32nd International Conference of Agricultural Economists
2-7 August 2024 I New Delhi I India

The unknown link between aspirations and livelihoods: Do aspirations explain gendered livelihood diversification?

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Abstract

Gendered livelihood activities explain women's lower income and higher poverty rates than men. Existing hypotheses attribute these gendered livelihoods to inequitable access and agency over household and community assets. However, this hypothesis does not explain why some people choose not to diversify despite asset availability. Personal aspirations may influence diversification decisions, yet, the role of these subjective mechanisms remains unknown. Here we show the role of aspirations in shaping gendered livelihood diversity and mobilities towards diversification, particularly in pastoral zones practicing agropastoralism in Baringo, Kenya. Through Poisson, multinomial logit regression, and robustness checks, we find that aspirations positively correlate with livelihood diversity with stronger associations than other intrinsic factors and certain material assets. After controlling for capital assets, self-efficacy, and locus of control, people with higher aspirations are more likely to be in long-term diversification than in late diversification and singular livelihoods, particularly non-farm-forest-use activities. These patterns are more pronounced in higher-income and men-headed households but less so in women-headed households. Women with higher aspirations tend to rely on non-farm-forest-based activities, which generate the lowest income. Higher aspirations of some lower-income households also correspond to intermittent diversification. Our results show that aspirations are an important determinant of livelihood diversification decisions, but they alone are insufficient. Women and the poor may aspire to diversify but they require essential capital and social cognitive traits to realize their desired states. Hence, interventions aimed at promoting livelihood diversification must simultaneously address aspirations and material assets. The inclusion of people's aspirations in the livelihoods analysis may promote long-term positive economic behaviour given their forward-looking nature.

JEL Codes: J24, J43, Q12.

1. Introduction

Poverty is a global recurring problem and it hits a substantially higher share of women. Globally, the gender poverty gap as of 2022 leaves 16 million more women and girls in extreme poverty than men. These disparities stem from gendered economic inequality, such as in livelihood strategies, with women often involved in less diversified and low-return activities (Loison, 2019; Niehof, 2004). Gendered economic participation, and consequently welfare outcomes, is often because of unequal access and agency over households and community assets that are typically restricted to women and skewed to men due to rigid norms (Doss et al., 2015; Galiè et al., 2019; Quisumbing et al., 2014). This has been the mainstream explanation in development research, especially in the global South, inspired by the Sustainable Livelihoods Framework (SLF) (Natarajan et al., 2022; Scoones, 1998).

While the framework is crucial, there is a tendency to overlook the internal constraints or subjective mechanisms in livelihood decisions, such as people's aspirations. Aspirations are "future-oriented" and "motivating" goals and represent a "multidimensional life outcome" (Bernard & Taffesse, 2014). Poverty theories, including Appadurai (2004) and Ray (2006), emphasize how low aspirations cause cyclical poverty, underscoring its role in shaping economic behaviour. Genicot & Ray (2017) theorize that aspirations channel inequalities. Dalton et al. (2016) emphasize that the poor forego more rational choices, e.g., livelihood diversification, due to the psychological poverty trap. This hypothesizes that while poor people have similar access to assets as everyone else, they do not make productive investments even if the returns are high. Duflo (2006) emphasizes that traditional economic theory may be limited in understanding human behaviour in impoverished and marginalized contexts because they influence how people behave and make decisions. Thus, aspirations are relevant in explaining gendered livelihoods, and material constraints should not be a single principal concern. This gap in understanding, particularly in marginalized pastoral settings, prompts our research.

To understand livelihood diversification, our research uniquely integrates the 'psychological' or 'intrinsic' factors into the SLF. Our objective is to assess the gendered patterns in pastoral livelihood diversification and its association with aspirations. This paper addresses two questions. First, how do aspirations shape mobilities toward diversified livelihood strategies? Second, how does it vary by intersectional factors gender and income class? We hypothesize that aspirations positively correlate with livelihood diversification, however, with heterogeneous effects among the poor and women. Poorer and women-headed households may have lower positive association of aspiration as they experience resource constraints that hamper their capacities to achieve their desired futures.

The remainder of the manuscript is organized as follows. In Section 2, we discuss our paper's contributions to aspiration and livelihoods literature and present the conceptual framework. Section 3 presents our methodology to investigate the unknown link between aspirations and livelihoods. Section 4 presents the empirical results, while Section 5 discusses the findings. Finally, Section 6 presents the policy implications of our findings for cyclical poverty and gender poverty gap, mentions limitations, and concludes the paper.

2. Literature and conceptual framework

The empirical research on aspirations in the context of poverty is new and scarce, especially concerning their impact on economic outcomes. Available aspiration papers mostly tackle the formation of aspirations (Mausch et al., 2018; Tabe-Ojong, JR. et al., 2023). Those that deal with aspiration and economic outcomes mostly emerged from the fields of education and migration and often outside the agricultural context (Beaman et al., 2012; Nandi & Nedumaran, 2021; Pasquier-Doumer & Risso Brandon, 2015).

Our paper contributes to two broad strands of the literature. First, it extends recent works on aspirations' influence on economic behaviour among rural agricultural communities. For example, Bernard & Taffesse (2014) linked lower aspirations to non-productive credit spending and low long-term credit demand in rural Ethiopia. Kosec & Khan (2017) find that people with high aspirations in rural Pakistan tend to save more and invest in education, technologies, and businesses. Knapp et al. (2021) highlight aspirations as one of the best predictors of farmers' technology adoption. Our research pioneers the understanding of how aspirations relate to livelihood diversification, an unexplored area in aspiration and livelihood research.

Second, our paper contributes to the literature on sustainable livelihoods. Livelihood strategies are conventionally categorized into farm or non-farm, diversified or non-diversified dichotomies, or more specific categories, e.g., farm, off-farm, and non-farm work (Verkaart et al., 2018). These are generally static and overlook the dynamic nature of livelihoods. Musumba et al. (2022) stress that understanding transiency in livelihoods is crucial as transient households have lower welfare levels (e.g., Dzanku (2015)). Moreover, while many livelihoods and some aspiration research cover agricultural settings, they tend to neglect pastoral contexts whose visibility in research, survey data, policies, and investments is opaque (FAO, 2023). The literature focuses on non-farm work as diversification strategy, with very limited representation of agropastoralism. In pastoral communities, agropastoralism, or the strategy based on both crop farming and livestock keeping, is the prevalent diversification strategy responding to droughts, cattle raiding, invasive species' land invasion, agricultural intensification, and irrigation schemes (Simpkin et al., 2020). Given its potential as an adaptive response to cultural, ecological, and environmental shocks, it is crucial to investigate how aspiration may shape people's diversification decisions toward agropastoralism.

Furthermore, gender perspectives seem absent in livelihoods research and many aspiration analyses, despite the intrinsic link between gender, poverty, and economic inequality (UN Women, 2018). This is crucial when considering the role that identities play in aspiration formation (Akerlof & Kranton, 2000; Hoff & Pandey, 2004, 2014), the biases that can be observed along social and economic lines (Akerlof & Kranton, 2000; Appadurai, 2004; Sen, 1984); and the multiple levels of marginalization created by norms and traditional institutions (Bacud et al., 2024), which remain strong and rigid in the global South.

Thus, this paper tests the idea that aspirations are associated with agropastoral livelihood diversification and its gendered nature. Our analytical framework is built by emphasizing people's aspirations or life goals in the SLF. It has been the most used livelihood framework, which presents how a household or individual decision to adopt livelihood strategies and their resultant outcomes depends on vulnerability contexts, five (pentagon) capital assets, and policies and institutions (DFID, 1999; Scoones, 1998). The classical use of SLF is to start identifying the vulnerability context that shapes people's livelihood strategies. But this way to approach SLF perceives people

as *people with needs*, instead of *people with goals and strategies* (Levine, 2014). The framework is also criticized for its strict adherence to material or capital constraints, which McLean (2015) refers to as 'Pentagon Prison'. But doing so may not explain the irrational behaviour of why people do not pursue strategies despite obvious benefits because it overlooks subjective mechanisms. Personal assets and aspirations for change and opportunities are not obvious, making the framework less people-centered as originally argued (Hamilton-Peach & Townsley, 2004). Previous research's strong focus on vulnerability context and capital assets maybe because these two are the first boxes seen in the graph that one may misinterpret as entry points.

Thus, we include aspirations in the livelihood analysis as an outcome variable influenced by other framework components and as an explanatory variable shaping livelihood decisions and future outcomes (Figure 1). As proposed by Levine (2014), livelihood research must start by understanding what people are doing, which involves the understanding of their multidimensional goals and objectives (represented by aspirations) as the first step. Aspirations are "desired future states", and in this, differ from expectations, which are "probable future states". The latter is about what is expected to happen under business-as-usual scenarios and behaviour, while the former is about what future is preferred by people and to which they link their actions and behaviour. Thus, aspiration is a determinant of action.

This paper links aspiration and rational theories. To maximize utility, individuals adopt livelihood strategies whose achievements align with their aspirations (Dalton et al., 2016). Poor agents cannot attain goals or adopt strategies not only because they lack access and entitlement to capital assets. Rather, agents may simply not aspire for the optimal outcome they could have realized. This is referred to as the psychological or behavioural aspiration trap. Dalton et al. (2016) argue that these internal constraints further limit the potential outcomes available to the poor. Hence, an individual with low aspirations will adopt low-return livelihood strategies despite necessary resource access. As empirical evidence, Barrett et al. (2001) find low uptake of training and assistance programmes in India despite obvious welfare improvements. In Kenya, Duflo et al. (2011) find very low rates of fertilizer adoption, even after lowering fertilizers' prices and explaining their usage and expected returns. Low aspiration levels may explain this, which leads to our first hypothesis.

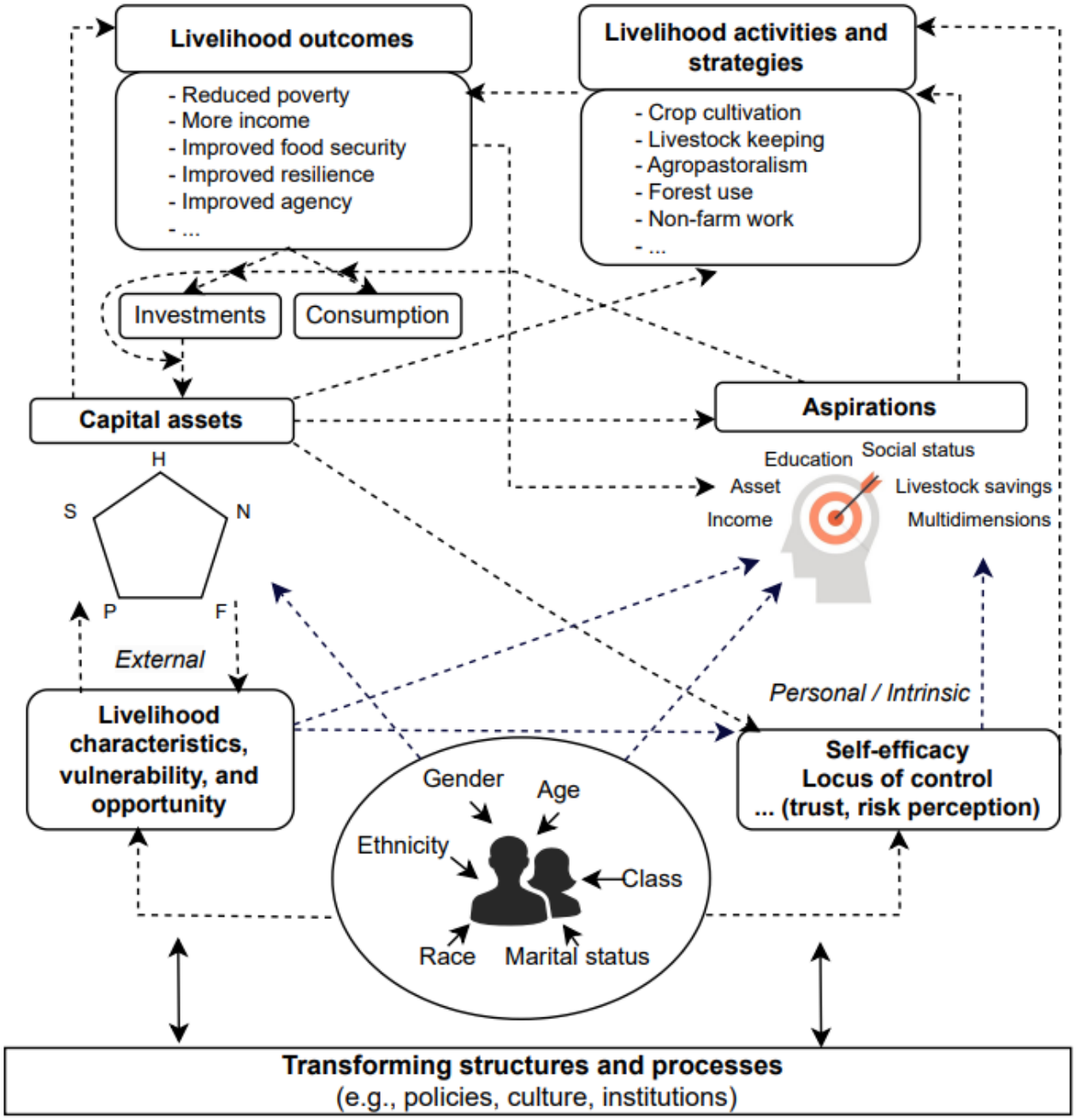


Figure 1. The inclusion of people's aspirations in the analysis of sustainable livelihoods.

Hypothesis 1: Aspirations are positively associated with livelihood diversification, even when controlling for different capital covariates and psychological constructs.

We introduce psychological constructs, including self-efficacy and locus of control, to capture social cognitive traits implicit in the SLF. Following Bandura's (1977) framework, self-efficacy is a person's confidence about their capacities to execute tasks to achieve positive outcomes. Locus of control reflects a person's belief in how much control they have over their lives. Outcomes may

depend on the person's own actions (i.e., internal locus of control) or external forces (i.e., external locus of control) (Bandura, 1977; Rotter, 1966). Previous research highlights their influence on one's capacity to aspire and on economic decisions (Abay et al., 2017; Knapp et al., 2021; Roy et al., 2018).

While higher aspirations generate impetus to take action, they do not always equate to better outcomes. People can become discouraged in the process of achieving aspirations leading to frustrations or fatalism, which then results in aspiration failure. Following Genicot & Ray (2017), frustration arises from – relative to their current state – very large aspirations requiring large investments that discourage people from closing them. Fatalism emerges from very small aspirations that imply worthless efforts given minimal improvements. Thus, aspirations are not always something 'achievable' (differentiating itself from expectations). Moreover, endogeneity may exist in which livelihood strategies hold a feedback relationship to aspirations through their outcomes. Aspirations may adjust depending on livelihood achievements, such as income. Genicot & Ray (2017) show that wealth levels and aspirations co-evolve over time. Dalton et al. (2016) indicate that lower aspirations are a consequence of poverty rather than a cause. This leads to our second hypothesis.

Hypothesis 2: Aspirations have a non-linear effect across income levels, specifically, the level of positive association of aspirations with livelihood diversification decreases with lower-income levels.

Our analysis adopts an intersectional lens centering our framework more on people compared to the SLF. Aspiration effects can differ because of biased social positions, defining people's external constraints, capacity to aspire, and aspiration window. Intersecting identities affect how people perceive and are perceived by others, which explain why the ownership of and access to assets, including land, financial services, inputs, and extension services, differ across and within gender (Bacud et al., 2024; Doss et al., 2015; Peterman et al., 2014). The capacity to aspire differs, as some have a low capacity to contest and unsubscribe from norms, which exacerbates their material constraints (Appadurai, 2004). Poor and socially marginalized groups are more likely to pay 'psychological cost of identity loss' or stereotype threats when they adopt behaviours and decisions that are inconsistent with their identities (Akerlof & Kranton, 2000). This results in cautious or adaptive aspirations holding them back from better welfare-enhancing choices, which is known as ecological rationality (Brandstätter et al., 2006; Todd & Gigerenzer, 2012). Ray (2006) emphasizes that aspirations are socially grounded within cognitive neighbourhoods or 'aspiration window'. Thus, secluded individuals are more likely to be trapped in low levels of aspirations. We choose gender to test this idea.

Hypothesis 3: The levels of positive association of aspirations with livelihood diversification are lower for women, as they are more likely to experience resource constraints and stereotype threats.

3. Empirical strategy

3.1 Survey design

This study draws on 2019 cross-sectional data from 530 randomly selected households in Baringo County, Kenya. The survey covers 35 randomly selected villages with 14 to 16 households per village. Data collection was designed, implemented using computer-assisted personal interview tool SurveyBe, and administered by well-trained enumerators. Survey modules include social and economic characteristics, asset ownership, income sources, market access, social capital, household income, aspirations, and land invasion. Respondents include mainly the household's husband or wife.

3.2 Livelihood diversity and mobilities

We are interested in examining livelihood diversification using two measures: the livelihood diversity index (LDI) and livelihood mobilities. LDI measures the overall livelihood diversity, while mobilities reveal the dynamics in diversification or how households move in or out of agropastoralism (Table 1). Following Musumba et al. (2022), we employ a count index for the four major livelihood activities of rural households. These include crop cultivation, livestock keeping, forest use, and non-farm work. Other diversity measures, such as Simpson's index (Simpson, 1949), focus on the income share per activity for which we do not have sufficient data. Existing livelihood studies show that count index provides a simple yet parsimonious measure of diversity (Michler & Josephson, 2017; Musumba et al., 2022). In order to capture transiency in livelihood diversification towards agropastoralism, we also include experience in crop farming and livestock keeping.

Table 1. Description and descriptive statistics of variables.

Variable	Description (household-level)	Mean	SD	Percentiles 5 %	Percentiles 95 %
Livelihood diversity categories					
Livelihood Diversity Index (LDI)	Number of livelihood activities the household participates in (integer 0-4)	2.57	0.80	1.00	4.00
Non-farm and forest dependents	Binary = 1 if households depend on non-farm activity or forest use and not on crop farming and livestock keeping	0.07	0.26	0.00	1.00
Stay-out (non-diversifiers)	Binary = 1 if households engage in either crop farming or livestock keeping only or on top of their non-farm or forest use activity, but have no experience of doing both	0.07	0.25	0.00	1.00
Step-out (intermittent diversifiers)	Binary = 1 if previously engaged in agropastoralism but not anymore	0.17	0.37	0.00	1.00
Step-in (beginner or late diversifiers)	Binary = 1 if currently engage in agropastoralism but have stepped-in only 5 years ago	0.26	0.44	0.00	1.00
Stay-in (long-term diversifiers)	Binary = 1 if engage in agropastoralism for over 5 years	0.43	0.50	1.00	4.00
Aspiration variables					
Aspiration index	Weighted index computed from five aspiration dimensions	0.22	11.47	-14.32	18.04

Income aspiration index	Aspired income in the next 5 years (weighted index)	0.01	3.98	-2.75	5.91
Asset aspiration index	Aspired asset value in the next 5 years (weighted index)	-0.02	3.70	-1.39	1.84
Social status aspiration index	Aspired level in a 10-scaled social status ladder where 1 represents worst status and 10 best status (weighted index)	0.13	3.76	-6.61	5.10
Education aspiration index	Aspired number of school years for male and female children under age 10 (weighted index)	0.16	5.59	-4.80	11.91
Livestock aspiration index	Aspired flock size for each of their three most preferred livestock converted to total livestock units (TLU) (weighted index)	-0.06	3.74	-3.94	6.24
Human capital					
Gender	Gender of the household head (1-male, 0-female)	0.74	0.44	0.00	1.00
Age	Age of the household head (years)	45.15	15.62	24.00	74.00
Ethnicity	Ethnicity of the household (1= Tugen, 0= Ilchamus and few Pokot)	0.64	0.48	0.00	1.00
Education	Education of the household head (years)	7.90	4.87	0.00	15.00
Marital status	Marital status of the household head:				
	Binary = 1 if household head is married monogamously	0.65	0.48	0.00	1.00
	Binary = 1 if married polygamously	0.12	0.33	0.00	1.00
	Binary = 1 if widow or separated	0.18	0.38	0.00	1.00
	Binary = 1 if single or never married	0.12	0.33	0.00	1.00
Household size	Number of members in the household	5.94	2.83	1.00	11.00
Dependency ratio	Ratio of dependents or non-working age group (below 15 and above 61) to working age population (15-61)	1.17	1.17	0.00	3.00
Crop farming experience	Experience in crop cultivation (years)	17.06	16.14	0.00	40.00
Livestock keeping experience	Experience in livestock keeping (years)	13.40	13.02	0.00	50.00
Social capital					
Extension contact	Binary = 1 if any member received advice from an extension staff in the last year	0.26	0.44	0.00	1.00
Extension number	Number of contacts with extension staff	0.55	1.11	0.00	3.00
Cooperative membership	If any member belongs to cooperative (1-yes, 2-no)	0.25	0.43	0.00	1.00
Savings group membership	If any member belongs to savings group (1-yes, 2-no)	0.33	0.47	0.00	1.00
Physical capital					
Cropland area	Cropland area owned or managed (acres)	1.33	1.79	0.00	3.00
TLU	Total livestock unit owned	2.75	4.37	0.00	9.55
Asset value	Total value of owned assets (Ksh)	171,532.50	1,055,138.00	5,060.00	380,700.00
Village market distance	Time to nearest village market (minutes)	27.16	34.59	2.00	60.00
Irrigation	Irrigation acces (1-yes, 2-no)	0.24	0.43	0.00	1.00
Financial capital					
Savings amount	Total savings amount	1,064.53	5,430.16	0.00	3,500.00

Credit access	If any member has access to a credit institution (1-yes, 2-no)	0.43	0.50	0.00	1.00
Natural capital					
Invasion index	If household's land is infested with any of the three major invasive species in Kenya namely, *Prosopis*, *Parthenium*, and Fall armyworm (0-3)	1.48	0.75	0.00	2.00
Land quality	Quality of the land the household has access to compared to the land of others in the village (1- better, 0-average, worse, no land)	0.28	0.45	0.00	1.00
Social cognition variables					
Self-efficacy z-scores	Six self-efficacy scale questions (1-strongly disagree to 6-strongly agree) transformed into z-scores	0.00	1.00	-1.80	1.33
Locus of control z-scores	Eight locus of control scale questions (1-strongly disagree to 6-strongly agree) transformed into z-scores	0.31	0.46	-1.56	1.72
Observations		530			

3.3 Aspiration measurement

We measure aspirations using an index following Bernard & Taffesse (2014) across five dimensions. These include income, education, social status, wealth or asset value, and livestock (Table 1). Livestock aspirations are added to the framework to account for livestock's cultural importance in pastoral communities. Unlike other studies that focus only on income aspirations (Tabe-Ojong, JR. et al., 2023; Villacis et al., 2023), we focus on the multidimensional aspect of aspirations. Aspiration and livelihoods research too often assumes that rational behaviour of people always involves maximizing income. But, different people carry different goals that they may or may not prioritize equally. In line with Levine (2014), we consider that the uptake of livelihood strategies by people and households must be understood within broader life goals.

Aspirations suffer from measurement error when respondents report general wishes or expectations instead of desired states. This holds for studies that ask aspirations directly without considering anchoring effects in attitudinal questions. This compromises the validity and reliability of aspiration measurement. To realize reliable aspiration levels, respondents are first asked about the minimum and maximum achievable outcomes in their village before they report their aspired level (Manski, 2004). This helps respondents frame their answers and reduce anchoring effects by establishing their points of belief regarding what is achievable in their community. Then, they report their current or achieved level to better asses their aspirations. Finally, respondents report their aspired level in the different dimensions (Beaman et al., 2012). To make the answers comparable across the different dimensions, a standardized wording of the questions is used (see Appendix A).

The aspiration levels in each dimension are aggregated into a composite index Asp to present the individual's general aspiration level. While aggregation risks losing the information captured in each dimension, it controls for measurement errors in attitudinal questions by reducing stochastic noise. The dimensions are also assumed to be positively related (see Table B.1 for empirical support), justifying aggregation. Because the scales and distribution differ across dimensions, aspirations are still not fully comparable. To construct a dimension-free aggregation, we first standardize each individual's aspiration by subtracting the ward sample mean aspiration

and dividing its standard deviation (eq.1). Second, we sum the standardized scores across the five dimensions. Recognizing that, in reality, individuals value each dimension differently, we introduce a weight on each dimension representing its relative importance. Respondents were handed 20 maize seeds and asked to distribute them according to the dimension's importance to them. Few seeds indicate low importance and conversely. The weight is the share of seeds per dimension. Formally, the weighted aspiration index is calculated as

$$aspiration\ index\ (Asp) = \sum_{k=1}^{5} \left(\frac{a_i^k - \mu_l^k}{\sigma_l^k} \right) w_i^k \quad [1]$$

where a_i^k is the aspiration of individual *i* on dimension *k* (income, education, social status, asset, livestock); μ_l^k and σ_l^k are the sample mean and standard deviation, respectively, in ward location *l* on dimension *k;* and w_i^k is the weight placed on dimension *k* by individual *i.*

3.4 Capital and social cognition covariates

Control variables were selected following the framework (Figure 1). We controlled for capital asset levels to capture external constraints influencing livelihood strategies and aspiration levels. Natural capital includes the invasion of the three common invasive species (*Prosopis, Parthenium*, Fall armyworm), which also represent rural households' vulnerability context to shocks. Invasive species are reported to significantly lower crop yields, disturb rural livelihoods (Shiferaw et al., 2021; Tambo et al., 2021; Tanveer et al., 2015), and affect aspiration levels (Tabe-Ojong et al., 2021).

We also controlled for social cognition including self-efficacy (SE) and locus of control (LOC) (Bandura, 1977). SE responses "agree" and "strongly agree" are coded 1 and 0 otherwise. LOC responses "true" for positive statements and "false" for negative statements are coded 1 and 0 otherwise. We then compute z-scores by aggregating the *k* number of statements for SE and LOC and standardizing the index by reducing the ward *l*'s mean μ_l and dividing with the standard deviation σ_l (eq. 2).

$$SE, LOC = \frac{\sum_{k=1}^{n} s - \mu_l}{\sigma_l} \quad [2]$$

3.5 Model specification

We are interested in examining the association of aspiration with livelihood diversification and its gendered nature. We perform Poisson regression to model the count index LDI provided that the count data has no overdispersion. We employ multinomial logit regression for livelihood mobility categories. The model controls capital assets, social cognitive traits, and aspiration-income interaction, and is given by:

Poisson: $$Y_i = \beta_0 + \beta_1 Asp_i + \beta_k X_{ik} + \beta_2 Self_i + \beta_3 Locus_i + \beta_4 Asp_i Inc_i + \varepsilon_{ik} \quad [3a]$$

MNL: $$Prob(Y_i^m = 1) = F(\beta_0 + \beta_1 Asp_i + \beta_k X_{ik} + \beta_2 Self_i + \beta_3 Locus_i + \beta_4 Asp_i Inc_i + \varepsilon_{ik}) \quad [3b]$$

where Y_i is the LDI and Y_i^m is the m^{th} livelihood mobility of i^{th} household with *M*=5 (Table 1). *m*=2 (stayout or non-diversifiers) is the base group. *F()* denotes the logistic cumulative distribution function. Asp_i represents the aspiration index. X_{ik} is a vector of *k* exogenous regressors under each capital asset. $Self_i$ and $Locus_i$ refer to self-efficacy and locus of control measured in z-scores (eq.2). $Asp_i Inc_i$ is the interaction between aspiration index and income. β_0 is a constant, β_1 presents the association of aspiration with LDI and mobilities. β_k, β_2, β_3 control for covariates. β_4 control for the income-moderated association of aspirations. ε_{ik} is the error term. We cluster standard errors by village for robust estimates under potential heteroskedasticity (Wooldridge, 2010), because types and number of livelihood strategies and aspiration levels may be concentrated in some villages.

For each of the models, hypothesis one is formulated as $\beta_1 > 0$ and hypothesis two as $\beta_4 > 0$, and both are tested by a one-sided t-test. To test hypothesis three, an interaction term between aspirations and gender is added to the model and tested by a one-sided t-test ($\beta_5 > 0$). We acknowledge that our specifications are entirely associational and by no means causal. To partly address this drawback, we carefully assess the sensitivity of our results to iterative addition of controls. We perform robustness checks including (i) instrumental variable (IV) regression using village-predicted aspiration index to rule out potential endogeneity of aspirations, (ii) including village fixed-effects to control for time-invariant unobserved heterogeneity, (iii) using different instruments to validate our endogeneity tests, and (iv) excluding social status from aspiration measurement to mitigate the possible influence of social norms that are uncontrolled for in the model.

Reverse causality between aspiration and livelihoods may exist because higher-earning livelihoods can induce people's aspirations (Genicot & Ray, 2017). We formally test for endogeneity using Hausman test and address it by replacing the original *Asp* with its fitted values. We use the "predicted" aspiration index Asp_{vi} as the instrument following Kosec et al. (2022) as an individual's aspiration is formed by frequent interaction and physical proximity (Ray, 2006). It is computed by weighing the standardized individual's reported aspiration with mean village-level weights w_{v-i}^k that exclude own reported relative importance (eq.4). The instrument is considered not weak when F-value is greater than10 after IV-2SLS post-estimation.

$$Asp_{vi} = \sum_{k=1}^{5} \left(\frac{a_i^k - \mu_l^k}{\sigma_l^k} \right) w_{v-i}^k \quad [4]$$

We validate our endogeneity tests using new instruments: the perceived others' achievement gap ($Achievegap_{oth}$) and the perceived own achievement gap ($Achievegap_{own}$), both measured as indices. $Achievegap_{oth}$ is the difference between the maximum and minimum achievable level of *k* dimension in the village that person *i* believes. $Achievegap_{oth}$ excludes the social status dimension because the maximum and minimum social status could always be 10 and 1, leading to little variation. $Achievegap_{own}$ is the distance of the person's current level of *k* from the maximum achievable level in the village. These are standardized by subtracting the mean and dividing by the standard deviation in the ward *l*. Ray (2002) indicates that a "right level of inequality" is crucial for productive aspirations, e.g., a society where one can observe a ladder between the poorest and the richest. Because if people in the village are similarly poor, there are no role models to induce people's aspirations and provoke efforts. By saying this, we do not mean we promote inequality. There is no constant linear link between inequality and aspirations. Ray

(2002) emphasizes that inequality may drive people's aspirations initially, but too long inequality may stifle aspirations.

$$Others'\ achievement\ gap\ (Achievegap_{oth}) = \sum_{k=1}^{4}\left(\frac{(max_{oth}-min_{oth})_i^k-\mu_l^k}{\sigma_l^k}\right) \quad [5a]$$

$$Own\ achievement\ gap\ (Achievegap_{own}) = \sum_{k=1}^{5}\left(\frac{(max_{oth}-min_{oth})_i^k-\mu_l^k}{\sigma_l^k}\right) \quad [5b]$$

4. Results

4.1 Gendered inequality in livelihood diversification

Our descriptive results reveal pronounced gender disparities in livelihood diversification in Kenya (Figure 2). A significantly higher share of men participate in crop farming, forest activities, and agropastoralism (1a), resulting in a higher overall livelihood diversity index (LDI) compared to women (1b). We find no significant gender difference in non-farm work and livestock keeping, indicating that some women rely on these sources when farm work is unavailable for them (1a). However, differences arise in the composition of non-farm work and livestock owned by households. Men tend to operate multiple non-farm activities (e.g., transport, construction) and own larger livestock (e.g., cattle, goats, and sheeps), while women often manage single small enterprises and small livestock (e.g., poultry and some goats). This does not imply that women lack interest in agricultural diversification. Although 12% more men participate in agropastoralism, which is the most common diversification strategy, gender-disaggregated livelihood mobilities reveal women as transient and beginner diversifiers. 22% step out and 32% just begin diversification, compared to 15% and 24% of men, respectively (1c). Sustaining diversified livelihoods is more challenging for women, with only 28% achieving this compared to 48% of men.

Livelihood diversification seems vital in improving welfare. Figure 3 shows a significant income rise with increased livelihood activities. Yet, women consistently earn less than men for the same number of livelihood activities, especially strong for the case of 4 income sources.

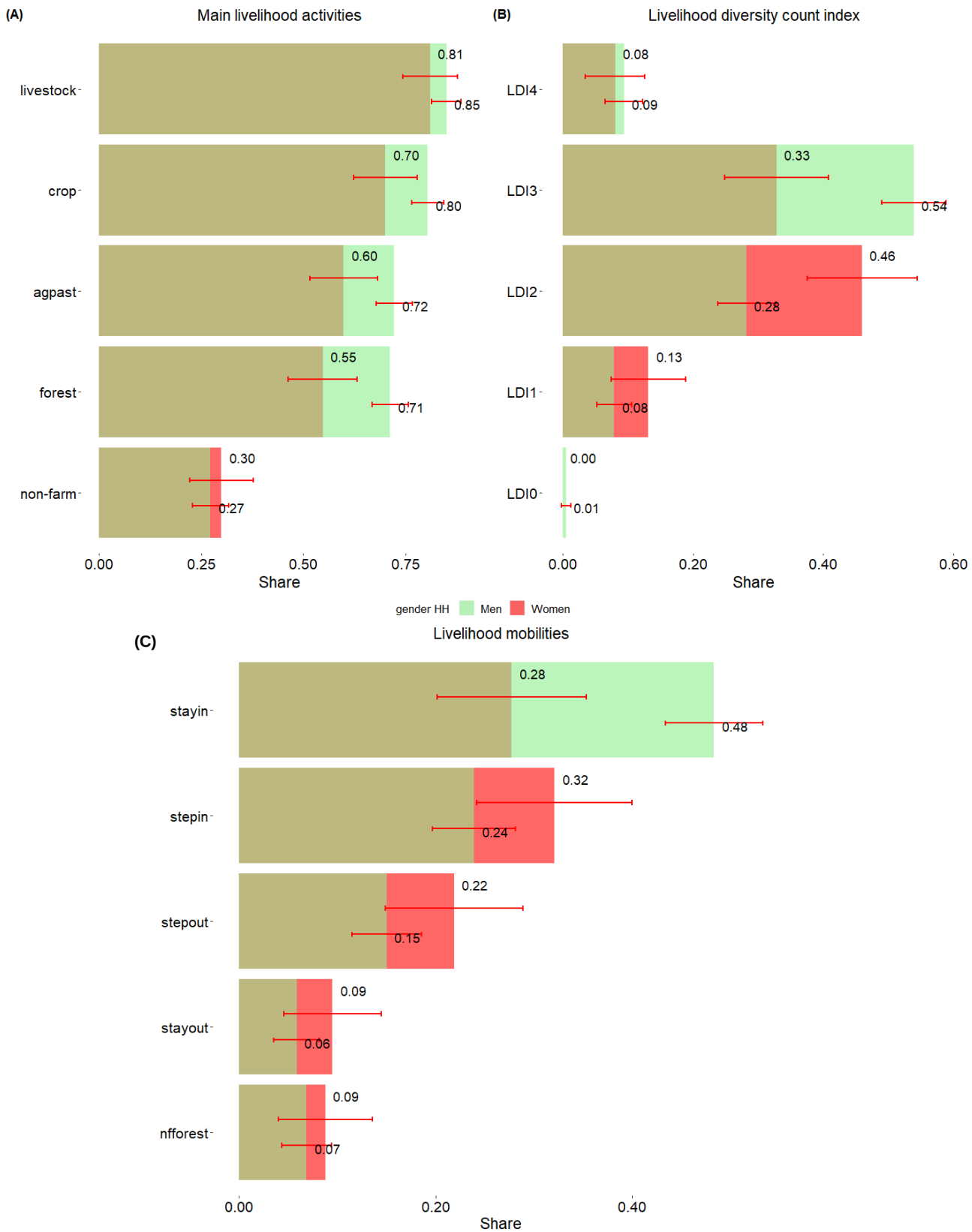


Figure 2. Distribution of livelihood diversification by gender.

Notes: The sample includes 530 households with 137 women- and 393 men-headed households. Red line shows the confidence interval of mean estimates at 95 %. Panel (a) shows the share of women and men participating in the main livelihood activities: livestock keeping, crop cultivation, forest-based activities such as charcoal and honey production, and non-farm activities such as non-farm enterprises, construction, transport, and government employees. agpast stands for agropastoralism and includes those doing livestock and crop farming. Panel (b) shows the share of women and men across LDI or the count of the household's livelihood activities. Panel (c) highlights the mobility patterns towards agropastoralism diversification strategy. Nfforestdep refers to households depending solely on non-farm-forest-based activities, stayout are non-diversifiers of agropastoralism, stepout are intermittent diversifiers, stepin are those who recently engage in agropastoralism, and stayin are long-term diversifiers. Table 1 presents the detailed variable descriptions.

Figure 3. Income distribution based on the number of livelihood activities, by gender.

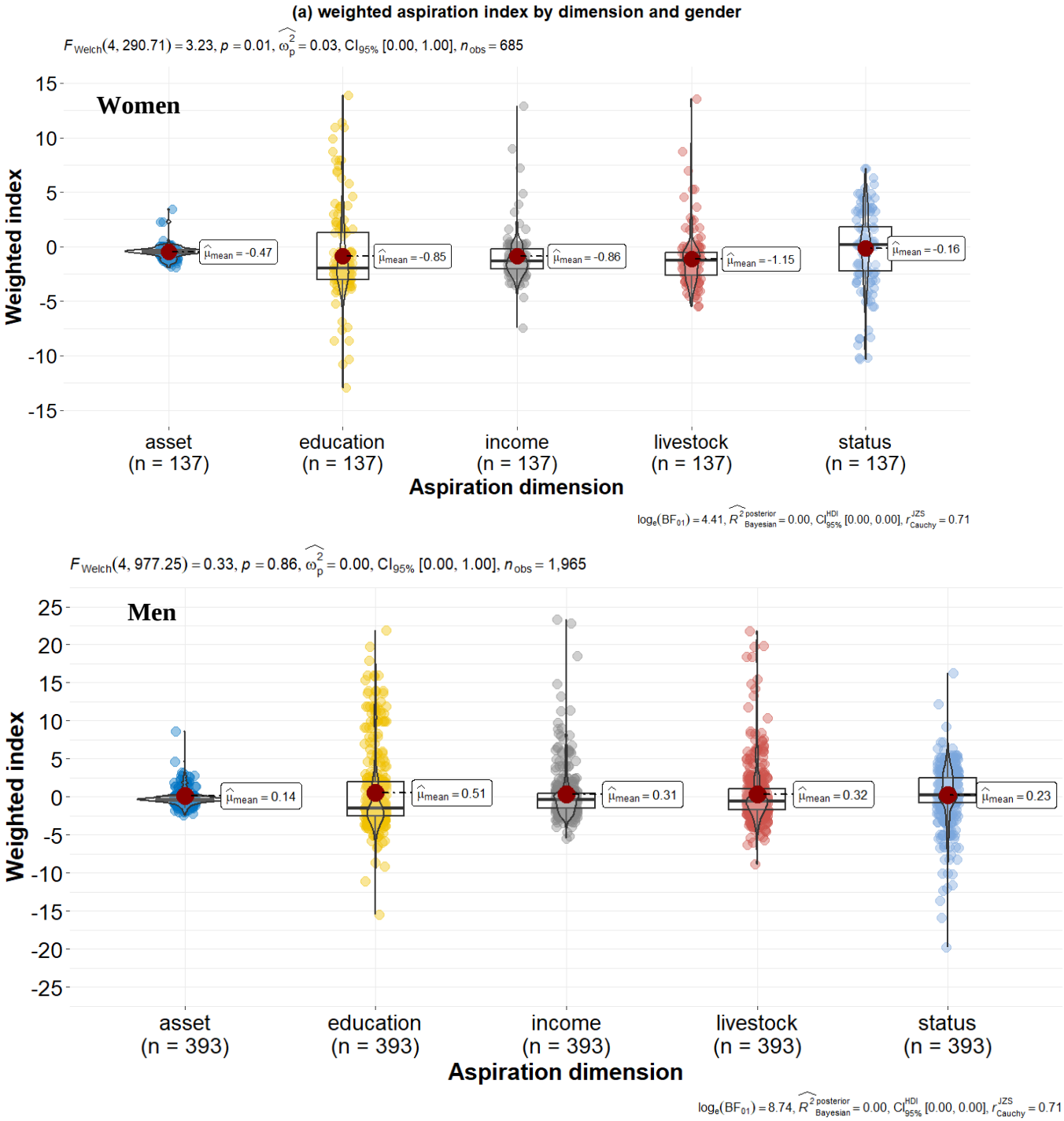
Notes: The sample includes 530 households with 137 women- and 393 men-headed households. LDI refers to livelihood diversity index or count of household participation in main livelihood activities. LDI0 is not shown due to few observations (n=2). Income, in Kenyan shillings (Ksh), refers to the household's income in the last 12 months. Dashed lines indicate statistically significant income differences between livelihood groups based on Bonferroni pairwise comparisons, with reported p-values. Non-dashed lines indicate the gender gap in the mean income.

Gendered disparities in diversification and income might stem from unequal access to assets and varying aspirations. Table 2 highlights that women lag behind men in access to and ownership of different assets, including land and larger livestock, which yield greater returns. While self-efficacy shows no significant difference, women's locus of control is on average negative and lower than for men. Figure 3 shows that women's average aspiration levels are negative, i.e., below the sample average and significantly lower than men's, both when considering the overall weighted aspiration index and each dimension separately, but especially concerning livestock, education, and income.

Table 2. Gendered access to different capital assets.

	Women	Men	P-value
Demographics			
Age	47.75	44.24	0.024
Ethnicity	0.67	0.63	0.340
Education			
Married monogamously	0.30	0.78	0.000
Married polygamously	0.09	0.13	0.147
Widow/ separated	0.55	0.05	0.000
Single/ never married	0.09	0.13	0.147
Human capital			
Household size	5.36	6.14	0.006
Dependency ratio	1.34	1.12	0.057
Crop farming experience	11.14	14.19	0.018
Livestock keeping experience	16.67	17.20	0.742
Social capital			
Extension contact	0.16	0.30	0.002
Extension number	0.33	0.63	0.006
Cooperative membership	0.15	0.29	0.001
Savings group membership	0.31	0.33	0.677
Physical capital			
Cropland area	0.92	1.47	0.002
TLU	1.40	3.22	0.000
Asset value	67313.82	207863.20	0.180
Village market distance	28.24	26.79	0.673
Irrigation	0.19	0.26	0.101
Financial capital			
Savings amount	1277.37	990.33	0.595
Credit access	0.31	0.47	0.001
Natural capital			
Invasion index	1.35	1.53	0.018
Land quality	0.20	0.31	0.013
Social cognition variables			
Self-efficacy z-scores	0.03	-0.01	0.713
Locus of control z-scores	-0.18	0.06	0.013
Observations	137	393	

P-values are from t-tests on the mean difference between women and men. Table 1 presents the detailed variable descriptions.



	Asset	Education	Income	Livestock	Social status
$\Delta(Women - Men)$	-0.610	-1.363	-1.172	-1.472	-0.389
p-value	0.006	0.019	0.000	0.000	0.280

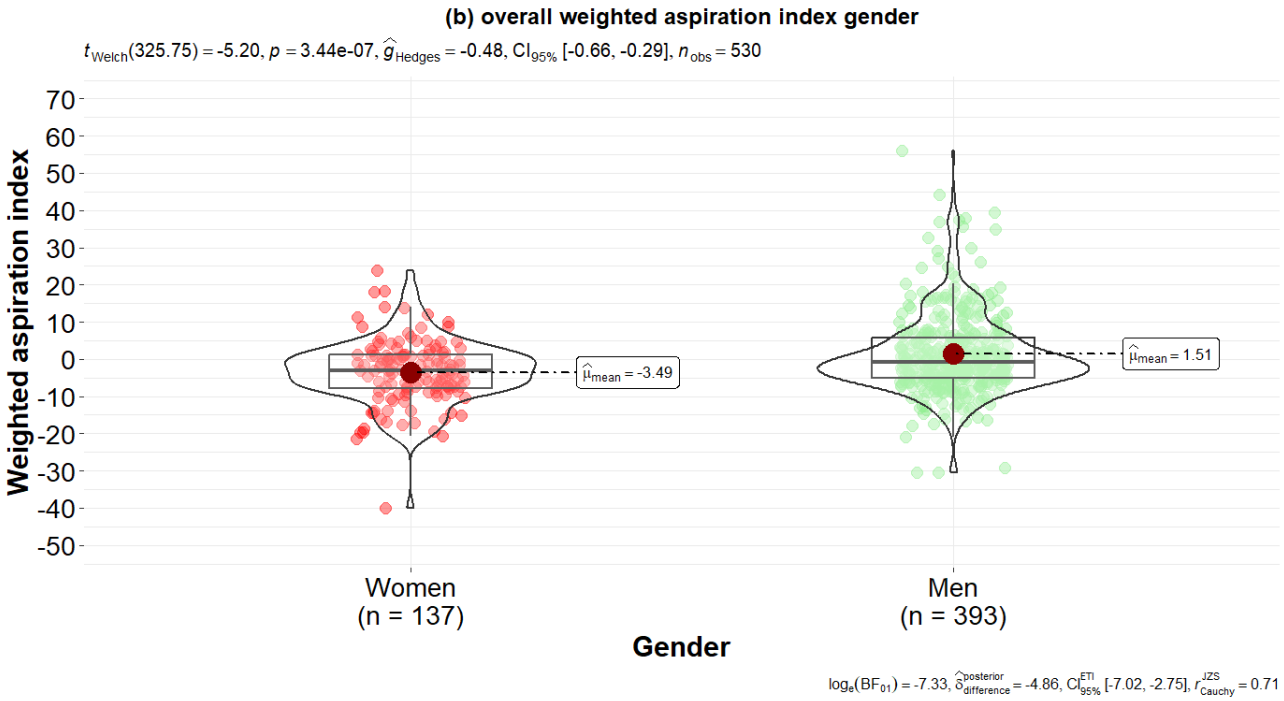


Figure 4. Weighted aspiration index across dimensions and gender.

Notes: Welch's ANOVA and t-tests are employed for the mean differences between the genders across the five aspiration dimensions. Welch test is chosen for mean comparisons as it ensures robustness even with unequal sample sizes and variances between groups and yields identical results for balanced samples and equal variances. Violin plots represent the data's kernel density or sample distribution of (weighted) aspiration indices. Box plots display mean estimates and 95% confidence intervals.

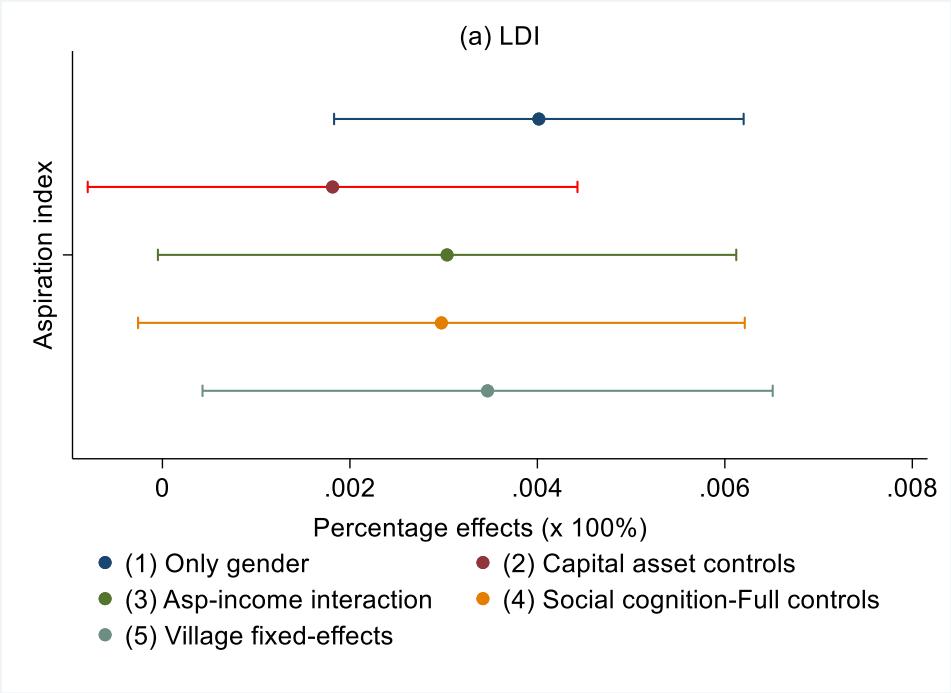
4.2 Endogeneity testing

We test for endogeneity of aspirations to identify the appropriate regression model. The first column (OLS) in Appendix Table B.2 shows our first-stage results. The village-predicted aspiration index is strongly positively associated with actual aspirations and F-test indicates that it is not a weak instrument. The IV results imply that we maintain the hypothesis of no endogeneity as shown by insignificant residuals when regressed with livelihood variables. Thus, we can interpret the findings based on Poisson and multinomial logit regressions.

4.3 Aspiration and livelihood diversification

Figure 5a and 5b presents the results of Poisson and multinomial logit regressions, respectively. We performed sensitivity and robustness checks to confirm the validity of our findings. Our first specification controls only for gender (model 1). We then iteratively add capital asset controls (model 2), aspiration-income interaction (model 3), and social cognition controls (model 4). Model 5 controls for unobserved time-invariant within-village heterogeneity. Appendix Tables B.3 to B.5 present the full model results of Poisson and multinomial logit models after iterative control additions.

We begin by testing whether there is a positive association between aspiration and livelihood diversification. We find that aspirations are positively associated with LDI and their statistical significance is robust across specifications, except model 2 (Figure 5a, Table B.3). Model 4 is our preferred specification as it includes all covariates and controls for aspirations' plausible non-linear effect (e.g., across income levels). In terms of livelihood mobilities, higher aspiration levels are associated with a reduced likelihood that households will depend on non-farm-forest activity and an increased likelihood of long-term diversification (Figure 5b). This is robust across specifications (Table B.4). We also find that aspirations are associated with a reduced likelihood of late diversification. The size and statistical significance of the aspirations' association are relatively stable with no critical change in coefficient size and standard error after controlling for capital assets and social cognition. These patterns also hold after we control for unobserved time-invariant within-village effects. This indicates aspirations' individual explanatory power in livelihood diversification and mobilities.



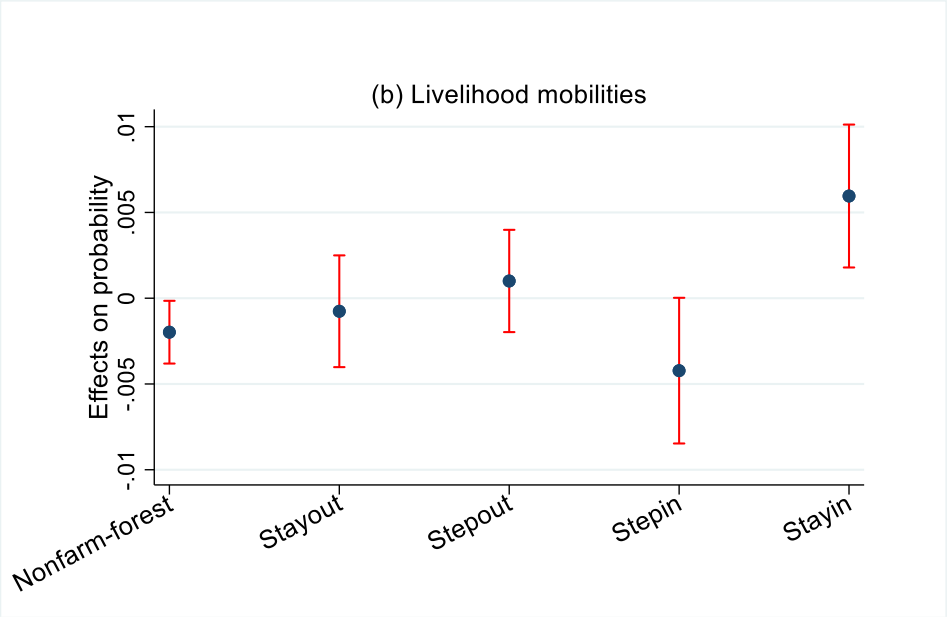


Figure 5. Aspirations' percentage effects on overall livelihood diversity (LDI) (a) and average marginal effects on livelihood mobilities (b) at 95 % confidence interval (CI).

Notes: The sample includes 530 households with 137 women- and 393 men-headed households. Panel (a) shows Poisson results under iterative addition of controls (see Appendix Table B.3 for full results). Panel (b) shows only the multinomial logit results from the full control model (see Appendix Tables B.4 and B.5 for full results).

We standardize the above coefficients to compare the effect sizes between variables and discern which predictors more strongly associate with livelihood diversification measures. Figures 6 and 7 reveal that aspirations have a comparable or even greater influence than social cognitive traits and some capital assets. For instance, a standard deviation change in aspirations corresponds to a 3.4 % increase in the number of household livelihood strategies, compared to 2.9 % for self-efficacy and 2.5 % for locus of control. A standard deviation change in aspirations more strongly correlates with long-term-diversification (6.8 %) and reduced non-farm-forest dependency (-2.3 %), which outperform self-efficacy (3.2 % and -0.2 %) and locus of control (-0.5 % and -0.9 %). Notably, aspirations show a stronger association with overall livelihood diversity than certain physical assets, including land area (2.3 %), TLU (1.9 %), market access (1.9 %), and irrigation access (1.7 %), and financial assets such as savings amount (<0.1 %) and credit access (1.3 %). It also exceeds the extension number of visits, market access, irrigation access, savings, and income in predicting long-term diversification. The effect size of aspirations on livelihood diversity exceeds that of gender, but this does not hold for livelihood mobilities (late and long-term diversification). Household size, extension service access, invasive species, and land quality show the strongest significant associations with both overall diversity and livelihood mobilities.

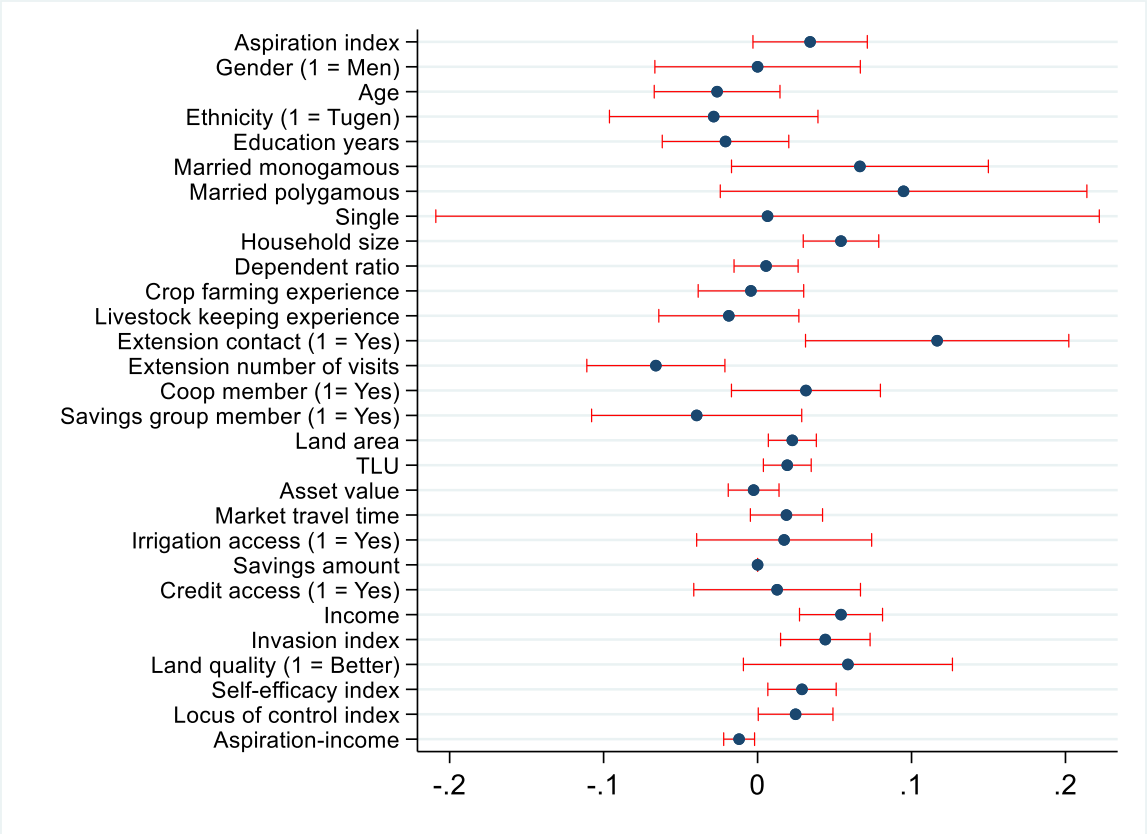


Figure 6. Standardized effects of aspiration and controls on LDI at 95 % CI.

Notes: The figure illustrates the relative effect sizes between predictors after controlling for capital assets, social cognitive traits, and aspiration-income interaction. Standardized effects indicate the average change in the number of household livelihood strategies associated with one standard deviation change in the predictors. We use standardized beta-coefficients only to compare the effect sizes of our predictors, but we retain the unstandardized coefficients in this paper for more intuitive interpretation and effect size comparisons across studies or samples (Goldstein-Greenwood, 2023; Graebner & Cochran, 1978).

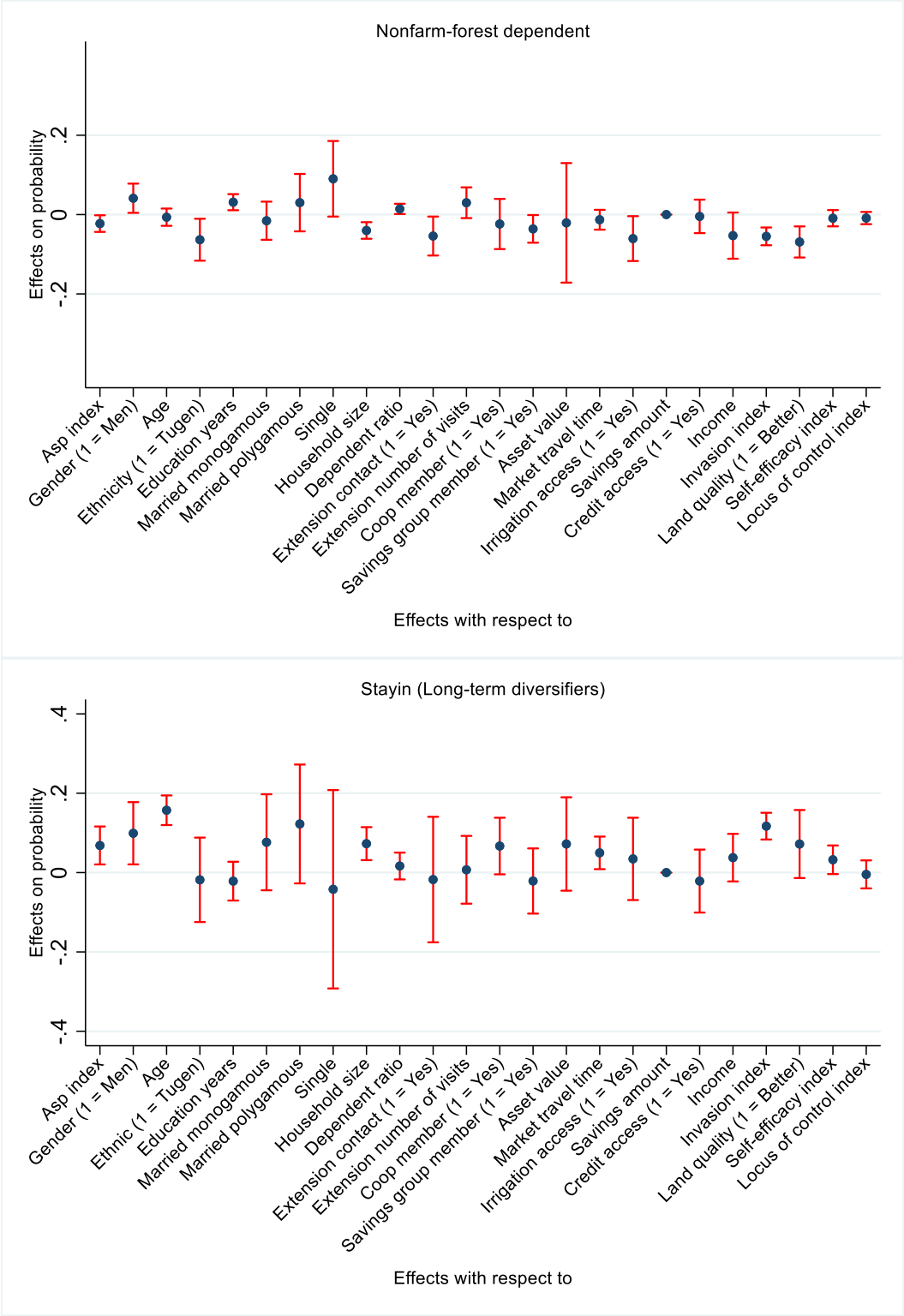


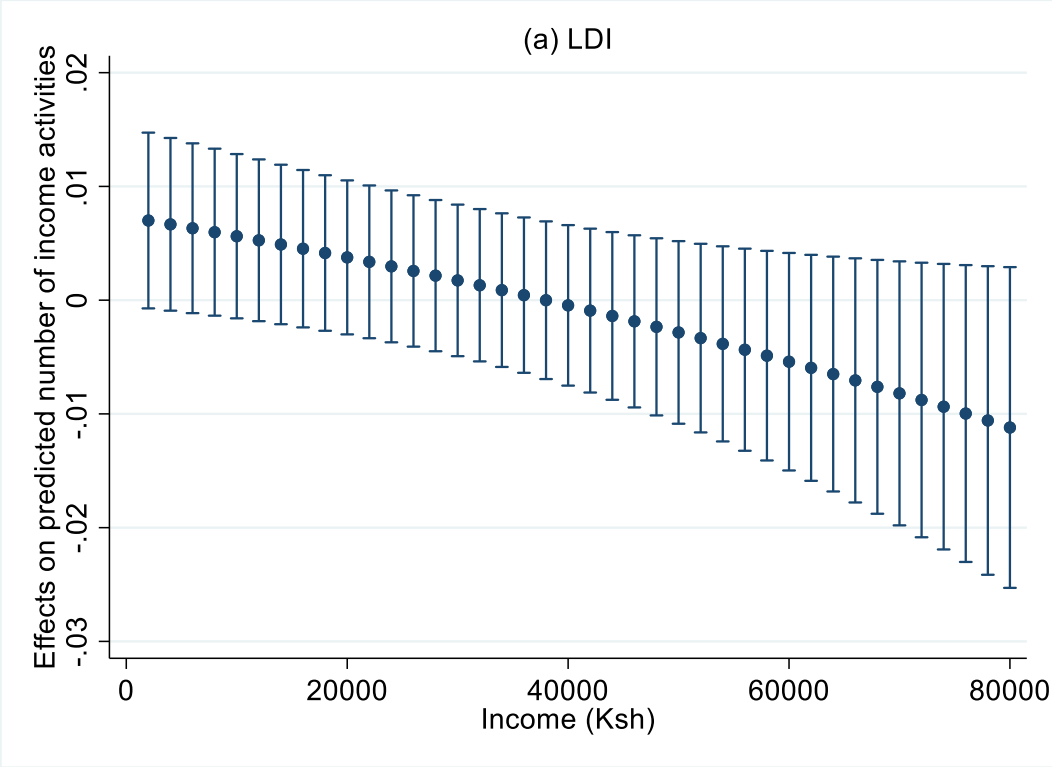
Figure 7. Standardized average marginal effects of aspiration on livelihood mobilities at 95 % CI.

Notes: The figure illustrates the relative effect sizes between predictors after controlling for capital assets, social cognitive traits, and aspiration-income interaction. Standardized effects indicate the average change in livelihood

mobility category probabilities associated with one standard deviation change in the predictors. We use standardized beta-coefficients only to compare the effect sizes of our predictors, but we retain the unstandardized coefficients in this paper for more intuitive interpretation and effect size comparisons across studies or samples (Goldstein-Greenwood, 2023; Graebner & Cochran, 1978). Only the likelihood of being non-farm-forest dependent and long-term diversifier is highlighted due to their more robust statistically significant associations with aspirations. Full results are available in Appendix Figure B.1.

4.4 Gendered aspiration effect on livelihood diversification

We then test for the level of association of aspirations as income varies. Figure 6 shows that the aspiration-income interaction is negative and statistically significant, which indicates that the association of aspiration with LDI decreases as income increases. This leads to a rejection of our second hypothesis. Figure 8a highlights that aspiration effects on LDI are higher among lower-income households. We find quite different findings in terms of livelihood mobilities. Figure 8b shows the marginal effects of aspirations on livelihood mobilities across income distribution. At any income level, aspirations are significantly positively associated with long-term diversification but with slightly higher marginal effects among higher-income households. Although aspirations are significantly negatively associated with non-farm-forest-based activities and late diversification among lower-income households, the association of aspirations with intermittent diversification is significantly positive in lower-income households and significantly negative in higher-income households. This may signal aspiration failure among low-income households. Meanwhile, aspirations show a negative association with non-diversification across income levels, albeit non-significant.



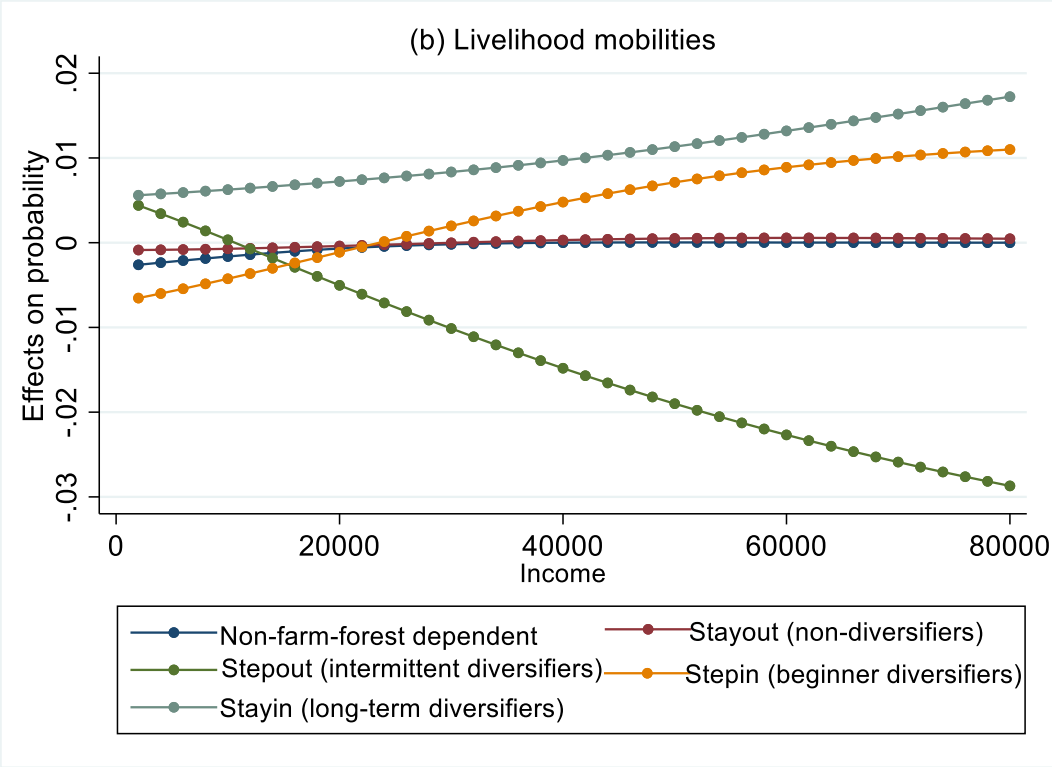


Figure 8. Average marginal effects of aspirations on LDI and livelihood mobilities across income levels at 95 % CI.

Notes: The sample includes 530 households with 137 women- and 393 men-headed households. Panel (a) presents the Poisson results while Panel (b) displays the multinomial logit results after controlling for capital assets and social cognitive traits in Table 1, and the aspiration-income interaction term. See Tables B.3 and B.5 for full results. Income, in Kenyan shillings (Ksh), refers to the household's income in the last 12 months.

Finally, we test whether the association of aspiration with livelihood diversification is lower for women. This is particularly relevant for this study due to the strong gendered patterns and the majority of men-headed households in the sample. The aspiration-gender interaction appears not statistically significant, indicating no strong gendered aspiration effect on overall livelihood diversity (Figure 9a). There are, however, statistically significant gender differences in the association of aspirations with livelihood mobilities. Figure 9b shows that increasing aspiration levels correspond to a higher probability of long-term diversification, with this being more pronounced and significant for men. Increasing aspirations among men also negatively correlate with non-farm-forest-based livelihoods. Conversely, among women, aspiration shows a positive association with non-farm-forest dependency but is non-significant. Aspirations also negatively correlate with being late diversifiers, but only significant for men. While men's results are robust after iterative covariate additions, aspirations' negative association with women's intermittent diversification is not robust after controlling for capital asset and social cognitive traits (Table B.7). We only present the outcomes with significant aspiration effects (Figure 9b).

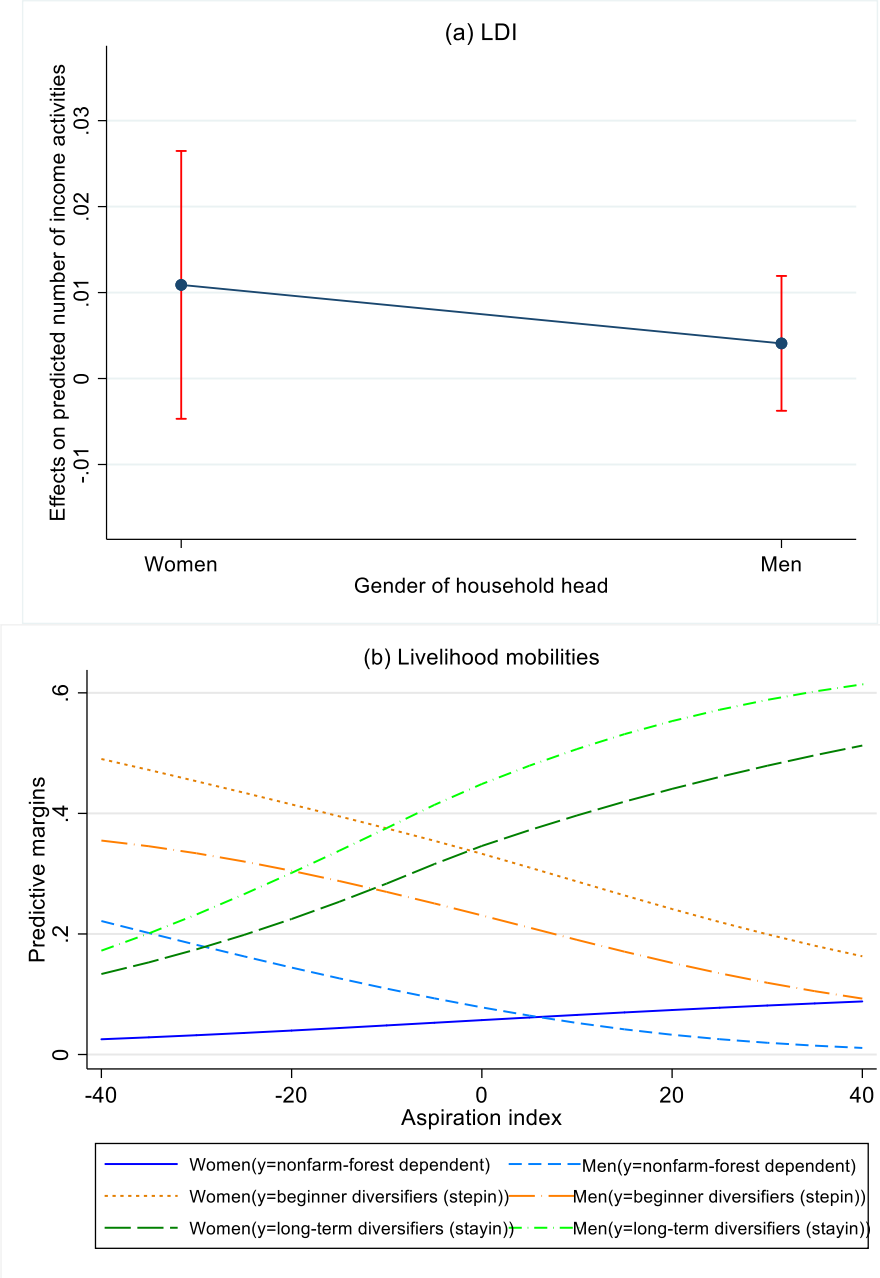


Figure 9. Average marginal effects of aspiration on livelihood mobilities by gender.

Notes: The sample includes 530 households with 137 women- and 393 men-headed households. Comparisons shown are only significant ones. Based on full specification model controlling for capital assets, social cognition, aspiration-income, and aspiration-gender interaction. Table 1 describes the control variables. See Appendix Tables B.6 and B.7 for the full results.

4.5 Additional robustness checks

We conducted additional robustness checks to ensure the validity of our findings. These include using a different instrument (achievement gap) and a modified aspiration index (excluding social status aspirations). Appendix Table B.8 shows the results of IV approach using achievement

gap instruments. In line with the theory, the presence of social stratification or inequality, indicated by the divide between the richest and the poorest (others' achievement gap), may induce people to aspire. The smaller gap of own achievement from the richest is associated with lower aspiration levels. These two instruments emphasize the importance of role models and aspiration window in aspiration formation. The effect sizes of aspirations are slightly larger but statistically insignificant compared to the previous findings. But, both instruments are not weak and confirm no potential endogeneity. This confirms the validity of our findings based on Poisson and multinomial logit regressions above.

We next excluded social status aspirations from aspiration index to rule out the effects of social norms uncontrolled in the model. Compared to other dimensions, social status aspirations are more likely affected by norms, which may affect women's decisions to diversity and preferences of diversification strategies more than men (Kosec et al., 2022). We see that aspirations remain statistically significant and associated with increased livelihood diversity, a higher likelihood of long-term diversification, and a reduced likelihood of non-farm-forest-use dependence (Table B.9). The effect size is slightly larger after excluding social norms.

5. Discussion

This paper is among the first providing empirical evidence on the relationship between aspirations and livelihood diversification decisions. Our analysis integrates psychological or intrinsic capital, including aspirations, self-efficacy, and locus of control, into the SLF and gender approach to explain livelihood diversification. The inclusion of aspiration will help to make the framework more people-centered by knowing how individuals' future goals motivate their choices.

Our analysis unveils an obvious gendered pattern in livelihood diversification. A significantly higher share of women operate in single or two livelihood activities, while men operate in three or four activities. This does not imply that women have no goal to diversify. We find that a larger share of women are transient diversifiers, or those previously adopting agropastoralism but stepout within 5 years, and beginner or late diversifiers, or those who just started to diversify. In contrast, a larger share of men sustain their diversification in the long-term. This pattern suggests that diversified households tend to stay diversified, supporting Musumba et al. (2022). Yet, some rural households, particularly women-headed households, move in and out of diversification pursuits. This aligns with Dzanku (2015)'s findings that diversification is temporary and a trial-and-error process for some.

This is driven by disparities in access to and ownership of assets, including land and livestock (primary assets for agropastoralism), which favor men. Our findings complement previous studies linking gendered access to assets to gendered livelihoods (Loison, 2019). Besides capital assets, we find that women on average express significantly lower aspirations than men, implying that their desired futures are less ambitious than those of men in the same community. Thus, we hypothesize that low aspirations may explain women's lag in pursuing diversified livelihoods.

After performing Poisson regressions, multinomial logit regressions, and robustness checks, our analysis leads to three key findings. First, we find significant positive associations of aspirations on overall livelihood diversity, long-term diversification, and reduced dependence solely on non-farm and forest-based activities. This is robust to iterative addition of capital assets and social cognitive traits, IV regression using different instruments, and unobserved time-

invariant heterogeneity, and to exclusion of social status aspirations to mitigate effects of social norms. Their standardized beta-coefficients indicate a comparable or even stronger association of aspirations with livelihood diversification compared to other intrinsic factors and certain capital assets such as land, livestock, and irrigation access. Thus, aspirations may independently explain an individual's diversification decisions and are not dependent on capital covariates and related psychological constructs. This further suggests that people align their decisions with their aspirations or perceived goals. People with high aspirations tend to engage and sustain more in high-return economic activities such as diversified livelihoods, and vice versa. Our findings support the few yet growing literature that emphasizes the pivotal role of aspirations in economic decisions, such as technology adoption, agricultural spending, and non-farm enterprises (Knapp et al., 2021; Kosec & Khan, 2017; Kosec et al., 2022). In our study, aspirations emerge as crucial in livelihood diversification decisions.

Second, we find that aspiration's association with livelihood diversity is highest among lower-income households but lacking capital assets may impede the capacity of some to sustain diversified livelihoods. Aspirations are associated with reduced dependence on non-farm-forest activities and increased likelihood of sustaining diversification among lower-income households. This is again robust across specifications. This indicates that raising aspirations may benefit the poorest. However, for lower-income households, increasing aspirations also coincide with intermittent diversification or stepping out of diversified livelihoods, signaling aspiration failure. Among higher-income households, aspirations have a higher positive association with long-term diversification and a negative association with intermittent diversification. Thus, despite aspiring to diversify towards agropastoralism, lacking sufficient capital impairs this transition and its sustainability for some poorer households.

Third, our research reveals that aspiration effects on overall livelihood diversity of women and men do not vary, but they do vary on the types or mobilities of diversification. Aspirations positively correlate with long-term diversification of women and men but they are more pronounced and only statistically significant for men. We also find that aspirations negatively correlate with the likelihood of women's intermittent diversification, but this appears non-significant after controlling for capital assets, self-efficacy, and locus of control. Thus, men can better act on their aspirations, while women find it hard due to resource and intrinsic constraints.

Our findings further indicate that women tend to adapt their aspirations to existing gendered norms. The probability of dependence on non-farm-forest activities decreases for increasing aspirations of men, while it is vice versa for women. This indicates that men are more likely to respond to their aspirations through diversified agricultural livelihoods than through single non-farm-forest activities, while some women exhibit a stronger preference for non-farm work over agropastoralism diversification. This aligns with previous research that women with higher aspirations engage in non-farm enterprises and paid work (Kosec et al., 2022; Roy et al., 2018). Women's preference for non-farm work might stem from the acquired agency and less time allocated to non-farm work. Rietveld et al. (2020) point to women's disengagement in farming due to concerns about husbands claiming their revenue. In Meru County, Kenya, farming, especially commercial crops, increases the workload but not women's income (Kimathi et al. 2020). Women entering male-dominated activities, such as farm work, may face stereotype threats or identity loss (Akerlof and Kranton 2000). Thus, women tend to adapt their goals and related actions to gendered

labour assignments that are pre-defined by norms. This signals ecological rationality of Gigerenzer & Todd (2012).

In our results, women's locus of control is significantly lower than men's, while their self-efficacy levels are similar. Thus, although some women aspire and have the confidence for diversified agricultural livelihoods other than sole non-farm activity, they believe that their success depends on external forces such as norms and their husband's decisions than on their own actions. We also highlight the significance and positive association of self-efficacy and locus of control with livelihood diversity. Moreover, self-efficacy is associated negatively with intermittent diversification and positively with long-term diversification. A more internal locus of control is associated with beginning diversification and reduced likelihood of non-diversification. In contrast, aspirations show non-significant associations with intermittent and non-diversification.

We find that role models and social norms are crucial mechanisms for aspirations. The gap between one's achievement to their role models' (own achievement gap) and visible social stratification (others' achievement gap) are correlated with higher aspirations. The aspiration effect is higher when social norms are relaxed.

6. Conclusion

Equitable provision and access to assets have reached a consensus in the literature to bridge gender gaps (Quisumbing et al., 2014). Yet, it is intriguing why despite targeting material constraints, results remain unsatisfactory (Banerjee et al., 2010; Duflo et al., 2011). This paper addresses an important gap in understanding aspirations and livelihood diversification, aiming to tackle cyclical and gendered poverty. We present a new perspective on gendered livelihoods that emphasizes intrinsic capital (e.g., aspirations) rather than only external material constraints.

Our findings reinforce the role of people's aspirations in influencing livelihood diversification decisions. People with higher aspirations are more likely to diversify, are more likely to sustain diversification, and are less likely to diversify late and depend on single non-farm-forest activities, which generate the least income. These associations are found to be higher in the poorest households. We also find that there is no significant gendered aspiration effect in terms of overall livelihood diversity. Thus, augmenting aspirations will benefit both women and men, especially those in the poorest households. Given their future-oriented nature, aspiration offers a low-cost "complementary" way to promote women's employment and poverty alleviation in the long-term.

We emphasize that raising aspirations is just complementary and that low aspiration levels must not be a convenient reason for persistent poverty and gender gaps. We find that aspirations positively correlate with intermittent diversification in lower-income households. We also find no strong evidence that aspirations are associated with women's livelihood mobilities when controlling for capital assets, self-efficacy, and locus of control, while there is strong evidence that aspirations are associated with men's long-term diversification and reduced reliance on non-farm-forest-based activities. Interestingly, women with higher aspirations tend to rely on single non-farm and forest-based livelihoods, while men rely on agropastoralism diversification. Thus, people may aspire to diversify but they face economic constraints, which are true for marginalized groups including the poorest households and women. Some also experience low self-efficacy and high

external locus of control as they are more affected by social norms, which may influence women's preferences for diversification strategies and further impair their capacity to translate their aspirations into actions. Self-efficacy and locus of control are important confounders that are significantly and robustly associated with women's and men's livelihood mobilities. These social cognitive traits can encourage men and women to contest and unsubscribe to traditional gender roles and reduce self-stereotyping and fear of identity loss.

Overall, we find that aspirations are an important determinant of gendered livelihood diversification. The potential effect of aspirations is far from negligible. Their effect size is comparable to or even exceeds the influence of other intrinsic factors and certain material assets such as land, livestock, and irrigation. Raising aspirations benefits the marginalized to navigate themselves to better economic decisions, but they require essential capital to realize their desired states. Policies must therefore focus on simultaneously augmenting aspirations, social cognitive traits, and access to assets, especially social and natural capital, to promote and sustain diversified livelihoods such as agropastoralism. Material constraints must not be the sole concern to ensure long-term positive economic behaviour.

This paper has some limitations. First, while we found no evidence of endogeneity and our livelihood categories offer livelihood dynamics, establishing causality remains a challenge. Longitudinal and panel studies that track aspirations and livelihoods over time would provide strong causal insights, which is currently a limitation. Nevertheless, our robustness checks validate the aspiration associations with livelihood diversity and mobilities, which increase our confidence about our results and interpretation. Our purpose is to provide new hypotheses for future research, i.e., to test whether aspirations are a strong correlate of livelihood choices, which has not yet been explored. We aim to establish causal links upon the availability of our panel survey. Results should be treated as preliminary evidence of this conceptual idea. Nonetheless, the aspiration-livelihoods relationship is new, and the gender and intersectional analysis approaches are novel contributions in themselves. Angrist & Pischke (2009, p.113) argue that correlation sometimes provides good evidence of possible causal links. Second, previous research and our observations suggest that differences in agency and time use are among the principal concerns of livelihood decisions. Future work should consider the interaction of power relations, agency, and time use with aspirations to examine how these variables moderate aspiration effects. Finally, due to data limitations, our analysis does not consider intrahousehold heterogeneity of aspirations. The aspirations discussed here may pertain only to the respondent and should not be interpreted as household aspirations to prevent a biased picture of the household aspirations and livelihood mobility. This offers another theme for future investigation.

References

Abay, K. A., Blalock, G., & Berhane, G. (2017). Locus of control and technology adoption in developing country agriculture: Evidence from Ethiopia. *Journal of Economic Behavior & Organization, 143*, 98–115.

Akerlof, G. A., & Kranton, R. E. (2000). Economics and Identity*. *The Quarterly Journal of Economics*, *115*, 715–753.

Angrist, J. D., & Pischke, J.-S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton, N.J., Oxford: Princeton University Press.

Appadurai, A. (2004). *The capacity to aspire: Culture and the terms of recognition*.
Bacud, E. S. T., Gerullis, M. K., Puskur, R., & Heckelei, T. (2024). Looking at gender is not enough—How diversity of farmers' marginalization relates to varietal trait preferences. *Food Policy*, *124*, 102616.
Bandura, A. (1977). Self-Efficacy: The Exercise of Control. *Encyclopedia of psychology*, *7*, pp. 212–213.
Banerjee, A. V., Banerji, R., Duflo, E., Glennerster, R., & Khemani, S. (2010). Pitfalls of Participatory Programs: Evidence from a Randomized Evaluation in Education in India. *American Economic Journal: Economic Policy*, *2*, 1–30.
Barrett, C., Reardon, T., & Webb, P. (2001). Nonfarm income diversification and household livelihood strategies in rural Africa: concepts, dynamics, and policy implications. *Food Policy*, *26*, 315–331.
Beaman, L., Duflo, E., Pande, R., & Topalova, P. (2012). Female leadership raises aspirations and educational attainment for girls: a policy experiment in India. *Science (New York, N.Y.)*, *335*, 582–586.
Bernard, T., & Taffesse, A. (2014). Aspirations: An Approach to Measurement with Validation Using Ethiopian Data. *Journal of African Economies*.
Brandstätter, E., Gigerenzer, G., & Hertwig, R. (2006). The priority heuristic: making choices without trade-offs. *Psychological review*, *113*, 409–432.
Dalton, P. S., Ghosal, S., & Mani, A. (2016). Poverty and Aspirations Failure. *The Economic Journal*, *126*, 165–188.
DFID (1999). Overview of the Key Sheets for Sustainable Livelihoods - Key Sheets for Sustainable Livelihoods.
Doss, C., Kovarik, C., Peterman, A., Quisumbing, A., & van den Bold, M. (2015). Gender inequalities in ownership and control of land in Africa: myth and reality. *Agricultural Economics*, *46*, 403–434.
Duflo, E. (2006). *Poor but rational*: Oxford University Press.
Duflo, E., Kremer, M., & Robinson, J. (2011). Nudging Farmers to Use Fertilizer: Theory and Experimental Evidence from Kenya. *American Economic Review*, *101*, 2350–2390.
Dzanku, F. M. (2015). Transient rural livelihoods and poverty in Ghana. *Journal of Rural Studies*, *40*, 102–110.
FAO (2023). Pastoralism | Policy Support and Governance Gateway | Food and Agriculture Organization of the United Nations | Policy Support and Governance | Food and Agriculture Organization of the United Nations. https://www.fao.org/policy-support/policy-themes/pastoralism/en/. Accessed 14.05.2023.
Galiè, A., Teufel, N., Korir, L., Baltenweck, I., Webb Girard, A., Dominguez-Salas, P., & Yount, K. M. (2019). The Women's Empowerment in Livestock Index. *Social Indicators Research*, *142*, 799–825.
Genicot, G., & Ray, D. (2017). Aspirations and Inequality. *Econometrica*, *85*, 489–519.
Gigerenzer, G., & Todd, P. M. (Eds.) (2012). *Ecological rationality: Intelligence in the world.* Evolution and cognition. Oxford: Oxford University Press.
Goldstein-Greenwood, J. (2023). The Shortcomings of Standardized Regression Coefficients. https://www.library.virginia.edu/data/articles/the-shortcomings-of-standardized-regression-coefficients. Accessed 22.05.2024.
Graebner, W., & Cochran, T. C. (1978). 200 Years of American Business. *The Journal of Interdisciplinary History*, *8*, 793.

Hamilton-Peach, J., & Townsley, P. (2004). *An IFAD Sustainable Livelihoods Framework*.
Hoff, K., & Pandey, P. (2004). *Belief Systems and Durable Inequalities: An Experimental Investigation of Indian Caste*: The World Bank.
Hoff, K., & Pandey, P. (2014). Making up people—The effect of identity on performance in a modernizing society. *Journal of Development Economics*, *106*, 118–131.
Knapp, L., Wuepper, D., & Finger, R. (2021). Preferences, personality, aspirations, and farmer behavior. *Agricultural Economics*, *52*, 901–913.
Kosec, K., Akramov, K., Mirkasimov, B., Song, J., & Zhao, H. (2022). Aspirations and women's empowerment: Evidence from Kyrgyzstan. *Economics of Transition and Institutional Change*, *30*, 101–134.
Kosec, K., & Khan, H. (2017). Chapter 11. Understanding the Aspirations of the Rural Poor. *Agriculture and the Rural Economy in Pakistan*, 433–474.
Levine, S. (2014). *How to study livelihoods: Bringing a sustainable livelihoods framework to life*.
Loison, S. A. (2019). Household livelihood diversification and gender: Panel evidence from rural Kenya. *Journal of Rural Studies*, *69*, 156–172.
Manski, C. F. (2004). Measuring Expectations. *Econometrica*, *72*, 1329–1376.
Mausch, K., Harris, D., Heather, E., Jones, E., Yim, J., & Hauser, M. (2018). Households' aspirations for rural development through agriculture. *Outlook on Agriculture*, *47*, 108–115.
McLean, J. E. (2015). Beyond the pentagon prison of sustainable livelihood approaches and towards livelihood trajectories approaches. *Asia Pacific Viewpoint*, *56*, 380–391.
Michler, J. D., & Josephson, A. L. (2017). To Specialize or Diversify: Agricultural Diversity and Poverty Dynamics in Ethiopia. *World Development*, *89*, 214–226.
Musumba, M., Palm, C. A., Komarek, A. M., Mutuo, P. K., & Kaya, B. (2022). Household livelihood diversification in rural Africa. *Agricultural Economics*, *53*, 246–256.
Nandi, R., & Nedumaran, S. (2021). Understanding the Aspirations of Farming Communities in Developing Countries: A Systematic Review of the Literature. *The European Journal of Development Research*, *33*, 809–832.
Natarajan, N., Newsham, A., Rigg, J., & Suhardiman, D. (2022). A sustainable livelihoods framework for the 21st century. *World Development*, *155*, 105898.
Niehof, A. (2004). The significance of diversification for rural livelihood systems. *Food Policy*, *29*, 321–338.
Pasquier-Doumer, L., & Risso Brandon, F. (2015). Aspiration Failure: A Poverty Trap for Indigenous Children in Peru? *World Development*, *72*, 208–223.
Peterman, A., Behrman, J. A., & Quisumbing, A. R. (2014). A Review of Empirical Evidence on Gender Differences in Nonland Agricultural Inputs, Technology, and Services in Developing Countries. In *Gender in Agriculture: Closing the Knowledge Gap* (pp. 145–186). Dordrecht: Springer Netherlands.
Quisumbing, A. R., Meinzen-Dick, R., Raney, T. L., Croppenstedt, A., Behrman, J. A., & Peterman, A. (2014). Closing the Knowledge Gap on Gender in Agriculture. In *Gender in Agriculture* (pp. 3–27): Springer, Dordrecht.
Ray, D. (2006). *Aspirations, poverty, and economic change*. Cary: Oxford University Press USA - OSO.
Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*, 1–28.

Roy, S., Morton, M., & Bhattacharya, S. (2018). Hidden human capital: Self-efficacy, aspirations and achievements of adolescent and young women in India. *World Development*, *111*, 161–180.
Scoones, I. (1998). *Sustainable Rural Livelihoods: A Framework for Analysis*: IDS.
Sen, A. (1984). Resources, Values and Development.
Shiferaw, H., Alamirew, T., Dzikiti, S., Bewket, W., Zeleke, G., & Schaffner, U. (2021). Water use of Prosopis juliflora and its impacts on catchment water budget and rural livelihoods in Afar Region, Ethiopia. *Scientific Reports*, *11*, 2688.
Simpkin, P., Cramer, L., Ericksen, P., & Thornton, P. (2020). Current situation and plausible future scenarios for livestock management systems under climate change in Africa.
Simpson, E. H. (1949). Measurement of Diversity. *Nature*, *163*, 688.
Tabe-Ojong, M. P., Heckelei, T., & Baylis, K. (2021). Aspiration Formation and Ecological Shocks in Rural Kenya. *The European Journal of Development Research*, *33*, 833–860.
Tabe-Ojong, M. P., JR., Heckelei, T., Baylis, K., & Rasch, S. (2023). Cooperative membership and exposure to role models: Implications for income and asset aspirations. *Journal of Behavioral and Experimental Economics*, *107*, 102119.
Tambo, J. A., Kansiime, M. K., Rwomushana, I., Mugambi, I., Nunda, W., Mloza Banda, C., Nyamutukwa, S., Makale, F., & Day, R. (2021). Impact of fall armyworm invasion on household income and food security in Zimbabwe. *Food and Energy Security*, *10*, 299–312.
Tanveer, A., Khaliq, A., Ali, H. H., Mahajan, G., & Chauhan, B. S. (2015). Interference and management of parthenium: The world's most important invasive weed. *Crop Protection*, *68*, 49–59.
Todd, P. M., & Gigerenzer, G. (2012). What Is Ecological Rationality? In G. Gigerenzer, & P. M. Todd (Eds.), *Ecological rationality: Intelligence in the world* (pp. 3–30). Oxford: Oxford University Press.
UN Women (2018). Discussion-paper-Gender-equality-and-poverty-are-intrinsically-linked-en.
Verkaart, S., Mausch, K., & Harris, D. (2018). Who are those people we call farmers? Rural Kenyan aspirations and realities. *Development in Practice*, *28*, 468–479.
Villacis, A. H., Bloem, J. R., & Mishra, A. K. (2023). Aspirations, risk preferences, and investments in agricultural technologies. *Food Policy*, *120*, 102477.
Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data, Second Edition.* (Second edition). Cambridge: MIT Press.