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1. Introduction

Subjective well-being (SWB) is often used as an indicator of well-being alongside objective measures such as consumption, income, and wealth. However, many studies conflate general life satisfaction with momentary happiness. For example, research on developed countries by Blanchflower and Oswald (2004) and Alesina et al. (2004) treats these terms interchangeably. Similarly, Patino et al. (2023), in their analysis of SWB in Colombia, does not distinguish between them.

However, as Deaton (2008) points out, the terms "life satisfaction" and "happiness" are not interchangeable. Specifically, life satisfaction questions ask respondents to make an overall evaluation, while happiness questions capture affective or temporary feelings. Similarly, Kahneman and Deaton (2010) distinguish between life satisfaction and happiness as two facets of well-being with different determinants. Life satisfaction is understood as an evaluative measure, reflecting individuals' cognitive assessment of their overall life circumstances, while happiness captures the emotional quality of daily experiences, including feelings of joy, stress, and contentment.

Stevenson and Wolfers (2008) conducted a cross-country empirical study and identified some perplexing outliers. Notably, they discovered that two of the poorest countries in their sample, Tanzania and Nigeria, reported the highest average levels of happiness, despite both countries reporting lower average levels of life satisfaction. This finding indicates a need to re-examine the relationship between life satisfaction and happiness by investigating their determinants using various socioeconomic and institutional factors.

Social and institutional factors that influence well-being include religious involvement, general trust, political trust, and family. Several studies have found a positive correlation between religiosity and well-being (e.g., Lim and Putnam, 2010). Trust in the general public and political institutions also plays a significant role in enhancing well-being, as shown in studies by Frey and Stutzer (2000), Diener and Diener (2009), Berggren and Bjørnskov (2020), and De Martino and Prilleltensky (2020). These studies emphasize the need to incorporate institutions into well-being studies, as their design and reform can significantly impact societal welfare.

A key contribution of the current study is identifying the distinctive correlates of life satisfaction and happiness. Societies with religious inclinations demonstrate a clear differentiation, as religious individuals consider afterlife utility in their well-being (Azzi & Ehrenberg, 1975). Ethiopia, a large developing country with significant Christian, Islamic, and Jewish influences, presents an ideal context for exploring these relationships. Additionally, this study contributes by incorporating informal institutions into SWB analysis, aligning with the emphasis placed by Berggren and Bjørnskov (2020) on the significance of institutions. It is also consistent with Kahneman and Krueger (2006) in incorporating broader factors into well-being.

This study leverages Ethiopia's distinctive religious diversity and the significant role of its religious institutions in daily life to examine varied influences on life satisfaction and happiness. Additionally, Ethiopia's evolving governance and trust in public institutions provide a unique context to explore how political and social trust intersect with other

institutional factors to shape SWB. This approach contributes to the literature by offering insights from a developing country with a unique blend of formal and informal institutions.

Prior research indicates that in rural areas of developing countries, religiosity and religious affiliation are often more influential in shaping subjective well-being due to their central role in community and social identity (e.g., Lim and Putnam, 2010). This supports the relevance of focusing on rural Ethiopia for examining these relationships.

Methodologically, the standard ordered probit specification used in SWB literature assumes certain conditions that may not hold in practice. Heteroscedastic errors, influenced by income, emotional stability, and age, can arise in SWB data (Greene et al., 2014). This study incorporates a variance function into the ordered probit model to address this heterogeneity and minimize biases.

Our analysis reveals distinct determinants of life satisfaction and happiness. Broader socioeconomic factors such as religiosity and the quality of political governance strongly correlate with satisfaction, while welfare metrics such as consumption drive happiness. Hence, future research on subjective well-being needs to differentiate between general satisfaction and happiness, as this can provide valuable insights into the underlying factors contributing to human well-being.

2. Data and Econometric Method

This study uses the Ethiopian Rural Household Survey conducted in 2004 by Addis Ababa University in collaboration with the International Food Policy Research Institute and the University of Oxford. A total of 1,477 households were covered in the survey from four regional states. Our final dataset comprises 1,114 households with information on the variables of interest. Although our study uses data from rural Ethiopia, institutional factors such as religiosity, trust, and governance, which are integral to subjective well-being, likely apply across both rural and urban settings.

While the data is from 2004, it remains the most comprehensive source available on religious and institutional variables in Ethiopia, and we believe the findings are still relevant given the continuity in cultural and institutional structures in rural Ethiopia.

We use two indicators of well-being - life satisfaction and happiness. In the life satisfaction question, respondents were asked the level of agreement with the statement "*I am satisfied with my life*", with responses that can be categorized as '*Dissatisfied,*' '*Neutral,*' and '*Satisfied'*.[1] The happiness question is framed as "*Taken all together, how would you say things are for you these days: would you say you are: 'Not too happy,' 'Pretty happy,' or 'Very happy'*".

Table 1 reports the summary statistics.

[1] Original responses for the life satisfaction were framed as 'Strongly Disagree', 'Disagree', 'Slightly Disagree', 'Neither Agree or Disagree', 'Slightly Agree', 'Agree', and 'Strongly agree'. To avoid potential instability of our model, we conflate the satisfaction responses into three categories.

Table 1: Summary Statistics of Main Variables of Interest

Variable	Description	N	Mean	SD	Min	Max
SATISFACTION	Life Satisfaction	1114	0.93	0.73	0	2
HAPPINESS	Happiness	1114	0.77	0.65	0	2
LRCONSUMPTION PC	Logarithm of real per capita consumption	1114	4.17	0.81	0.87	7.01
LLIVESTOCK	Logarithm of tropical livestock units	1114	1.1	0.72	0	3.2
TRUST	Most people can be trusted' 1(Strongly disagree) _ 7(Strongly agree)	1114	4.37	1.71	1	7
POLITICAL TRUST	I am Confident in the ability of local officials' 1(Strongly disagree) _ 7(Strongly agree)	1114	4.19	1.7	1	7
PARTICIPATION	1 if Head of household has position in local institutions, 0 otherwise	1114	0.25	0.43	0	1
RELIGIOSITY	Church/Mosque visits per month	1114	6.3	7.15	0	45
CATHOLIC	1 if Catholic, 0 otherwise	1114	0.04	0.19	0	1
MUSLIM	1 if Muslim, 0 otherwise	1114	0.23	0.42	0	1
PROTESTANT	1 if Protestant, 0 otherwise	1114	0.2	0.4	0	1
CATHOLIC*RELIGIOSITY	CATHOLIC * RELIGIOSITY	1114	0.28	1.96	0	30
MUSLIM*RELIGIOSITY	MUSLIM * RELIGIOSITY	1114	1.68	5.7	0	45
PROTESTANT*RELIGIOSITY	PROTESTNT * RELIGIOSITY	1114	1.35	3.54	0	40

Note

“Ethiopian Orthodox-Christian is a reference religion variable

Methodologically, the study uses heteroscedastic ordered probit models, Heteroscedasticity can lead to biased estimates of the ordered probit model (Greene et al., 2014; Litchfield et al., 2012). Income contributes to the variance in satisfaction, particularly among individuals with higher income levels as they have a wider range of needs and, consequently, respond differently to specific factors. To address heterogeneity, we include a variance function in the model.

Let y_i^* represent the latent index of individual i's utility level, which can take any value in the range $-\infty < y_i^* > \infty$. We assume the utility is related to the observed ordinal well-being data as

$$\begin{array}{lll} y = 0 & \text{[Dissatisfied]} & \text{If} \quad -\infty < y_i^* < \theta_0 \\ y = 1 & \text{[Neutral]} & \text{If} \quad \theta_0 \leq y_i^* < \theta_1 \\ y = 2 & \text{[Satisfied]} & \text{If} \quad \theta_1 \leq y_i^* < \infty \end{array}$$

A similar formulation applies for happiness.

For estimation by maximum likelihood methods, the log likelihood function for the model is formulated as

$$logL = \sum_{i=1}^{n} \sum_{j=0}^{2} m_{ij} \log \left[\Phi\left(\theta_j - x'\beta\right) - \Phi\left(\theta_{j-1} - x'\beta\right)\right] \qquad (1)$$

where $m_{ij} = 1$ if individual i's response falls within the j's category (well-being) and 0 otherwise (with standardised mean functions, β and thresholds, $\theta's$).

We use diagnostic tests derived by Machin and Stewart (1990) based on general residuals developed by Gourieroux et al. (1987) to test for heteroscedasticity.

We account for heterogeneity by a variance function in the ordered probit model.

$$\sigma_i^2 = (e^{w_i\gamma})^2 \qquad (2)$$

where w_i comprises a vector of variables that are the source of the residual variance and γ is a vector of unknown parameters. We modify the standard probability response to incorporate the variance function, resulting in a modified form of equation (1). The modified likelihood function becomes:

$$\log L_{Hetero} = \sum_{i=1}^{n} \sum_{j=0}^{2} m_{ij} \, log \left[\Phi \frac{(\theta_j - x'\beta)}{e^{w_i\gamma}} - \Phi \frac{(\theta_{j-1} - x'\beta)}{e^{w_i\gamma}}\right] \qquad (3)$$

The variance functions based on the log of consumption per capita, the log of livestock holdings, and district dummies are statistically significant for the satisfaction and happiness models, respectively.

3. Results

The null hypothesis of homoscedasticity is rejected for life satisfaction and happiness in the standard ordered probit model[2]. Hence, we incorporate a variance function. The results from

[2] Results of diagnostic tests are available upon request.

the heteroscedastic ordered probit model are presented in Table 2, with the marginal effects reported in Table 3.

Table 2: Determinants of Subjective Well-being: Heteroscedastic Ordered Probit

DEP.VAR.	**SATISFACTION**		**HAPPINESS**	
	Coef.	St.Er.	Coef.	St.Er.
CONSTANT	-1.83***	0.68	-0.55**	0.26
	Welfare Metrics			
LRCONSUMPTION PC	0.34***	0.11	0.11**	0.04
LLIVESTOCK	0.57***	0.18	0.36***	0.07
	Institutions			
TRUST	0.11***	0.04	0.03*	0.02
POLITICAL TRUST	0.08**	0.04	0.02	0.02
PARTICIPATION	0.26**	0.13	0.02	0.06
	Religion and Religiosity			
RELIGIOSITY	-0.004	0.01	0.001	0.01
CATHOLIC	-0.09	0.25	0.22	0.14
MUSLIM	-0.40*	0.22	-0.13	0.12
PROTESTANT	-0.07	0.2	0.05	0.12
CATHOLIC*RELIGIOSITY	0.01	0.03	-0.02	0.02
MUSLIM*RELIGIOSITY	0.03*	0.02	0.004	0.01
PROTESTANT*RELIGIOSITY	0.04**	0.02	0.02	0.01
	Others			
VILLAGE CONTROLS	Yes	-	Yes	-
CONTROLS	Yes	-	Yes	-
Mu (1)	1.75***	0.5	1.17***	0.2
	Variance Function			
LRCONSUMPTION PC	0.10*	0.06		
LLIVESTOCK	-	-	-0.18*	0.06
VILLAGE CONTROLS	Yes	-	Yes	-
Diagnostics [P-Values in Parenthesis}				
OBSERVATIONS	1114		1114	
LOG-LIKELIHOOD VALUE	-998.3		-913.7	

Note
Control variables include land holding size, education, illness, gender, age, and number of children.
MU (1) refers to the first cut-off/threshold.
***, **, * denote statistical significance at the 0.01, 0.05 and 0.10 levels, respectively

Table 3: Marginal Effects of Selected Variables

	LIFE SATISFACTION			HAPPINESS		
	0	1	2	0	1	2
LRCONSUMPTION PC	-0.09	0.01	0.08	-0.06	0.04	0.02
LLIVESTOCK	-0.16	0.03	0.13	-0.21	0.12	0.08
RELIGIOSITY	0.001	-0.0002	-0.0009	-0.0005	0.003	0.0004
CATHOLIC*RELIGIOSITY	-0.003	0.0004	0.002	0.01	-0.005	-0.004
MUSLIM*RELIGIOSITY	-0.008	0.001	0.007	-0.003	0.002	0.001
PROTESTANT*RELIGIOSITY	-0.01	0.002	0.01	-0.01	0.007	0.004
TRUST	-0.03	0.005	0.03	-0.02	0.01	0.01
POLITICAL TRUST	-0.03	0.003	0.02	-0.01	0.01	0.004
PARTICIPATION	-0.07	0.01	0.06	-0.012	0.007	0.005

Note
The marginal effects are based on the heteroscedastic ordered probit estimates reported in Table 2.

As expected, consumption per capita and livestock holdings emerge as strong predictors of life satisfaction and happiness. The marginal effects reveals that each additional consumption (in logarithmic form) makes an average individual nine percentage points less likely to report 'dissatisfied' and eight percentage points more likely to report 'satisfied'. However, the coefficient of income in life satisfaction is higher than in happiness, in line with findings in other studies such as Stevenson and Wolfers (2008).

Our study highlights the significant influence of institutions, including religion, trust, and confidence in politics. Religiosity affects SWB differently depending on religious affiliation. Muslims exhibit lower satisfaction levels than Orthodox Christians, while religious Muslims and Protestants report higher satisfaction levels than Orthodox Christians, indicating a distinct role of religiosity. The marginal effects reveal that being a religious Muslim makes an individual 0.8 percentage points less likely to report being dissatisfied and 0.7 percentage points more likely to report being satisfied. Similarly, being a religious protestant makes an individual one percentage point less likely to report being dissatisfied and one percentage point more likely to report being satisfied.

This suggests that newly introduced religions like Protestantism in Ethiopia contribute to developing social capital for minority groups. Similar findings have been observed by Azzi & Ehrenberg (1975) regarding the satisfaction of racial minorities in the United States.

In contrast to the general life satisfaction model, religion and religiosity are not significant determinants in the happiness model. However, overall trust positively affects both life satisfaction and happiness, while confidence in local political institutions affects life satisfaction but not happiness.

These findings underscore individuals' ability to differentiate between overall satisfaction and momentary happiness. This distinction is particularly evident within religious communities, where individuals consider future religious rewards (e.g., heaven) when assessing overall satisfaction, but not necessarily when evaluating momentary happiness, which is predominantly influenced by hedonic experiences.

To obtain a sense of the relative importance of the determinants of subjective well-being, we can construct '*indifference curves'* between any two continuous covariates whose slopes

represent the '*marginal rate of substitution*' between them. The indifference curves represent various combinations of two covariates that yield the same level of satisfaction. In the current application, the slopes of the indifference curves are given by the minus of the ratio of their β-coefficients (see, for example, Stewart et al. (2004) and Litchfield et al. (2012)). Table 4 reports indifference curves for an average individual for selected covariates based on the estimates of Table 2.

Table 4: Trade-offs between Selected Covariates: Slopes of Indifference Curves

Slope for a given Satisfaction level	Standard Order Probit	Heteroscedastic Order Probit
Change in per capita consumption required to compensate for extra day in church/mosque	-0.056** (-0.03)	-0.04** (-0.02)
Change in livestock holdings required to compensate for extra day in church/mosque	-0.027** (-0.01)	-0.025** (-0.01)
Change in per capita consumption required to compensate for an extra trust level	-0.43*** (-0.13)	-0.32*** (-0.1)
Change in per capita consumption required to compensate for an extra government trust level	-0.29*** (-0.11)	-0.23*** (-0.09)

Note
For a more straightforward treatment of religiosity, we do not include interactions.
***, **, * denote statistical significance at the 0.01, 0.05 and 0.10 levels, respectively, using two-tailed tests

Focusing on the heteroscedastic models, the slopes of the indifference curves reveal that individuals are willing to sacrifice a 5% of consumption for an additional visit to a church/mosque to stay at the same level of satisfaction. This implies that the value of a visit to a church/mosque is equivalent to 5% of their per capita consumption. Similarly, one extra visit to a church/mosque per month offsets the loss in satisfaction due to a reduction of 2.6% of livestock holdings. A one-point increase, which is large relative to the mean, in general trust or government trust, can compensate for 32% and 23% reductions in consumption per capita, respectively. The sizes of the effects of trust (general and government) are surprisingly large. This can be due to the absence of formal institutions in rural areas. Since we have not adequately controlled for the potential endogeneity of these factors, the results should be taken only as indicative.

4. Conclusions

This study examined the factors contributing to subjective well-being (SWB) in Ethiopia, specifically focusing on the impact of religious, social, and political institutions using comprehensive survey data. It sought to determine whether life satisfaction and happiness share similar correlates.

Estimations based on heteroscedastic ordered probit models demonstrate that, unlike in the general life satisfaction model, religion and religiosity do not emerge as significant determinants in the happiness model. While general trust positively affects both life satisfaction and happiness, confidence in local political institutions influences life satisfaction but not happiness.

These findings suggest that happiness responses primarily reflect welfare metrics such as income, whereas life satisfaction responses consider broader socioeconomic and institutional factors in addition to income when evaluating overall well-being. Thus, data on happiness and life satisfaction convey distinct information. The differential impact of institutions on life satisfaction and momentary happiness aligns with the propositions of Deaton (2008) and Kahneman and Deaton (2010) that life satisfaction and happiness are not synonymous. Moreover, consistent with Berggren and Bjørnskov (2020), our findings emphasize the importance of incorporating measures of formal and informal institutions in studies on life satisfaction.

Future research should focus on distinguishing between general life satisfaction and happiness, as this differentiation can offer critical insights into the multifaceted nature of well-being, particularly in developing economies. Additionally, studies in emerging economies could be enriched by longitudinal approaches that examine how life satisfaction and happiness respond to political and economic changes. Such research would provide critical insights into the dynamics of well-being over time. Furthermore, comparative analyses of urban and rural settings could enhance our understanding of how institutional and socioeconomic factors shape SWB across diverse contexts in developing countries.

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