medium to low subjective wellbeing. Not holding brief for any religious faith as being superior over the other in terms of subjective wellbeing, however, the karma that religiosity is rewarding could be the driving force behind the link between religious belief and subjective wellbeing. Thus in subsistence livelihoods which is characterized by people living on the margins of life, religious belief of any sort gives other meaning to life promoting their satisfaction with life as a whole.

Annual income per capita positively influenced subjective wellbeing at a significance of 5%. Holding all other variables constant, a unit increase in the annual income of subsistence farmers shows that the odds of having a high subjective wellbeing is 1.00 times higher relative to them having a medium to low subjective wellbeing. This concurs with the generally held view in literature that income positively relates with subjective wellbeing (Clark and Oswald, 1994; Easterlin, 2001; Frey and Stutzer, 2002; Ferrer-i-Carbonell, 2005).

Social capital which measures connectedness had a positive coefficient with a p-value of 10%. Meaning holding other variables constant, a unit increase in the social capital of subsistence farmers shows that the odds of them having a high subjective wellbeing is 1.13 times greater relative to them having a medium to low subjective wellbeing. That is subsistence farmers association to groups of any form psychologically

increases the possibility of them feeling satisfied with the ends of their life. The group creates the platform for members to share their challenges and experiences. In doing so, members then fathom that they are not alone in their predicament which reduces their desperation and anxiety, thereby increasing their satisfaction with what they have. The globally accepted axiom propounded by Inglehart (1999) stipulates that high subjective wellbeing is achieved 'if people get what they like or like what they get'. A social interaction with people tends to draw people towards liking what they get which improves their subjective wellbeing.

Human capital square which comprises household size, ability of adult household members to labour, level of education and age of the household head, positively influenced subjective wellbeing at a significance of 5%. Holding other variables constant, a unit increase in the human capital of subsistence farmers shows that the odds of them having high subjective wellbeing is 1.20 times higher relative to them having a medium to low subjective wellbeing. This concurs with the opinions held by Diener et al. (1993) that human capital positively correlates with subjective wellbeing. Agriculture and Nonfarm livelihood strategy had a positive coefficient and significant at 1% in its contribution to subjective wellbeing. Invariably holding other variables constant, a unit increase in the number of subsistence farmers adopting the Agriculture and Nonfarm strategy shows that the odds of them having a high subjective wellbeing is 9.67 times greater relative to them having a medium to low subjective wellbeing. Aside the contribution of nonfarm activities to household income in subsistence livelihoods, job satisfaction which subsistence farmers may derive from participating in nonfarm activities also positively influences their subjective wellbeing (Pollner, 1989; Denier, 2003).

The Agriculture and Off-farm (sale of agricultural labour) as a livelihood strategy had a negative coefficient and a probability value of 10% in its contribution to subjective wellbeing. This implies that holding other variables constant, a unit increase in the number of farmers adopting Agriculture and Off-farm strategy shows that the odds of subsistence farmers having a high subjective wellbeing is 0.49 times lower relative to them having a medium to low subjective wellbeing. In effect, the Agriculture and Off-farm livelihood strategy contributes negatively to subsistence farmers' satisfaction with life. The negative relationship between Agriculture and Off-farm livelihood strategy and subjective wellbeing suggests strongly that subsistence farmers did adopt Agriculture and Off-farm strategy not out of will, but might be pushed by circumstance into adopting the strategy. Any livelihood strategy among other things is adopted to achieve happiness; as such, it would be irrational therefore for subsistence farmers to adopt any strategy willingly when it leaves them unhappy with life as a whole.

Conclusions

This study's findings presented here concur with literature on life satisfaction. In particular, it shows strong support for the importance of food insecurity, income, social capital and adopting *Agriculture and Nonfarm* livelihood strategy, the rest being: human capital, the belief system (Idol/Islam) and adopting *Agriculture and Off-farm* livelihood strategy. These factors independently have significant impact on life satisfaction as a whole in subsistence livelihoods, that is, when other factors are held constant. Of this, however, two of the variables give a more savvy understanding on the determinants of subjective wellbeing in subsistence livelihoods. Adopting *Agriculture and Nonfarm* as a livelihood strategy had the strongest effect in promoting subsistence farmers' satisfaction with life, while experiencing food insecurity had equally a strong impact in lowering the subjective wellbeing of subsistence farmers.

Addressing issues affecting the availability and accessibility of food ironically among 90% of food producers in the country would not only help in mitigating the nation's food deficit, but also ameliorate the effect of food insecurity in lowering life satisfaction in subsistence livelihoods in the Northern region of Ghana. Further, introducing alternative livelihood strategies that can make use of the slack labour resources of subsistence farmers through the year would not only contribute more to household income, but would significantly improve the subjective wellbeing of subsistence farmers in the Northern region of Ghana.

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