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Abstract

Despite some improvements in recent years, poverty and food insecurity remain widespread and the main challenges in Ethiopia. Using individual and household level data collected in rural Ethiopia, we examine if aspirations are strongly associated with well-being outcomes, as posited in the aspirations failure framework articulated by Ray (2006) and others. We employ both bivariate and multivariate analyses. We find that aspirations (particularly that of the household head) are indeed strongly associated with the household per-capita income and expenditure and with various triangulating measures of household food (in)security including per-capita calorie consumption, the food consumption score (FCS), the household dietary diversity score (HDDS), and the household food insecurity access scale (HFIAS). Contrary to a few other studies, we also find strong evidence that, in rural Ethiopia, aspirations are positively associated with satisfaction in life and/or happiness. Findings in this study provide suggestive evidence that policies aimed at improving well-being outcomes might benefit from multiple effects (both direct and indirect) if they incorporate aspirations raising strategies.

Keywords:

Aspirations, income, poverty, food security, subjective well-being, Ethiopia

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1. Introduction

Despite some improvements in recent years, poverty and food insecurity remain widespread and the main challenges in Ethiopia. These challenges are further exacerbated by climatic shocks such as failure of rainfall, which adversely affect agriculture and allied activities, the main livelihood activities for the rural population.[1] In fact, following the failure of rainfall during the 2015 agricultural seasons, estimates suggest that about 10.1 million people require emergency food assistance as of December 2015 (EHRD, 2016). Poverty persistence had long been recognised as a major contributing factor for the continuing vulnerability of the food insecure group and this has led the government, jointly with development partners, to implement a social safety net program (PSNP) since 2005. This program aims at "smoothing consumption, reducing risks the poor face and protecting their assets" (GFDRE, 2009). In 2012, the PSNP reached over 7.6 million people and the program is complemented by a household asset building program (HABP), which provides food insecure households with financial services and technical support to strengthen their production systems by diversifying income sources, and increasing productive assets so as to improve their productivity (World Bank, 2013).

Notwithstanding the potential benefits associated with policies such as the PSNP, the alleged benefits can be realized only under a set of conditions. For example, the recent weather-related shocks highlight the level of vulnerability of the poor despite such programs. In addition, while earlier evaluations of the PSNP (e.g. Gilligan et al., 2009; Berhane et al., 2011, 2014; Coll-Black et al., 2011) find some positive impact of the program on food security, asset holdings and income growth, there is little evidence of graduation.[2] These studies attribute the lack of graduation, among others, to limited efficiency in program implementation, higher food prices and the nature of the program, i.e. targeting households which are both poor and food insecure. Yet, what is missing in these studies (and in the broader empirical literature on the determinants of well-being) is the importance of psychological factors or 'internal' constraints, such as low aspirations. However, internal constraints are also important for they could reinforce external constraints (or material deprivations) and this may lead to a self-sustaining trap of poverty and low levels of proactivity (Appadurai, 2004, Ray, 2006; Dalton et al., 2014). Aspirations are motivators of effort, for example in terms of creating opportunities or exploiting available ones (Bandura, 2009; Bernard et al., 2008), which may lead to achieving better well-being outcomes. This study contributes to the literature by examining the effect of aspirations on income, food security and subjective well-being in rural Ethiopia.

The next section presents the background and the review of related literature followed by section 3 which presents the data and descriptive statistics. The empirical strategy and results are discussed in section 4 and section 5 concludes.

2. Background and literature review

2.1. Some concepts and measurements of poverty and food insecurity

The literature on the determinants of poverty and food insecurity continues to grow for a significant proportion of the world population still suffers from such deprivations. Sen's (1976, 1981) seminal

[1] According to the Central Statistics Agency of Ethiopia (CSA), the rural population is estimated to constitute about 83 percent of the total which is estimated at 87,952, 000 as of July 2014. http://www.csa.gov.et/ (accessed Nov 17, 2015).

[2] "Graduation" is a situation where a household can meet its food needs for all 12 months and is able to withstand modest shocks in the absence of the PSNP (GFDRE 2007).

studies respectively on poverty measurement and poverty and famines have inspired the development of more analytical tools such as the aspirations-failure framework and the improvement of the measurements of poverty, food insecurity, and other well-being outcomes. The Alkire and Foster (2011, 2009) multidimensional poverty index (MPI) is one of the latest entries on the list of poverty measures. The MPI encompasses the many deprivations that people can experience across different areas of their lives, including lack of education or employment, inadequate housing, poor health and nutrition, low personal security, or social isolation. According to Alkire and Foster (2009, 2011) the MPI is a powerful tool to show how and where people are poor, within and across countries and regions. Consequently, the MPI has been adopted as a target indicator for monitoring the UN sustainable development goals.[3] Yet, composite measures such as the MPI are not without critics.[4] For example, Ravallion (1996, 2010[5]) argues that the "welfare rankings of social states (including policies) based on composite measures [such as the MPI] will often be more difficult." For this or other reasons, much of the empirical studies on poverty to a large extent rely on unidimensional poverty measures, often following Foster et al. (1984). In such an approach, only monetary dimensions are used and the poor are identified as those whose expenditure (or income) falls below a defined poverty line which is often determined by the income required to achieve the minimum caloric requirements (Haughton and Khandker, 2009). Three methods are used to calculate the poverty line, including *direct caloric intake*, *subjective poverty lines*, and *the cost of basic needs.* According to Haughton and Khandker (2009), *the cost of basic needs* estimates the cost of acquiring enough food for adequate nutrition and then adds the cost of other essentials such as clothing and shelter. The *food energy intake* method can be an option in the absence of price information. To determine the expenditure (or income) level at which a household acquires enough food, the method plots expenditure (or income) per capita against food consumption (in calories per person per day). On the other hand, by asking people the minimum income level that is needed just to make ends meet, *subjective poverty lines* are calculated (Haughton and Khandker, 2009).

The most commonly used method, among the three, is the *cost of basic needs* approach (Haughton and Khandker, 2009). Further, it is argued that poverty measurements based on consumption expenditure are preferred to income for the measurement is more accurate in the case of consumption expenditure and also it is subject to less temporal variations, which is often the case for income, particularly in developing countries (see review by Deaton and Grosh, 1998). In some cases, modified forms of these indicators (e.g. share of food expenditure by the poor (Jones et al., 2013)) are used to measure food security even though poverty is commonly considered as one of its main determinants (Barrett, 2010). However, food security is a rather complex concept and its definition continues to evolve. The latest definition that refined the one adopted in the 1996 World Food Summit states that "food security (is) a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 2002). According to Jones et al (2013), this definition addresses concerns related to: inequitable distribution of food not only within countries but also within households, the ability to acquire socially and culturally acceptable food and the ways in which to acquire it, and the food composition and micro nutrient requirements. Food insecurity on the other hand is a state "when people do not have adequate physical, social or economic access to food" as defined above (FAO, 2002).

[3] http://www.ophi.org.uk/multidimensional-poverty-index-adopted-as-a-sdg-target-indicator/ (accessed Nov 26, 2015).
[4] To read the debates regarding the MPI, follow the world bank blog on this link: http://blogs.worldbank.org/africacan/the-multidimensional-poverty-index-debate-rounds-2-3-4 (accessed Nov 26, 2015)
[5] https://oxfamblogs.org/fp2p/guest-blog-world-bank-research-director-critiques-the-new-un-poverty-index/ (accessed November 26, 2015).

To operationalize the definition of food (in)security, empirical studies often use one or some combination of the four domains that reflect: food availability, access, utilization, and the stability of food over time. Yet, the complexity of the concept is simply evident from the availability of multiple approaches and tools for assessing food security. For example, in some cases, the concept of food insecurity is used interchangeably with nutrition insecurity even though nutrition security requires food security along with "care, health and hygiene practices" (Jones et al, 2013). A related concept often used to measure food and nutrition insecurity is undernutrition, which is "caused by undernourishment –defined as a level of food intake insufficient to meet dietary energy requirements" (FAO, 2015). In the same report, hunger is defined as synonymous with chronic undernourishment. This simply shows that the concepts are overlapping (Jones et al, 2013, see Figure 1), and hence a diverse pool of food and nutrition security measurements exist. Based on a systematic review of available measurements, Jones et al (2013) and Pangaribowo et al. (2013) argue that the choice of which measurement to use requires understanding the underlying constructs and identifying the intended use of a tool (or the intended use of the data to be collected).

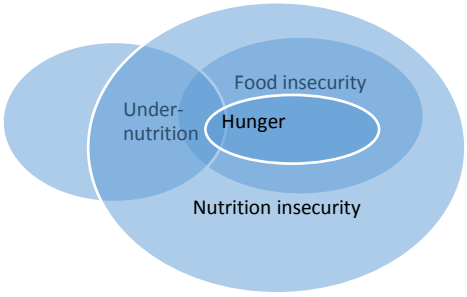


Figure 1. Overlapping concepts within the context of food and nutrition security. The figure is from Jones et al (2013) who adapted it from Benson (2004).

2.2. Empirical evidence on the state of poverty and its determinants

The share of world population living under $1.90 per-day, a new international poverty line using the 2011 purchasing power parity (PPP), is estimated to be 700 million (or 9.6 percent of the world's population) in 2015 (World Bank Group, 2016). Based on data from 2011, the same report predicts that the poverty rate in Ethiopia would be 33 percent in 2015. On the other hand, based on the national poverty line measured at 2010/11 prices, official reports show that the incidence of poverty in the country was 29.6 percent in 2011, a decline from 38.7 percent in 2004/05 (MoFED, 2013). While this shows a significant improvement over the years, poverty remains a priority policy concern in Ethiopia. Various studies examine correlates of poverty and poverty dynamics in rural Ethiopia. Based on a panel household survey data (ERHS) from 15 rural villages in Ethiopia, some studies find a statistically significant poverty reducing effects of access to: roads and towns (Dercon and Krishnan, 1998; Dercon et al, 2009; and Dercon and Christiaensen, 2011), agricultural extension services (Dercon and Christiaensen, 2011 and Dercon et al, 2009) and human and physical capital such as better education, male headship of the household and relatively being younger, land and oxen (Dercon et al., 1998). While results from these studies are based on data collected from the same households repeatedly interviewed (six times) between 1989 and 2004, the number of waves used in each study is not necessarily the same. Yet, similar findings were also reported by Bogale et al. (2005) who used a three-round survey data other than the ERHS. Bogale et al (2005) study the determinants of rural poverty in three rural villages in Ethiopia. They find that rural poverty is strongly linked to access to land, human capital and oxen. Similarly, Dercon, (2006) analyses the determinants of growth and

poverty changes between 1989 and 1995. He finds that location, land and labor endowment are important factors for the observed differences in terms of some changes and poverty persistence. Similar results are also reported by Bigsten et al.(2003) that also identify the importance of growing a cash crop (*Chat*) for the improvement of household welfare. Bigsten and Shimeles (2008) also analyse the persistence of poverty in both rural and urban areas in Ethiopia during 1994-2004. They find that households move frequently in and out of poverty. Their findings suggest that the difficulty of exiting from poverty increases with the time spent in that state and varies considerably between male and female headed households.

Rural households in Ethiopia are highly vulnerable to weather and idiosyncratic shocks for their livelihoods depend on subsistence agriculture and related sectors such as pastoralism. For example, an earlier study by von Braun (1991) reports that a 10% decline in rainfall below the long-term national average causes national cereal production to decline by 4.4%. A more recent study by Porter (2012) also finds that extremely low rainfall relative to local norms can cause significant reductions in farm income, and also on consumption whose reduction amounts to 20 percent for people in the bottom quintile of the local distribution. This is in line with Börner et al (2014) who, based on data from 25 developing countries, find that climate-related shocks predominantly result in reduced consumption. Ethiopia is arguably one of the most famine-prone countries with a long history of famines and food shortages (see for example Webb and von Braun, 1994) and such type of shortfalls are likely to occur more frequently with climate change and this may severely affect the rural poor. In fact, the failure of rainfall in the recent past is revealing the level of vulnerability of the rural people,[6] despite the social safety net programs that have been put in place since the mid-2000s. Further, shocks of this nature may have a long-lasting impact on the welfare of the people, as a previous study shows (Dercon et al, 2005). Using the two waves of ERHS data (i.e.1999 and 2004), Dercon et al (2005), show that experiencing a drought at least once in the previous five years lowers per capita consumption by about 20%, and experiencing an illness reduces per capita consumption by approximately 9%. Dercon and Krishnan (2000a) also report finding evidence on the sensitivity of consumption for various shocks in rural Ethiopia. Although other studies such as Asfaw and Braun (2004), Porter (2012) and Yilma et al. (2014) report that consumption is unaffected by health shocks in rural Ethiopia, coping mechanisms in general may include sale of productive assets such as oxen, which might limit the future productivity of the household and eventually might lead to poverty (or poverty persistence) as discussed above. In line with this, Börner et al (2014) report that households tend to deplete financial and durable assets in response to death or illness or asset-related idiosyncratic shocks. Their study finds that households in sites characterised by high asset wealth tend to cope with shocks in a more proactive way than those in sites with average or below average asset wealth. Yet, the authors note that the role of asset types in conditioning shock responses varies across regions. As another indirect mechanism, weather related shocks may perpetuate poverty through their effect on risk averse behavior for farmers tend to smooth their consumption by avoiding the use of risky productive inputs such as fertilizers. In this context, using ERHS data, Dercon and Christiaensen (2011) show that some farmers are trapped in "low return, lower risk" agriculture, a recipe for the perpetuation of poverty. In the absence of "effective" social safety net programs, this in turn might lead to food insecurity. In fact, based on ERHS data, Dercon and Krishnan, (2000b) find that the nutrition status, a widely used indicator of FNS, of adults in poor households in rural Ethiopia is affected by idiosyncratic agricultural shocks, while richer households are more successful in smoothing nutritional levels.

[6] Recall that an estimated 10.1 million people are reported to be in need of emergency food assistance as of December 2015.

2.3. Empirical evidence on the state of food (in)security and their determinants

The latest report on the *State of Food Insecurity in the World* (FAO, IFAD and WFP, 2015) estimates the number of people undernourished in 2014-16 at 795 million or 10.9 percent of the total, a reduction from 18.6 percent in 1990-92. The report notes that the vast majority of the hungry (780 million people) live in the developing world and the overall share of the hungry currently stands at 12.9 percent of the total population. The same report estimates that the share of people in Ethiopia who are undernourished in 2014-16 is 32 percent, a reduction from 74.8 percent in 1990-92. According to the report, this improvement in Ethiopia could be attributed to several interlinked factors including the high GDP growth rate the country has been experiencing in the recent years and the existing social protection program (PSNP). This assertion of attribution echoes other studies such as World Bank (2015), Berhane et al (2011, 2014) and Dorosh and Rashid (2012). According to World Bank (2015), for example, real GDP growth in the country averaged 10.9 percent between 2004 and 2014 and a significant part of this growth comes from agriculture. If this is indeed the case, the reduction in undernutrition may not be surprising for the majority of the people depend on agriculture, a sector which had been found to have a high growth poverty elasticity, and poverty is arguably one of the determinants of food and nutrition security. In this context, Tafesse (2005) estimates that a one percentage increase in agricultural per capita value added in Ethiopia would result into a one percent decline in poverty level of rural households.

A high poverty-reducing effect of agricultural growth has also been reported by Christiaensen and Demery (2007) based on data from Ethiopia and other African countries. Berhane et al (2011) on the other hand evaluate the impact of the PSNP implementation from 2006-2010 on the livelihoods of participating households. They find that, on average, program participation has improved food security by over one month and increased meals eaten by children by 0.15. They also find that five years participation in the program raised livestock holdings by 0.38 tropical livestock units by comparison to program participation for only one year. However, Berhane et al (2011) find limited impact of the program in terms of graduation of beneficiaries from the program. To say the least, however, the establishment of the productive safety net program along with other policy measures (such as substantial liberalization of markets, investment in agricultural research and extension, building of key transport infrastructure) is credited for the prevention of large-scale country wide famines such as those in 1972-74 and 1984-85 (Dorosh and Rashid, 2012).

As the concept of FNS evolves, rigorous and national level studies on the determinants of food and nutrition security in Ethiopia are largely lacking. A brief review of available studies, which are mainly limited to smaller geographic areas and often associated with project evaluations, sheds some light regarding one or the other domains of food security. In this context, Asenso-Okyere et al.(2013), for example, study the determinants of food security in selected agro-pastoral communities in south-eastern Ethiopia. Using availability of food in the household as proxy indicator to food security, they find that the most significant factors affecting household food security are: the educational level of the spouse and that of the household head, size of farm land, availability of household assets including livestock, peace and security. Beside household endowments such as land (Feleke et al, 2005) and proximity to food markets (Abay and Hirvonen, 2016), Negatu (2004) report that livelihood diversification strategies such as livestock rearing, growing cash crops, and engagement in trading are important factors for achieving household food security (measured by calories consumption per adult-equivalent).

Just like poverty, food insecurity is also affected by seasonality or by irregular shocks such as weather events, deaths or conflicts (Barret, 2010) and hence food insecurity may be chronic or transitory depending on the frequency of such shocks (Jones et al, 2013). According to Jones et al (2013), in response to temporary shocks, households may resort to the sale of assets and other coping strategies which may in turn lead to more sever shocks, failed returns on investments, and an eventual fall into a state of chronic food insecurity. In the event of such shocks, food aid through different modalities is the often used policy response. In this context, a few studies (e.g. Yamano et al., 2005; Quisumbing, 2003; and Gilligan and Hoddinott, 2007) examine the importance of food aid programs following drought or harvest failures on food security in Ethiopia. These studies find positive impact of such transfers on consumption or child nutrition outcomes, but Gilligan and Hoddinott (2007) also uncover some evidence of food aid dependency. In addition, even the achieved positive effects are considered to be short term as the country continues to suffer from food insecurity even in good harvest years (Clay et al, 1999), the realization of which has led to the policy shift from such "ad hoc responses" to the more planned and systematic approach of the PSNP (GFDRE, 2009).

In general, the presence of widespread food insecurity in Ethiopia is argued to be the result of several factors including recurrent drought and heavy reliance on nature, use of backward agricultural technologies (or low input –low output production systems), and inappropriate agricultural policies in the past (Devereux and Sussex, 2000). Relatedly, von Braun and Olofinbiyi (2007) more broadly classify the major factors of food crisis in the country as: population pressure, production failures, marketing failures, and policy, institutional, and organizational failures.

However, what is apparent from the studies reviewed here or more generally from the broader empirical literature on poverty and food insecurity is that the importance of internal constraints, such as the lack of aspirations, are largely ignored. Hence, this study fills the gap using data collected from sample households in rural Ethiopia.

3. Data and descriptive statistics

3.1. Data

The data comes from a household survey carried out between January and March 2014 in Ethiopia. The survey builds upon an existing sample of agricultural households surveyed in 2006 and again in 2010[7] in Oromia region under an NGO project that promoted agricultural innovations and which ended in 2010. The original survey used a mix of purposive and random sampling procedures to select 390 households from three study sites (Aredo, et al. 2008). The primary sampling unit consisted of a pair of neighboring districts or *woredas* which had been chosen based on the density of cultivation of the major crop and on the presence of active farmers' cooperatives. At the second stage, *kebeles* (sub-districts) which had active farmers' cooperatives were selected. Using the number of participating households within a cooperative as a sampling frame, households were randomly selected. The total sample size at each research site is summarized in Table 1. However, due to a (non-systematic) problem of missing data on some indicators, the number of observations in the regression analyses (at household level) varies between 372 and 375. Further, about 10 percent of households in the sample are female (single) headed, and they drop out of some specifications that control for the characteristics

[7] The analysis in this paper mainly relies on the 2014 survey for the main variable of interest (i.e. aspirations) is missing in the preceding surveys.

of both the household head and the spouse. As a result, the number of observations for some specifications varies between 301 or 302.

Table 1. Total sample size

	Bakko- Siree site		Lume-Adaa site		Hettosa-Tiyyo site		Sample size
District	Bakko	Sibu Siree	Lume	Adaa	Hettosa	Tiyyo	Total
Sample size at baseline (2006/07)	65	65	65	65	65	65	390
Sample size (2013/14)	64	63	63	64	62	63	379

In addition to the basic socio-economic indicators, the survey collected information on individual aspirations and future expectations on four indicators including: income, wealth, social status and children's education. The survey also collected information about the corresponding weight each attaches to each of the four indicators. Using these four indicators, an aggregate aspirations index is calculated using the formula described below. The aggregate aspirations index is then used to classify individuals into low-aspirations and high-aspirations status by comparison to the district average.

The calculation of the aggregate aspirations index (A_i) can be represented as:

$$A_i = \sum_{n=1}^{4} \left(\frac{a_n^i - \mu_n^d}{\sigma_n^d} \right) . w_n^i \qquad (1)$$

Where:

a_n^i is the aspired outcome of individual i on dimension n (income, assets, education, or social status).

μ_n^d is the average aspired outcome in district d for outcome n.

σ_n^d is the standard deviation of aspired outcomes in district d for outcome n.

w_n^i is the weight individual i places on dimension n.

3.2. Descriptive statistics

3.2.1. Income and wealth

We begin with the descriptive statistics on income and wealth indicators to show how the sample households have fared over time (2006-2014). Table 2 provides the (per-capita) mean and median annual income of the study households by source of income. The data suggest that the per-capita annual income has improved between 2006 and 2014 for each income source except for livestock income, and for income from all sources combined. The total per-capita income has grown by about 27 percent during the same period and the difference between the means of per-capita income in 2006 and 2014 is statistically significant. Table 2 also suggests that the number of households with off-farm income has increased between 2006 and 2014. Similarly, Table 3 shows that, on average, the total value of assets owned by households have increased during the specified period. The value of livestock holdings take the lion's share in the value of total asset holdings, and its significant decline in 2010 fully explains the total decline in the total value of assets for that year.

Table 2. Per-capita annual household income, by source (Ethiopian Birr, at 2006 constant terms).

	2006			2010			2014		
	N	Mean	Med.	N	Mean	Med.	N	Mean	Med.
Livestock income	295	430	227	313	406	163	329	327	187
Crop income	387	1801	1480	383	2020	1588	376	2235	1663
Agricultural income	**390**	**2113**	**1728**	**384**	**2346**	**1963**	**377**	**2515**	**1868**
Business and wage labor	164	414	160	227	352	202	185	673	299
Transfers income	5	227	83	28	166	84	81	320	150
Off-farm income	**168**	**411**	**160**	**236**	**358**	**205**	**230**	**654**	**307**
Total income	***390***	***2290***	***1794***	***384***	***2566***	***2177***	***379***	***2898***	***2122***

Note: a t-test mean comparison shows that differences are significant at the 1% level for total income (2006/10, 2006/14 and 2010/14), agricultural income (2006/10 and 2006/14) and off-farm income (2010/14). Other differences in these categories are not statistically significant.

Table 3. Total value of assets owned by the HH (in ETH Birr) at 2006 constant terms

	2006 (n=386)		2010 (n=384)		2014 (n=379)	
	Mean	Median	Mean	Median	Mean	Median
Value of production assets	403	100	963	129	1,743	455
Value of consumer durables	934	234	959	392	2,359	788
Value of livestock	10,273	7,865	5,752	4,413	14,969	10,630
Total value of assets	***11,611***	***9,127***	***7,674***	***5,977***	***19,071***	***14,089***

Since the data on aspirations is available only for the 2014 survey, we could not show if there was any correlated trend between aspirations and income or wealth indicators over time. Yet, we conduct mean comparisons across indicators including annual household income per adult equivalent, monthly per capita expenditure, and value of asset holdings between people with different levels of aspirations. According to Table 4, individuals with high aspirations have on average higher income or wealth by comparison to those with low aspirations and the difference is statistically significant at less than 1 percent (with the only exception of per-capita expenditure for spouses with low and high aspirations). These descriptive statistics in general reflect a preliminary evidence that aspiration could be one of the strong correlates of poverty (or income) as theory predicts.

Table 4. Mean comparison of the 2014 household income and wealth (in ETB) by aspirations level of the spouse and head of the household

	Household head			Spouse		
	Mean outcome (High Asp.)	Mean outcome (Low Asp.)	*Mean difference: p-value*	Mean outcome (High Asp.)	Mean outcome (Low Asp.)	*Mean difference: p-value*
Total annual income per-adult equivalent	12453	8170	*0.0001*	14167	9825	*0.0003*
Monthly per-capita consumption expenditure	593	506	*0.0051*	572	542	*0.3734*
Total value of assets	77662	39991	*0.0000*	89702	59822	*0.0008*

3.2.2. Food Security

Food security, as discussed in the literature review, is a broad and complex concept and we try to capture its multidimensionality (i.e. availability, access, utilization and stability) by employing widely used indicators. We construct triangulating measures of food (in)security including per-capita calorie consumption, food consumption score (FCS), household dietary diversity score (HDDS), household food insecurity access scale (HFIAS), and the incidence of inadequate food supply in the household in the previous 12 months. We capture intra-household food allocations based on the information we collected by asking whether all household members eat the same diet, and whether each of them eats a more- or less- diversified diet and how many times a day, by age categories.

The measurement of food consumption using kilocalories (such as per-capita calorie consumption) is referred to as the "gold standard" to measure food security but its implementation is challenging for it requires the collection of detailed food intake data which is time consuming (WFP, 2008). This study however benefits from the availability of such information in the data, which also helps triangulate the result from other indicators. One of the alternative tools to measuring food security is the WFP's (2008) FCS that measures the frequency of consumption of different food groups consumed by a

household during the 7 days before the survey. In this approach, different food items are first categorized into 9 main groups and a food consumption score is then calculated using weights assigned to each food group[8]. Using FCS cut-offs which had been validated based on data collected from households in different countries (e.g. Wiesmann et al, 2009), this technique categorises households into three food security groups: *poor, borderline and acceptable*.

A related composite measure is the HDDS, which reflects the average household dietary diversity and proxies for household's food access (Swindle and Bilinsky, 2006). HDDS differs from FCS for it does not attach any weight among different food items and also does not take into account the frequency of consumption of a certain food. Further, it often uses a 24-hour recall period which is shorter than the seven-days recall used in FCS. The average HDDS is calculated based on whether anyone in the household consumed any of the 12 types of food groups[9]. To examine household food access, the resulting HDDS is compared among income groups such as income-terciles. On the other hand, household food insecurity could also be measured using the HFIAS, which captures the household's food insecurity (in terms of access), including the frequency of occurrence of the event in the 4 weeks prior to the survey (Coats et al, 2007). In this measure, three dimensions of occurrence of food insecurity are captured: *anxiety and uncertainty about the household food supply; insufficient quality (includes variety and preferences of the type of food); and, insufficient food intake and its physical consequences* (Coats et al, 2007). The HFIAS is then calculated by summing over the frequency-of-occurrence of food insecurity-related conditions with higher value indicating severe food insecurity. Following the recommended cut-offs (Coats et al, 2007), households are then categorised into 4 levels of household food insecurity: *food secure, mild, moderately* and *severely food insecure*. Next, we provide empirical evidence on the level of household food (in)security among the study households using the indicators discussed above.

To begin with, based on the direct responses by the household head (and/or the spouse), the data suggest that only about 7 percent of households had a situation where the household did not have enough food in the previous 12 months. In terms of intra-household food allocations, under-five children had, on average, 4 meals per-day by comparison to 3 meals eaten by other household members. Further, about 83 percent of households reported that all household members eat roughly the same diet while the remaining report that children eat more diverse foods.

On the other hand, based on recommended cut-offs to food (in)security measures such as FCS and HFIAS, the data suggest that the share of households in the sample who are food insecure are between 7 and 10 percent (See Table 5 and Table 6). However, when we investigate calorie consumption using the 2,100 kilocalories[10] per person and day dietary energy requirement, the share of households that can be considered food insecure increases to 27 percent (Table 7). Further disaggregation of the data by calorie consumption thresholds reveal that households who are considered greatly food insecure

[8] The 9 main food groups and the given corresponding weights (in parenthesis) include- Main staples: cereals, starchy tubers and roots (2); Pulses: legumes and nuts (3); Meat and fish: beef, goat, poultry, pork, eggs and fish (4); Vegetables (including green leaves) (1); Fruits (1); Oil: oils, fats and butter (0.5); Milk: milk, yogurt and other diary (4); and Sugar: sugar and sugar products, honey (0.5). For details including calculation steps, see WFP's (2008).

[9] These food groups include: cereals; root and tubers; vegetables; fruits; meat, poultry offal; eggs; fish and sea food; pulses/legumes/nuts; milk and milk products; Oil/fats; Sugar/honey; miscellaneous. HDDS is then calculated following Swindale and Bilinsky (2006).

[10] The cut-off point, as the minimum caloric requirement, used by official reports in Ethiopia is 2200 kilocalories (See MOFED, 2013). If we were to use that cut off point, the number of food insecure groups would rise to 32 percent. However, we use 2100 kcal cut-off to keep consistency with the internationally used measures and in line with other indicators employed in this study.

(<1470 kcal) and those on the borderline (≥ 1,470 and < 2,100 kcal) are about 6 percent and 21 percent, respectively (Table 7). These figures may seem a great underestimation of the level of food insecurity by the country standard since FAO's (2014) estimate puts the share of people undernourished in 2012-14 at 35 percent. However, we offer two reasons: (1) our sample households were drawn from relatively well-off districts in terms of average land holdings and agricultural potential, and (2) data were collected immediately after harvest. These two factors may tend to overstate the likelihood of availability of food in the sample households. Nonetheless, availability of food does not necessarily guarantee access to- and utilisation of- food and by extension overall food security. To that end, we cross-tabulate one measure of diet quality (HDDS) against per-capita food expenditure terciles. According to Figure 2, the average diet diversity increases with the increase in expenditure. Further, consumption of food groups such as fruits, meats, and eggs greatly vary by income group with progressive increase. For example, the share of households that consume fruits, meats, and eggs for the lowest expenditure group is 13%, 21%, and 33%, respectively while corresponding figures for each food group by the middle expenditure group are roughly twice, and that by the top expenditure group are roughly thrice. Pairwise correlation of per-capita calorie consumption, FCS, HDDS, HFIAS and per-capita food expenditure suggests that all except HFIAS score are statistically significantly correlated to each other (i.e. $p<0.01$) (Table 8). Note however that since households draw their calories mainly from cereals, the correlation coefficients of FCS and HDDS with per-capita calorie consumption are relatively low (i.e. less than 0.3). Yet, as expected, there is high correlation coefficient between FCS and HDDS since both indicators reflect the diversity of foods consumed. HFIAS score is also statistically significantly correlated with FCS and per-capita food expenditure (i.e. at $p<0.1$ and $p<0.05$ respectively), though the correlation is low. The latter can be explained by the different nature of the self-reported HFIAS, which may also reflect tastes, preferences and traditions.

Table 5. Households by food consumption score (FCS)[11] profile

	Freq.	Percent	% with low-aspirations within each food (in)security profile	
FCS profile			Head	Spouse*
Poor (FCS<=28)	3	0.79	33	100
Borderline (28.5<= FCS<=42)	24	6.35	58	71
Acceptable (FCS<=42)	351	92.86	31	64

*Note: Corresponding statistics does not include female headed households.

Table 6. Households by household food insecurity access scale (HFIAS) profile[12]

	Freq.	Percent	% with low-aspirations within each food (in)security profile	
HFIAS category			Head	Spouse*
Food secure	340	90.19	30	64
Mildly food insecure	9	2.39	78	40
Moderately food insecure	21	5.57	43	83
Severely food insecure	7	1.86	71	67

*Note: Corresponding statistics does not include female headed households.

Table 7. Households by per-capita calorie consumption profile[13]

	Freq.	Percent	% with low-aspirations within each food (in)security profile	
Calorie consumption thresholds			Head	Spouse*

[11] FCS thresholds constructed following Wiesmann et al (2009).

[12] Household Food Insecurity Access category was determined following Coates et al (2007).

[13] The calorie value of foods consumed in the household calculated using FAO's calorie conversion factors. calorie/gmhttp://www.fao.org/docrep/003/X6877E/X6877E20.htm. Calorie consumption thresholds are based on Wiesmann et al (2009).

Poor (<1470 kcal)	21	5.56	38	67
Borderline (≥ 1,470 – < 2,100 kcal)	82	21.69	38	61
Acceptable (>=2100 kcal)	275	72.75	31	67

*Note: Corresponding statistics does not include female headed households.

Fig. 2. Dietary diversity score (HDDS) by per-capita consumption expenditure terciles

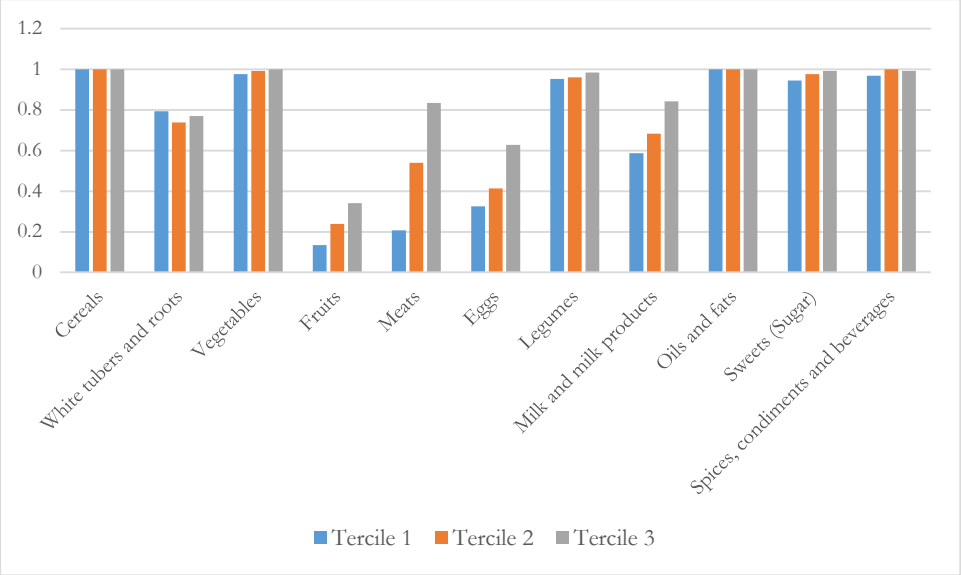


Table 8. Pairwise correlation of various food (in)security indicators

	Per-capita calorie consumption per day	FCS	HDDS	HFIAS score	Per-capita monthly food expenditure
Per-capita calorie consumption per day	1				
FCS	0.2658***	1			
HDDS	0.2305***	0.7294***	1		
HFIAS score	-0.104	-0.1356*	-0.1295	1	
Per-capita monthly food expenditure	0.7618***	0.4392***	0.3903***	-0.1634**	1

* p<0.10, ** p<0.05, *** p<0.01

One of the preliminary approaches to see the possible links between household food security and aspirations is to examine the share of people with low-aspirations that belongs in each food (in)security profile across indicators. Accordingly, Tables 5 to 7 present such descriptive statistics for household heads and spouses separately. For example, Table 6 shows that among households who are considered “severely food insecure”, the share of household heads with low aspirations is 71 percent while the corresponding figure for spouses is 67 percent. Further, spouses with low aspirations account for more than 50 percent of all spouses in households which are considered “food insecure” and this is the case for almost all indicators (Tables 5 to 7). While the large proportion of household heads that belong in households which are “food insecure” seem to have low aspirations, there is no clear trend across various indicators. In general, these preliminary evidences imply that it may be useful to control for the aspirations status of both the household head and spouse while studying food security correlates using multivariate analysis.

3.2.3. Subjective well-being

Any effort that a household puts for the betterment of its economic outcomes such as income, wealth or food security may partly depend on the perception it holds regarding its well-being by comparison to others or by comparison to own past outcomes. In this context Stark et al (2015), for example, theoretically show that when other unemployed people constitute the main reference group for an

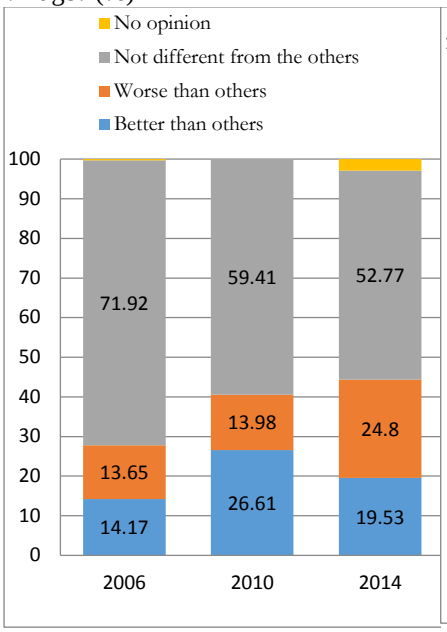
individual, this may reduce motivation and hence give rise to a "culture of unemployment." From a policy perspective satisfaction in life, happiness or subjective well-being in a society could all be an end in their own right,[14] not to mention the availability of empirical evidence on the positive effects of happiness, for example, on productivity (Oswald et al, 2014) and economic growth through life expectancy and investment (Li and Lu, 2008). In this section, we present descriptive statistics on the subjective well-being of the study households using various indicators. Availability of data for some of these indicators in the previous surveys (i.e. in 2006 and in 2010) allows us to see the average change in subjective well-being between 2006 and 2014. First, in all three surveys, the heads of households were asked about their household's welfare by comparison to other households in the village. According to Figure 3a, about 72% of households in 2006 thought their household's well-being was not different from other households' in the same village. But their share has declined to 59% and then to 53% in 2010 & 2014, respectively. In contrast, the share of those who thought either they were "better than" or "worse than" others has increased over the years and the highest increase comes from those who thought they were "worse than others".

Secondly, without reference to other households, the latest survey (i.e. the 2014) asked household heads two questions about (a) their own assessment of their household's current situation (i.e. well-being), and (b) the change in the well-being of their household in the previous five years. In response to the first question, about 40% of the households thought that they were "rich" or "comfortable" and about 50% of households thought that they "can manage to get by" (Figure 3b). Only about 3% of households thought that they were "poor" or "never had quite enough", and none reported to be "destitute." In terms of change in well-being in the past five years (Figure 3c), about 80% of households thought they had experienced "some" or "very big" improvement and only 14% of households thought that there was "no change." The remaining (less than 6%) household heads thought that the well-being of their household actually has experienced "some" or "big" deterioration. These figures on perceived changes in well-being seem to go along with the general positive changes that are observed in terms of per-capita income and wealth between 2006 and 2014 (Tables 2 & 3).

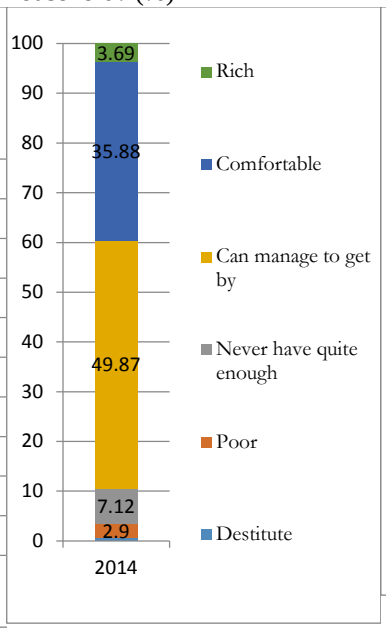
[14] This is because, according to Helliwell et al (2012), happiness, for example, *offers important information about the society: it can signal underlying crises or hidden strengths and it can suggest the need for change.* Further, cognizant of the limitations of other well-being indicators such as income, the study on happiness or life satisfaction has received increased attention in recent years. Recent developments on larger scale for example include OECD's *better life initiative* (OECD, 2011, 2013) and World Happiness Report (Helliwell et al, 2012).

Figure 3. Subjective well-being and change over time (%)

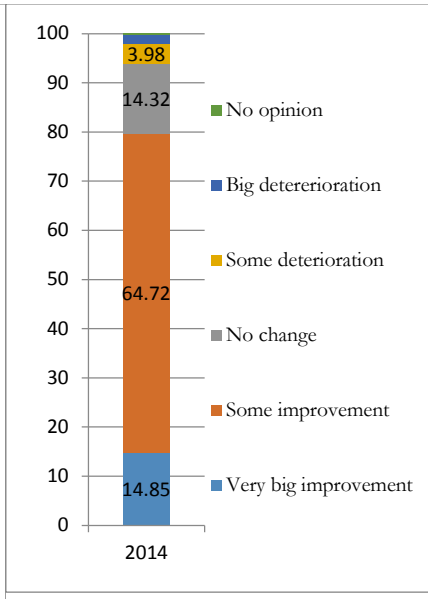
(a) How does your household's welfare or well-being compare with that of other households in the village? (%)



(b) Just thinking about your own household circumstances, how would you describe your household? (%)



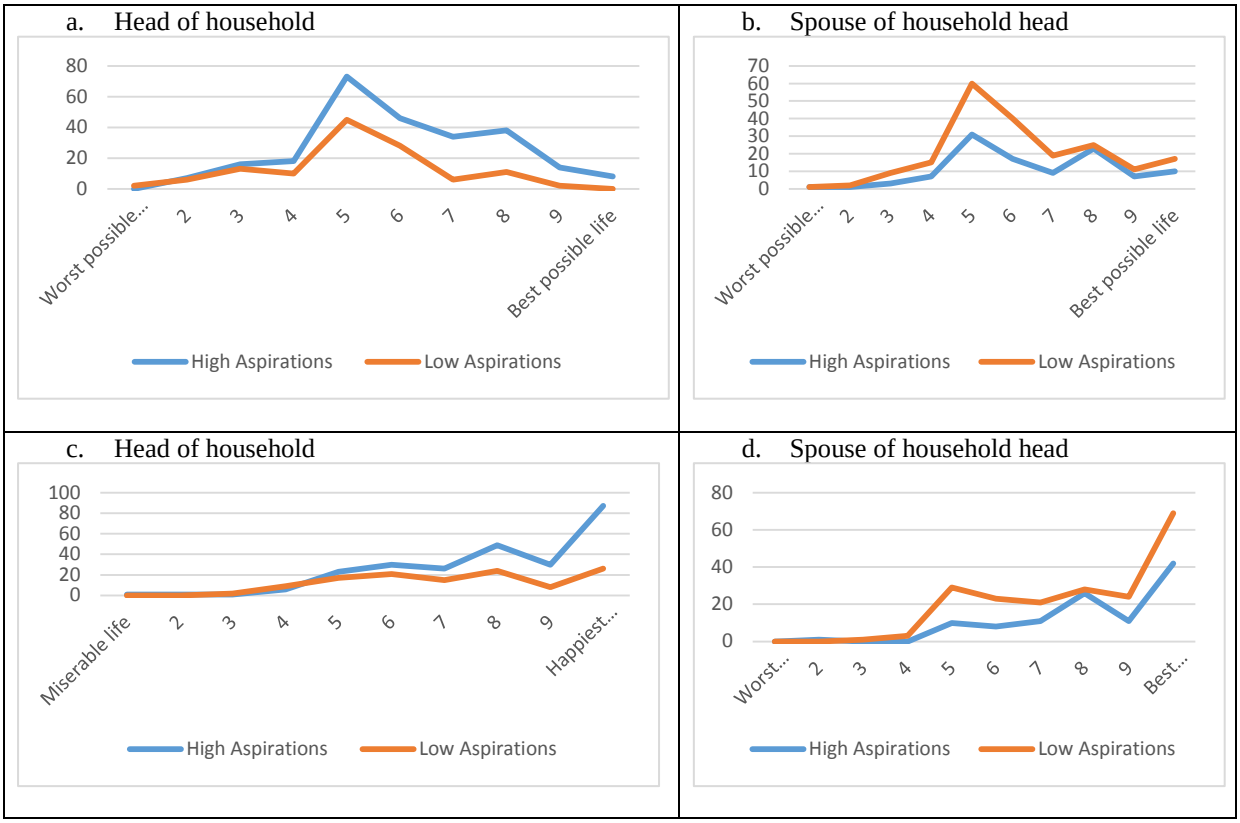
(c) How has the well-being of your household changed in the past 5 years (since 2000 EC)? (%)



Thirdly, the 2014 survey also included two individual level subjective well-being questions. Both the spouse and head of the household were separately asked, by referring to a 10-step ladder, where they personally stand at present if: (1) the top of the ladder represents the best possible life and the bottom step represents the worst possible life, and (2) the top of the ladder represents the happiest possible life and the bottom step represents the most miserable life. On average, household heads thought that they were above the 5th step of the ladder while spouses thought they were above the 6th step of the ladder in terms of "best possible life." In terms of happiness, household heads and spouses respectively thought that, on average, they were above the 7th and 8th steps of the ladder. In both indicators spouses seem to have a higher subjective well-being than the household heads, on average. Cross-tabulation of these two indicators of subjective well-being with aspirations turn in mixed evidence supporting a positive relationship between aspirations and higher subjective well-being among household heads; and, in contrast the relationship seems to be negative among spouses of the household heads (Figure 4). For example, the share of household heads who had higher subjective well-being in terms of both indicators (i.e. "best life" Figure 4a, and "happiest life" Figure 4c) is larger for those with high aspirations than for those with low aspirations. On the contrary, the share of spouses of the household heads who had higher subjective well-being in terms of both indicators (i.e. "best life" Figure 4b, and "happiest life" Figure 4d) is larger for those with low aspirations than for those with high aspirations. Perhaps this could be interpreted as follows. Spouses of the household heads in general also revealed lower aspirations by comparison to the household heads, on average. Hence, this could mean that having accepted their situation as it is and without much aspiration for improvement, they are more or less satisfied with what they have. This, as Ray (2006) argues, could be because their dreams are stifled due to poverty and also due to their limited "aspirations window", for they have limited exposure to media and living and travelling experience outside their village;[15] or, alternatively this could be a reflection of reconciliation to poverty (Sen, 1990).

[15] Average exposure to media is calculated by summing over the responses for three questions that ask: "How often do you listen to the radio?", "How often do you watch television?", "How often do you use a mobile/cell phone?"

Figure 4. Subjective well-being by aspirations status



4. Estimation and results

The well-being outcome (y) of the j[th] household[16] can be expressed in the following function:

$$y_j = f(A, I, H, C) \quad (1)$$

Where, A represents the aspirations status (of the household head and of the spouse), I denotes other characteristics of the household head and of the spouse, H and C respectively denote other household and community level characteristics. As opposed to the assumption behind unitary household models where preferences (or decision making) of the household is often proxied by that of the preferences of the head of the household, in this study we assume joint decision making by the two spouses and hence income, wealth or food security of the household is determined by the characteristics of both the head of the household and of the spouse, in combination with other household and community characteristics including district fixed effects. We estimate a series of an ordinary least squares (OLS) model relating well-being outcomes of the household with aspirations of the household head and of the spouse and a wide range of other potential determinants. Yet, our purpose remains to see if

Responses were coded as follows: 5=every day, 4=At least once a week, 3=At least once a month, 2=At least once a year, 1= Never. Similarly, average mobility or travel and living experience outside residence is calculated based on responses for five questions that ask: "How often do you go to nearest town?", "How often do you travel outside the kebele within the woreda?", "How often do you travel outside the woreda?" Responses were coded similar to exposure to media. Yet, the two more questions include: "Have you ever lived for more than 6 months outside this kebele?" and "Have you ever lived for more than 6 months outside this woreda?" Responses were coded as 1=Yes, 0 otherwise. Based on these two indicators, the data suggest that males have statistically significantly larger exposure to media and information, and have more travel and living experience outside residence. The corresponding mean values for the males were 12.57 and 11.98 and for females were 10.94 and 11.33.

[16] When the unit of analysis the individual level (e.g. if "y" is subjective well-being), A and I respectively denote the aspirations status and other characteristics of the individual. All other variables remain the same.

aspirations of the two spouses, given other factors, are strong correlates of well-being outcomes without necessarily claiming causal relations. This is because regression results might still be confounded by unobserved household-specific heterogeneity which we could not account for since we only have cross-sectional observations on the main variables of interest (e.g. aspirations and food (in)security indicators). Further, since aspirations and income are simultaneously determined and/or higher income might lead to higher aspirations (i.e. reverse causation), we cannot establish causal relations in this study for lack of identifying instruments that can affect the present level of aspirations but not income. We could not use lagged aspirations either since our data is cross-sectional. Yet, we try to minimize the influence of reverse causation by controlling for household income in the past which cannot be affected by present level aspirations but might determine the present level of income as well as aspirations. We also control for the interactions term between past income and present level aspirations and see if there is strong correlations between present aspirations and income. Yet, some (e.g. Angrist and Pischke, 2009) argue that strong correlations sometimes suggest causal relations and hence policy implications could still be drawn from such analysis.

4.1. Aspirations and income and consumption expenditure

Based on a review of existing studies, we have discussed the various correlates of income or poverty and food (in)security in rural Ethiopia. None of the existing studies however examine the potential effect of aspirations on well-being outcomes, and this study contributes to filling the gap. Recall that we have shown in a bivariate context that aspirations and well-being outcomes are positively correlated. Beginning with this section, we examine if that relationship still holds and whether the correlation is statistically significant after controlling for other potential determinants.

To begin with, Table 9 presents a summary of the main results from OLS[17] estimations relating annual per-capita income and monthly consumption expenditure with different determinants using various specifications. Since it is likely that the aspirations of the household head and the spouse are correlated, we control for that effect using the interaction term of the aspirations index of the two spouses (see result columns 1 & 3). Thus, after controlling for other factors, we find that the aspirations index of the household head is positively and significantly associated with the logarithms of per-capita household income (columns 1 & 2) and monthly consumption expenditure (columns 3 & 4).[18] According to these results (columns 1 and 2), holding all other independent variables constant, a standard deviation increase in the aspirations index[19] of the household head is associated with a (0.139 × 0.61) = 0.085 to (0.149 × 0.61) = 0.091 points increase in the logarithm of annual income per-capita. This is about (0.085/7.65) = 1.1 to (0.091/7.65) = 1.2 percent increase over the mean annual income per-capita. Similarly, according to columns 3 and 4, a standard deviation increase in the aspirations index of the household head is associated with a (0.134 × 0.495) = 0.066 to (0.147 × 0.495) = 0.073 points increase in the logarithm of monthly consumption expenditure per-capita. This is about (0.066/6.22) = 1.1 to (0.073/6.22) = 1.2 percent increase over the mean monthly per-capita expenditure. Surprisingly, results (columns 1-3) suggest that the aspirations of the spouse of the

[17] The data was also fitted to a more efficient method - the seemingly unrelated regression (SUR) model, but the main results did not change. This is because the outcome variables in each group (e.g. income and expenditure; the food (in)security indicators; or the two indicators of subjective well-being) are very much related within each group and hence the same set of explanatory variables enter the corresponding regressions, leading to similar results as equation-by-equation estimations (For example, compare Table A1.a. and Table A1.b in the appendix). In other words, there is little gain in efficiency from employing SUR since the same set of regressors are used. Hence OLS results are reported for the remaining outcome indicators for convenience.

[18] The mean and standard deviation of the logarithms of per-capita income and expenditure are (7.65 and 0.896) and 6.22 and 0.495, respectively.

[19] The mean and standard deviation of the aspirations index of the household head are 0.158 and 0.61, respectively.

household head are not statistically significantly correlated with per capita income or expenditure. While column 4 seems to indicate that the aspirations of the spouse of the household head are negatively associated with the per-capita consumption expenditure, the result is not robust for it loses its statistical significance when we control for the interactions term of the aspirations index of the two spouses. Further, in order to check if other results would hold in a unitary household model framework, we drop the aspirations index and other characteristics of the spouse of the household head from subsequent estimations (see columns 5 and 6) and control for the gender of the household head. Results suggest that the aspirations index of the household head remains positively and significantly associated with per-capita household income or consumption expenditure. Moreover, it is important to note the robustness of the overall results even when we control for the change in per capita income or expenditure in the past (i.e. between 2006 and 2010),[20] which is likely to influence both present income and aspirations, and the corresponding interactions term with the aspirations index.

Table 9. Correlates of annual income per capita (in log.) and monthly household consumption expenditure per capita (in log.)[21]

	(1)	(2)	(3)	(4)	(5)	(6)
	INC_pc1	INC_pc2	EXP_pc1	EXP_pc2	INC_pc3	EXP_pc3
Aspirations Head	0.14***	0.15***	0.13***	0.15***	0.13**	0.13***
	(0.05)	(0.04)	(0.04)	(0.04)	(0.06)	(0.04)
Aspirations Spouse	0.05	0.05	-0.05	-0.07*		
	(0.06)	(0.05)	(0.04)	(0.04)		
Aspirations(Head*Spouse)	0.02		-0.04			
	(0.06)		(0.04)			
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	304	304	304	304	376	376
R2	0.62	0.62	0.41	0.41	0.52	0.37

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Note: For the full set of results showing all control variables, refer to the Appendix, Table A1.a.

In addition, consistent with the existing studies, we find that other household characteristics including wealth indicators such as value of asset holdings, livestock holdings, and size of agricultural land holdings are all strongly positively associated with per capita income or consumption expenditure (Table A1). We also find that the education level of the household head is positively and strongly associated with household per capita income or consumption expenditure. In contrast, large family size seems to negatively affect household per-capita income and consumption expenditure. Female household headship is also negatively associated with per-capita income. Among the community characteristics proxied by the average distance to- asphalt road, markets and micro finance institution (MFI), we only find average distance to MFI to be negatively and strongly associated with annual income per capita. However, we fail to find evidence of any statistically significant correlations between household income or expenditure and the incidence of negative shocks such as illness of the household head or spouse, livestock diseases, large increases in input prices, death or loss of livestock, or illness of other family member. This implies that the study households are insured against these shocks, which is in line with other studies in rural Ethiopia such as Asfaw and von Braun (2004), Porter (2012) and Yilma et al (2014).

[20] Results remain unchanged when we control for actual level of per capita income or expenditure in 2006 and 2010 instead of the change. Results with actual level of past outcomes are not reported but they are available upon request.

[21] Female headed households drop out from the analysis (column 1-4) when we consider the characteristics of both the household head and spouse.

4.2. Aspirations and food security

Income and food security may have common determinants, but the two are conceptually distinct. In fact, while income may determine household's economic access to food, it by no means guarantees household food security for the later requires availability, utilization, and stability of food at all times. In this section, we examine if aspirations are also a strong correlate of food security given other factors that determine each of the four pillars of household food security. Following the existing literature and their availability in the data, we use per-capita calorie consumption, FCS, HDDS and HFIAS as measures of food (in)security. Table 10 presents a summary of the main correlates of food (in)security. Results suggest that aspirations are indeed strongly associated with household food (in)security. For example, according to column 1, a standard deviation increase in the aspirations index of the household head is associated with a (422.4 × 0.61) = 257.7 calories per-capita per-day increase in household consumption. This is roughly a (257.7/2997) = 8.6 percent increase over the mean calories consumption per-capita per day. Similarly, according to columns 2 to 4 respectively, a standard deviation increase in the aspirations index of the household head is associated with a (4.5 × 0.61) = 2.75 points increase in FCS, a (0.36 × 0.61) = 0.22 points increase in HDDS, and a (0.34 × 0.61) = 0.21 points decrease in HFIAS (recall that unlike other indicators, HFIAS actually measures food insecurity)[22]. In reference to the corresponding mean outcomes, these are roughly a (2.75/71.4) = 3.9 percent increase in FCS, a (0.22/8.68) = 2.5 percent increase in HDDS, and a (0.21/0.48) = 44 percent decrease in HFIAS. While the magnitude of the coefficient estimates for the aspirations index of the household head slightly decline when we ignore the characteristics of the spouse of the household head (columns 5-8), the correlation remains statistically significant in three out of the four indicators of household food (in)security. This perhaps underlines the importance of controlling for the aspirations and other characteristics of the spouse of the household head even though the coefficient estimates of the spouse's aspirations index are not themselves statistically significant (columns 1-4). Doing so is further supported by theory but also by the statistical evidence of the spouse's education as a statistically significant correlate of FCS and HDDS (column 2 and 3).

Table 10. Correlation of aspirations and other factors with food (in)security

	(1) pc_Calorie	(2) FCS	(3) HDDS	(4) HFIAS	(5) pc_Calorie_H	(6) FCS_H	(7) HDDS_H	(8) HFIAS_H
Aspirations Head	422.38***	4.50**	0.36**	-0.34**	364.38***	2.82	0.28**	-0.35**
	(129.72)	(1.81)	(0.15)	(0.16)	(123.54)	(1.98)	(0.13)	(0.16)
Aspirations Spouse	-183.02	-0.88	-0.07	-0.00				
	(122.89)	(1.76)	(0.13)	(0.29)				
Aspirations(Head*Spouse)	-82.35	-4.96***	-0.12	0.18				
	(92.69)	(1.52)	(0.13)	(0.19)				
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	302	302	302	302	302	302	302	302
R2	0.35	0.31	0.31	0.23	0.32	0.29	0.30	0.16

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Note: For the full set of results showing all control variables, refer to the Appendix, Table A2.

The strong correlations between aspirations and food security indicators should be put into context, as explained next. Aspirations may affect food security through different channels. First, aspirations may improve households' forward looking behavior and motivate them to reduce risk by diversifying their

[22] Female headed households drop out from the analysis (column 1-4) when we consider the characteristics of both the household head and the spouse. Thus, the corresponding mean values (for columns 1-4) of per-capita calorie consumption, FCS, HDDS, and HFIAS are respectively 2997, 71.4, 8.68, and 0.48. The corresponding mean values for the full sample regardless of household headship are 3040, 70.5, 8.6, and 0.49.

livelihood strategies (e.g. by engaging in non-farm income generating activities) which may lead to improved food security (e.g. through improved purchasing power or economic access). Secondly, aspirations may motivate households to reduce their risk aversion and encourage them to invest in agricultural innovations, the major determinants of agricultural productivity, which in turn may determine some aspects of food security (such as food availability and stability). Thirdly, farming in Ethiopia is a labor intensive sector and productivity may depend on the physical fitness of farm labor, which in turn is determined by the health status and consumption of foods that provide the necessary nutrients and adequate calories. In this context, aspirations may motivate households to consume more diversified and dietary foods and to make other investments that would improve their health and nutrition status, leading to at least one aspect of food security (e.g. utilisation). Despite the wide range of control variables including income growth in the past (i.e. between 2006 and 2010), this study does not establish causal inference. However, the findings provide suggestive evidence that higher aspirations may lead to improved food security.

Moving on to other results (Table A2 in the Appendix), we find that resource endowments such as annual household income, assets, livestock holdings and relative wealth status (i.e. belonging to higher wealth quintiles) are positively correlated with some of the food security indicators (columns 1-8). Besides having an education level higher than 8^{th} grade, engagement of the spouse of the household head in non-farm income generating activities tends to improve the household's dietary diversity (column 3). Further, negative shocks such as illness of the household head or the spouse and large increases in input prices are negatively associated with food security (column 3 and 4). Remoteness of the household from the market and asphalt road is also negatively associated with food security (columns 2, 3, 6 & 7), which is consistent with the findings of other studies such as Abay and Hirvonen (2016) who report that proximity to food markets improves consumption of more diverse diets and better child nutrition outcomes in northern Ethiopia. Surprisingly, however, results suggest that remoteness of the household from MFI and health center, and the incidence of illness of household member other than the head and spouse are positively correlated with some of the indicators of food security (columns 2, 6 & 8). Lastly, results also suggest that female headed households are more likely to be food insecure (columns 6 & 7).

4.3. Aspirations and subjective well-being

Unlike the objective measures of well-being outcomes such as income or food security, subjective measures such as satisfaction in life may not be necessarily dependent upon own outcomes. Just like aspirations, they are partly driven by one's relative economic position in a society and understanding their correlates may provide strong policy implications, e.g. with respect to economic inequality. For example, as we have seen in the descriptive statistics of this study (see Tables 2 & 3), the annual income per-capita and the wealth status of the studied households have, on average, increased between 2006 and 2014. However, in terms of subjective well-being, the share of people who thought they were "worse than others" has nearly doubled from 13.7 percent in 2006 to 24.8 percent in 2014 while the share of those who thought they were "not different from others" has declined from 72 percent to 53 percent during the same period (Fig 3a). At first sight, it might seem like income inequality may also have increased over the years despite the observed average income growth among the sample households. If that was the case, it might be natural to expect such inequality would trigger changes in subjective well-being. However, changes in subjective well-being may not necessarily happen in isolation from the individual's beliefs, aspirations and future expectations. Thus, in this section, we examine if there is any strong correlations between aspirations and future expectations and subjective well-being. Subjective well-being in this case is measured in terms of having "best life" and "happy life" by referring to a 10-step ladder where the top of the ladder represents "best/happy

life" and the bottom of the ladder represents "worst/miserable life." In the regressions, we also control for a wide range of other factors that might potentially determine well-being outcomes. To control for the relative economic position of the household in the community, we include indicators of the wealth quintile group and the income quintile group to which the individual's household belongs, in addition to the household's actual income and wealth. Regression results associated with the spouse and the household head are separately summarised in Table 11 and Table 12, respectively.

According to Table 11, neither aspirations nor expectations of the spouse of the household head seem to be strongly associated with either measures of subjective well-being. For household heads, in contrast, Table 12 shows that there is a positive and strong correlation between higher aspirations and higher subjective well-being (columns 1 - 4) and between higher expectations and higher subjective well-being (columns 5-8)[23]. Further, the coefficient estimate of the aspirations and expectations indicators remain statistically significant even after controlling for other internal (psychological) factors[24] including the individual's locus of control, self-esteem, perception on the causes of poverty, openness to change, envy, trust in others, exposure to media and information and travel experience outside the village (columns 2, 4, 6 & 8, Table Aa in the Appendix). Yet, contrary to our findings, Knight and Gunatilaka (2012) in rural China and Stutzer (2004) in Switzerland find some evidence of a "hedonic treadmill", that happiness is positively associated with income but negatively associated with aspirations to income for people adapt their aspirations in response to changes in income. Our interpretation of the findings in this study, however, is that the average per-capita income or wealth among sample households has increased between 2006 and 2014. This may mean that these positive changes may have given rise to increased hopes, aspirations and expectations. Since aspirations and expectations are also formed based on what is perceived to be achievable, and in this case the recent experience indicates continuous average growth in income and wealth between 2006 and 2014, they are likely to positively affect happiness or satisfaction in life. Further, despite some improvements in the magnitude of the coefficient estimates, corresponding results remain qualitatively the same when we drop the two indicators of the household's relative wealth and income position in the society from the regressions (results not shown). Perhaps, this may further indicate that aspirations and expectations are indeed an independent source of higher subjective well-being among household heads.

Table 11. Correlation of aspirations and other factors with wives' life satisfaction and/or happiness

	(1) BestA1	(2) BestA2	(3) HappyA1	(4) HappyA2	(5) BestE1	(6) BestE2	(7) HappyE1	(8) HappyE2
Aspirations Spouse	-0.32*	-0.16	0.16	0.16				
	(0.19)	(0.21)	(0.23)	(0.22)				
Expectations Spouse					-0.15	0.03	0.16	0.17
					(0.22)	(0.22)	(0.24)	(0.21)
Internal factors	No	Yes	No	Yes	No	Yes	No	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	302	302	302	302	302	302	302	302
R2	0.23	0.28	0.16	0.25	0.23	0.28	0.16	0.25

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Note: For the full set of results showing all control variables, refer to the Appendix, Table A3.

[23] Note: about 90 percent of household heads are males and the remaining are females who are either widow or divorcee.

[24] While internal factors are likely to be correlated to each other, each of the correlation coefficients amongst the indicators used in this study is far less than 0.6, suggesting that multicollinearity is not a problem. Correlation coefficients are reported in the Appendix as table A5.

Table 12. Correlation of aspirations and other factors with life satisfaction and/or happiness of the household head

	(1) BestA1	(2) BestA2	(3) HappyA1	(4) HappyA2	(5) BestE1	(6) BestE2	(7) HappyE1	(8) HappyE2
Aspirations Head	0.24*	0.29**	0.42***	0.41***				
	(0.13)	(0.13)	(0.14)	(0.14)				
Expectations Head					0.27	0.37**	0.27	0.34**
					(0.17)	(0.17)	(0.16)	(0.16)
Internal factors	No	Yes	No	Yes	No	Yes	No	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	374	374	373	373	374	374	373	373
R2	0.30	0.34	0.21	0.24	0.30	0.34	0.20	0.24

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Note: For the full set of results showing all control variables, refer to the Appendix, Table A4.

The relationship between life satisfaction and current income, and life satisfaction and relative income is inconclusive in the literature. For example, Easterlin (1995) concludes that "…within a country at a given time, those at higher incomes are, on average, happier. However, raising the incomes of all does not increase the happiness of all…for the material norms on which judgments of wellbeing are based increase in the same proportion as the actual income of the society." Accordingly, as can be seen in Table A4 (Appendix), we find that the relative per-capita income and the relative wealth status of the household (both measured in terms of quintile group that the household belongs to) are positively and strongly associated with subjective well-being of the household head, and this is true in all specifications (columns 1 – 8). However, we fail to find statistically strong correlations between actual per-capita income and the two measures of subjective well-being, and between actual household wealth and subjective well-being measured in terms of happiness (Tables 11 & 12). If anything, Table A4, column 8 suggests that happiness and actual income per capita are negatively and statistically significantly associated. Our findings are exactly in line with Easterlin's (1995) conclusion. On the other hand, based on a review of existing studies, Helliwell et al (2012) argue that absolute income is important for subjective well-being in poor countries while comparative income is rather the most important in richer countries. This contradicts not only our findings, but also partly others' such as Alem's (2013) who, based on panel data from urban Ethiopia, also finds that happiness increases with relative income. But contrary to our findings, Alem (2013) in urban Ethiopia and Kinght and Gunatilaka's (2012) in rural China find that happiness increases with actual income.

Among other characteristics, we find that family size of the household is positively and strongly associated with subjective well-being of the household head (Table A4, columns 1 and 5). This perhaps could be associated with the support the household could enjoy from the potential labor pool, particularly as the household head ages. In line with this, Conzo et al (2015) also find a strong relationship between subjective well-being of the household head and family size in rural Ethiopia. Having some level of education and having experienced large increases in input prices are negatively and statistically significantly associated with subjective well-being of the household head and this is true for all specifications (Table A4). On the other hand, when we consider wives (Table A3, Appendix), the incidence of negative shocks such as large increase in input prices, illness of the household head or the spouse, and death or loss of livestock, and remoteness of the market are negatively and statistically significantly associated with subjective well-being. In addition, we also find that own participation in off-farm income generating activities is negatively and strongly associated with subjective well-being of the spouse of the household head. This could be because wives engage in such activities not out of preference but rather out of the household's needs for additional income. Putting this into context, traditionally wives in rural Ethiopia are mainly

responsible for in-house chores and other household production that may include working on own farm. Hence, any deviation from this kind of culture or the burden of having additional responsibilities may negatively affect their subjective well-being or satisfaction in life.

5. Summary and conclusions

This study empirically examines if aspirations are important correlates of well-being outcomes in rural Ethiopia. We establish robust evidence by employing several objective as well as subjective measures of well-being outcomes including income and expenditure, multi-dimensional food security indicators, and satisfaction in life or subjective well-being. Descriptive statistics suggest that individuals with high aspirations have on average higher income or wealth by comparison to those with low aspirations and the difference is statistically significant. Similarly, across different food security categories, the share of people with low-aspirations increases as we move from the most food secure to the extremely food insecure categories, and this is true for most of the indicators. Cross-tabulation of subjective well-being (using indicators of life satisfaction and/or happiness) with aspirations however turns in mixed evidence that the relationship is positive among household heads while in contrast the relationship is negative among their spouses.

We use regressions to relate each well-being outcome against the aspirations indicator and other potential drivers including human capital or the household's access to natural capital, physical capital, financial capital, roads, markets and other services. To account for the unobserved factors common to all residents in each study site, we control for district fixed effects. The main finding of the study, which is robust across outcome indicators and specifications, is that the aspirations of the household head are important predictors of household well-being in rural Ethiopia. On the other hand, while we fail to find a statistically significant effect of the aspirations of the spouse, their inclusion in the regressions, along with other characteristics of the spouse, increases the magnitude of the coefficient estimates for the aspirations of the household head. This perhaps indirectly underscores the importance of the spouse's contribution to household decision-making and corresponding well-being outcomes. Regarding outcome indicators measured at individual level such as satisfaction in life or happiness, we also find a positive and strong effect of aspirations and future expectations of the household head. In contrast, for the spouse of the household head, aspirations and expectations do not seem to be strongly correlated with subjective well-being.

Despite the cross-sectional nature of the data used in this study, which is the major limitation for unobserved household characteristics might still affect both the aspirations and the well-being outcomes or the possibility of reverse causation, the robustness of findings across various indicators suggest that aspirations are indeed strong determinants of well-being outcomes. Yet, it is important to note that we have controlled for present as well as past income and wealth levels or their changes, other psychological factors and a wide range of other factors which might affect both the aspirations and the present level of outcome indicators. This perhaps would help minimise the influence of the error term that would result from unobserved heterogeneity. Further, we had also established (in other unpublished papers) that aspirations are also strongly correlated with the adoption of agricultural innovations and risk-taking behavior which are all underlying determinants of household income or wealth and food security. Nonetheless, the study also has other limitations. The survey this study mainly relies upon covered an existing sample of farm households who had been interviewed by other organizations in the past. The original survey used a mix of purposive and random sampling procedure from study sites which have high agricultural potential. This might limit the external validity of the study. Most of the findings of the study, however, are in line with the theory and few

other empirical studies. With those caveats in mind and based on the overall findings, the study concludes that policies aimed at improving well-being outcomes should incorporate aspirations-raising strategies for those policies could benefit from these multiple effects of aspirations (i.e. direct and indirect effects). This may involve direct motivations and/or other strategies which may target the determinants of aspirations that would help break behavioral poverty traps. Finally, the policy relevance of findings in this study could be emphasised using the words of Bandura (2009) which states that "failure to address the psychosocial determinants of human behavior is often the weakest link in social policy initiatives. Simply providing ready access to resources does not mean that people will take advantage of them."

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Appendix

Table A1.a. Correlates of annual income per capita (in log.) and monthly household consumption expenditure per capita (in log.), (OLS results)

	(1) INC_pc1	(2) INC_pc2	(3) EXP_pc1	(4) EXP_pc2	(5) INC_pc3	(6) EXP_pc3
Aspirations Head	0.14***	0.15***	0.13***	0.15***	0.13**	0.13***
	(0.05)	(0.04)	(0.04)	(0.04)	(0.06)	(0.04)
Aspirations Spouse	0.05	0.05	-0.05	-0.07*		
	(0.06)	(0.05)	(0.04)	(0.04)		
Aspirations(Head*Spouse)	0.02		-0.04			
	(0.06)		(0.04)			
Aspirat.*INChange(2006-10)	-0.00					
	(0.00)					
Aspirat.*ChangeExpen(2006-10)			-0.00			
			(0.00)			
Female hh head					-0.49**	0.03
					(0.19)	(0.07)
HH head Age31-50	-0.14	-0.17	-0.01	-0.02	-0.15	0.17
	(0.16)	(0.15)	(0.13)	(0.13)	(0.13)	(0.12)
HH head Age above51	-0.08	-0.11	-0.07	-0.06	-0.14	0.11
	(0.17)	(0.16)	(0.13)	(0.13)	(0.14)	(0.13)
Spouse Age31-50	-0.03	-0.02	0.09	0.10		
	(0.11)	(0.11)	(0.08)	(0.08)		
Spouse Age above51	0.06	0.07	0.19**	0.19**		
	(0.13)	(0.13)	(0.09)	(0.09)		
Head education: 0-4	0.26***	0.27***	-0.06	-0.04	0.19**	-0.02
	(0.08)	(0.08)	(0.07)	(0.07)	(0.08)	(0.06)
Head education: 5-8	0.15*	0.15*	0.01	0.02	0.07	0.01
	(0.08)	(0.08)	(0.07)	(0.07)	(0.09)	(0.06)
Head education: 8+	0.13	0.14	0.05	0.05	0.11	0.07
	(0.10)	(0.09)	(0.08)	(0.08)	(0.09)	(0.07)
Spouse education: 0-4	-0.01	-0.02	0.03	0.04		
	(0.08)	(0.08)	(0.07)	(0.07)		
Spouse education: 5-8	0.09	0.10	-0.04	-0.04		
	(0.09)	(0.09)	(0.07)	(0.07)		
Spouse education: 8+	0.15	0.17	0.13	0.14		
	(0.14)	(0.14)	(0.09)	(0.09)		
HH size(ln)	-0.84***	-0.86***	-0.54***	-0.52***	-0.67***	-0.48***
	(0.11)	(0.11)	(0.08)	(0.08)	(0.21)	(0.07)
Dependency ratio	0.00	0.02	-0.14	-0.16	-0.19	-0.12
	(0.20)	(0.19)	(0.14)	(0.14)	(0.29)	(0.12)
Off-farm income	0.06	0.06	0.00	0.00	0.07	-0.06
	(0.07)	(0.06)	(0.05)	(0.05)	(0.07)	(0.05)
Change in Income (2006-10)	-0.00				-0.00	
	(0.00)				(0.00)	
Value of assets	0.09***	0.09***	0.07***	0.07***	0.13***	0.08***
	(0.03)	(0.03)	(0.03)	(0.02)	(0.05)	(0.03)
Change in Expen (2006-10)			0.00			0.00
			(0.00)			(0.00)
Livestock holding(TLU)	0.03***	0.03***	0.02**	0.02***	0.04***	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Land in ha(ln)	0.45***	0.46***	0.08	0.07	0.44***	0.09*
	(0.11)	(0.11)	(0.06)	(0.06)	(0.13)	(0.05)
Too much rain or flood	0.16	0.17*	0.16	0.16	0.19*	0.15*
	(0.10)	(0.10)	(0.11)	(0.11)	(0.10)	(0.08)
Livestock diseases	-0.04	-0.06	0.11	0.13	-0.07	0.05
	(0.11)	(0.11)	(0.12)	(0.11)	(0.11)	(0.10)
Increased input prices	-0.00	0.00	-0.02	-0.03	0.08	0.05
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.08)
Death or loss of livestock	-0.12	-0.11	-0.04	-0.03	-0.09	-0.02
	(0.08)	(0.08)	(0.07)	(0.07)	(0.09)	(0.08)
Illness of head/spouse	-0.10	-0.08	-0.08	-0.09	-0.02	-0.04
	(0.12)	(0.12)	(0.08)	(0.08)	(0.12)	(0.07)
Illness of other family	-0.04	-0.03	0.12	0.11	-0.05	0.12

	(0.12)	(0.12)	(0.08)	(0.08)	(0.10)	(0.07)
Road (minutes) (ln)	0.01	0.01	-0.01	-0.01	0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Market (minutes) (ln)	0.01	0.01	-0.00	-0.00	0.08	-0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.07)	(0.02)
Micro-finance. (minutes) (ln)	-0.10*	-0.10*	0.03	0.03	-0.10*	0.03
	(0.05)	(0.05)	(0.04)	(0.04)	(0.06)	(0.03)
Bako-Sire	-0.13	-0.15	-0.16**	-0.15**	-0.05	-0.14**
	(0.10)	(0.10)	(0.07)	(0.07)	(0.12)	(0.06)
Hitossa-Tiyo	0.40***	0.41***	0.19***	0.20***	0.61***	0.20***
	(0.07)	(0.07)	(0.06)	(0.06)	(0.13)	(0.05)
Constant	7.98***	8.02***	6.23***	6.14***	7.09***	6.02***
	(0.47)	(0.48)	(0.30)	(0.30)	(0.74)	(0.28)
Observations	304	304	301	304	375	372
R-squared	0.62	0.62	0.41	0.41	0.52	0.37

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Note: Female-headed households drop out from the analysis (column 1-4) when we consider the characteristics of both the household head and the spouse. This is true for all tables below.

Table A1.b. Correlates of annual income per capita (in log.) and monthly household consumption expenditure per capita (in log.), (SUR results)

	-1 INC_pc1	-2 INC_pc2	-3 EXP_pc1	-4 EXP_pc2	-5 INC_pc3	-6 EXP_pc3
Aspirations Head	0.15***	0.15***	0.13***	0.15***	0.13**	0.13***
	(0.05)	(0.05)	(0.04)	(0.04)	(0.06)	(0.04)
Aspirations Spouse	0.04	0.05	-0.05	-0.07*	-0.49***	0.03
	(0.06)	(0.05)	(0.05)	(0.04)	(0.12)	(0.08)
Aspirations(Head*Spouse)	0.02		-0.04			
	(0.06)		(0.05)			
Aspirat.*INChange(2006-10)	-0.00					
	(0.00)					
Aspirat.*ChangeExpen(2006-10)			-0.00			
			(0.00)			
Female hh head					-0.49***	0.03
					(0.12)	(0.08)
HH head Age31-50	-0.17	-0.17	-0.01	-0.02	-0.16	0.16*
	(0.14)	(0.14)	(0.12)	(0.11)	(0.14)	(0.09)
HH head Age above51	-0.12	-0.11	-0.07	-0.06	-0.14	0.11
	(0.16)	(0.15)	(0.12)	(0.12)	(0.14)	(0.09)
Spouse Age31-50	-0.02	-0.02	0.09	0.10		
	(0.09)	(0.09)	(0.07)	(0.07)		
Spouse Age above51	0.07	0.07	0.19**	0.19**		
	(0.12)	(0.12)	(0.10)	(0.09)		
Head education: 0-4	0.27***	0.27***	-0.06	-0.04	0.20**	-0.02
	(0.09)	(0.09)	(0.07)	(0.07)	(0.10)	(0.07)
Head education: 5-8	0.16*	0.15*	0.01	0.02	0.08	0.01
	(0.09)	(0.09)	(0.07)	(0.07)	(0.10)	(0.06)
Head education: 8+	0.16	0.14	0.05	0.05	0.13	0.07
	(0.10)	(0.10)	(0.08)	(0.08)	(0.11)	(0.07)
Spouse education: 0-4	-0.02	-0.02	0.04	0.04		
	(0.08)	(0.08)	(0.06)	(0.06)		
Spouse education: 5-8	0.10	0.10	-0.04	-0.04		
	(0.09)	(0.09)	(0.07)	(0.07)		
Spouse education: 8+	0.16	0.17	0.13	0.14		
	(0.12)	(0.11)	(0.09)	(0.09)		
HH size(ln)	-0.86***	-0.86***	-0.54***	-0.52***	-0.67***	-0.48***
	(0.10)	(0.10)	(0.08)	(0.08)	(0.10)	(0.07)
Dependency ratio	0.02	0.02	-0.13	-0.16	-0.16	-0.12
	(0.16)	(0.15)	(0.13)	(0.12)	(0.16)	(0.11)
Off-farm income	0.05	0.06	0.00	0.00	0.04	-0.06
	(0.06)	(0.06)	(0.05)	(0.05)	(0.07)	(0.05)
Change in Incom (2006-10)	0.00				0.00**	
	(0.00)				(0.00)	

Value of assets (ln)	0.10***	0.09***	0.07***	0.07***	0.14***	0.08***
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
Change in Expen (2006-10)			0.00			0.00
			(0.00)			(0.00)
Livestock holding(TLU)	0.03***	0.03***	0.02***	0.02***	0.04***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Land in ha(ln)	0.47***	0.46***	0.08	0.07	0.44***	0.09**
	(0.06)	(0.06)	(0.05)	(0.05)	(0.07)	(0.05)
Too much rain or flood	0.17	0.17	0.16*	0.16*	0.20*	0.15*
	(0.12)	(0.11)	(0.09)	(0.09)	(0.12)	(0.08)
Livestock diseases	-0.06	-0.06	0.11	0.13	-0.09	0.05
	(0.11)	(0.11)	(0.09)	(0.09)	(0.13)	(0.08)
Increased input prices	0.00	0.00	-0.02	-0.03	0.09	0.05
	(0.10)	(0.10)	(0.08)	(0.08)	(0.11)	(0.07)
Death or loss of livestock	-0.12	-0.11	-0.04	-0.03	-0.09	-0.02
	(0.10)	(0.10)	(0.08)	(0.08)	(0.12)	(0.08)
Illness of head/spouse	-0.07	-0.08	-0.08	-0.09	0.01	-0.04
	(0.11)	(0.10)	(0.08)	(0.08)	(0.12)	(0.08)
Illness of other family	-0.04	-0.03	0.12	0.11	-0.06	0.12
	(0.10)	(0.10)	(0.08)	(0.08)	(0.12)	(0.08)
Road (minutes)(ln)	0.01	0.01	-0.01	-0.01	0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Market(minutes)(ln)	0.01	0.01	-0.00	-0.00	0.08**	-0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.02)
Micro-finance institutio (minutes)(ln)	-0.10**	-0.10**	0.03	0.03	-0.10*	0.03
	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.03)
Bako-Sire	-0.16*	-0.15*	-0.16**	-0.15**	-0.07	-0.14**
	(0.09)	(0.09)	(0.07)	(0.07)	(0.10)	(0.06)
Hitossa-Tiyo	0.41***	0.41***	0.19***	0.20***	0.64***	0.20***
	(0.08)	(0.08)	(0.06)	(0.06)	(0.08)	(0.05)
Constant	8.00***	8.02***	6.22***	6.14***	6.99***	6.02***
	(0.42)	(0.41)	(0.34)	(0.33)	(0.45)	(0.29)
Observations	301	304	301	304	372	372
R-squared	0.62	0.62	0.41	0.41	0.53	0.37

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Note: Female-headed households drop out from the analysis (column 1-4) when we consider the characteristics of both the household head and the spouse. This is true for all tables below.

Table A2. Correlation of aspirations and other factors with food (in)security

	(1) pc_Calorie	(2) FCS	(3) HDDS	(4) HFIAS	(5) pc_Calorie_H	(6) FCS_H	(7) HDDS_H	(8) HFIAS_H
Aspirations Head	422.38***	4.50**	0.36**	-0.34**	364.38***	2.82	0.28**	-0.35**
	(129.72)	(1.81)	(0.15)	(0.16)	(123.54)	(1.98)	(0.13)	(0.16)
Aspirations Spouse	-183.02	-0.88	-0.07	-0.00				
	(122.89)	(1.76)	(0.13)	(0.29)				
Aspirations(Head*Spouse)	-82.35	-4.96***	-0.12	0.18				
	(92.69)	(1.52)	(0.13)	(0.19)				
Aspirat.*INChange(2006-10)	0.00	0.00	0.00	-0.00	-0.00	0.00	0.00	-0.00
	(0.06)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)
Female hh head					6.39	-6.08*	-0.57**	0.09
					(254.72)	(3.35)	(0.24)	(0.33)
HH head Age31-50	-170.90	-2.87	-0.49	-0.59	65.69	-1.15	-0.28	-0.19
	(306.19)	(5.72)	(0.38)	(0.76)	(245.55)	(4.18)	(0.30)	(0.58)
HH head Age above51	-267.57	-4.38	-0.62	-0.76	-48.14	-2.25	-0.48	-0.46
	(337.34)	(6.05)	(0.40)	(0.69)	(258.40)	(4.24)	(0.32)	(0.52)
Spouse Age31-50	103.65	1.93	0.10	0.14				
	(205.33)	(2.97)	(0.24)	(0.26)				
Spouse Age above51	-92.47	3.67	0.46	-0.33				
	(272.30)	(3.76)	(0.32)	(0.34)				
Head education: 0-4	-106.28	-5.99**	-0.51**	-0.16	107.32	-4.92*	-0.46**	0.10
	(209.68)	(2.97)	(0.22)	(0.48)	(191.58)	(2.67)	(0.20)	(0.34)
Head education: 5-8	-113.99	0.16	-0.09	-0.70*	70.13	0.45	-0.13	-0.35
	(199.53)	(2.64)	(0.21)	(0.42)	(184.86)	(2.42)	(0.19)	(0.28)
Head education: 8+	13.05	0.82	-0.24	-0.60	3.21	0.58	-0.24	-0.15
	(237.26)	(3.28)	(0.24)	(0.41)	(256.19)	(2.83)	(0.21)	(0.38)
Spouse education: 0-4	199.23	2.64	0.10	0.46				
	(167.94)	(2.59)	(0.20)	(0.46)				
Spouse education: 5-8	-274.66	1.36	0.21	0.42				
	(201.28)	(2.99)	(0.22)	(0.38)				
Spouse education: 8+	154.56	8.61**	0.62**	0.37				
	(308.88)	(4.15)	(0.31)	(0.34)				
HH size(ln)	-991.32***	5.78*	0.78***	0.68	-1,372.61***	6.49**	0.74***	0.40
	(256.25)	(3.25)	(0.28)	(0.49)	(258.99)	(2.67)	(0.23)	(0.34)
Dependency ratio	102.32	5.25	0.38	0.27	-210.73	2.65	0.10	0.09
	(400.88)	(5.44)	(0.47)	(0.39)	(360.02)	(4.37)	(0.35)	(0.37)
HH head in business/wage	-334.85**	-2.95	0.02	-0.12				
	(152.56)	(2.32)	(0.16)	(0.28)				
Spouse in business/wage	159.60	2.41	0.31*	0.32				
	(171.65)	(2.24)	(0.17)	(0.38)				
Off-farm income					-130.53	0.06	0.05	0.19
					(141.00)	(1.85)	(0.14)	(0.20)
Change in Incom (2006-10)	0.00	0.00	-0.00	-0.00*	0.01	0.00	-0.00	-0.00
	(0.06)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)
Income per-adult equiv. (ln)	0.05	0.00***	0.00***	-0.00	0.03	0.00***	0.00***	-0.00
	(0.04)	(0.00)	(0.00)	(0.00)	(0.04)	(0.00)	(0.00)	(0.00)
Value of assets (ln)	-77.23	0.07	0.15*	-0.20	-30.53	0.77	0.19***	-0.21*
	(71.11)	(1.00)	(0.08)	(0.13)	(66.91)	(0.87)	(0.07)	(0.13)
Livestock holding(TLU)	58.02***	0.50**	0.01	0.00	47.09***	0.30	-0.00	0.01
	(17.00)	(0.23)	(0.02)	(0.02)	(16.51)	(0.22)	(0.02)	(0.02)
Land in ha(ln)	33.36	-0.77	-0.15	-0.17	170.92	2.06	-0.03	-0.26
	(154.76)	(1.98)	(0.18)	(0.20)	(169.48)	(2.06)	(0.17)	(0.18)
Too much rain or flood	594.27*	6.63**	0.38	0.08	493.57*	5.58*	0.49**	0.12
	(356.11)	(3.18)	(0.25)	(0.88)	(275.17)	(2.89)	(0.20)	(0.67)
Livestock diseases	238.35	-1.80	-0.04	0.04	426.32	-1.84	-0.14	0.45
	(281.38)	(3.21)	(0.23)	(0.66)	(279.23)	(2.78)	(0.21)	(0.58)
Increased input prices	-79.46	-2.35	-0.14	1.22**	96.41	-2.89	-0.06	0.70

	(224.08)	(3.36)	(0.21)	(0.59)	(211.23)	(3.09)	(0.20)	(0.52)
Death or loss of livestock	-191.19	-0.04	0.25	-0.56	-120.11	0.46	0.28	-0.34
	(201.14)	(3.34)	(0.21)	(0.53)	(196.97)	(3.10)	(0.19)	(0.52)
Illness of head/spouse	-190.48	-3.64	-0.47*	0.86	-156.54	-0.26	-0.33	0.42
	(230.75)	(2.86)	(0.26)	(0.73)	(203.55)	(2.90)	(0.24)	(0.61)
Illness of other family	484.20**	4.60	0.47**	0.33	294.93	4.61	0.35*	0.39
	(237.91)	(3.21)	(0.22)	(0.64)	(214.57)	(2.90)	(0.20)	(0.58)
Road (minutes)(ln)	-80.96**	0.10	-0.01	0.06	-42.34	0.29	0.01	0.04
	(39.38)	(0.42)	(0.03)	(0.04)	(38.46)	(0.45)	(0.03)	(0.04)
Market(minutes)(ln)	-53.17	-2.85***	-0.28***	-0.05	-71.33	-2.66***	-0.25***	-0.04
	(81.56)	(1.06)	(0.08)	(0.12)	(82.39)	(0.97)	(0.07)	(0.10)
Micro-finance (minutes)(ln)	63.99	2.47*	0.12	-0.13	159.08	2.09	0.09	-0.28*
	(111.41)	(1.43)	(0.12)	(0.14)	(101.01)	(1.31)	(0.10)	(0.14)
Health center(minutes)(ln)	166.19	3.34***	0.15	-0.11	68.41	2.67**	0.09	-0.10
	(103.22)	(1.23)	(0.10)	(0.09)	(89.27)	(1.10)	(0.09)	(0.10)
Bako-Sire	-454.32***	-1.51	-0.48**	0.46	-241.10	-0.78	-0.36*	0.27
	(169.15)	(2.86)	(0.24)	(0.29)	(155.23)	(2.54)	(0.20)	(0.29)
Hitossa-Tiyo	752.40***	6.98**	0.17	-0.15	848.16***	7.92***	0.26	-0.20
	(194.77)	(2.76)	(0.22)	(0.21)	(189.00)	(2.45)	(0.19)	(0.18)
Constant	4,286.69***	37.71***	6.01***	2.42	4,343.51***	32.54***	5.97***	3.49**
	(928.07)	(14.15)	(1.05)	(1.76)	(948.31)	(11.76)	(0.88)	(1.62)
Observations	302	302	302	302	374	374	374	375
R-squared	0.35	0.31	0.31	0.23	0.32	0.29	0.30	0.16

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Table A3. Correlation of aspirations and other factors with wives' life satisfaction and/or happiness

	(1) BestA1	(2) BestA2	(3) HappyA1	(4) HappyA2	(5) BestE1	(6) BestE2	(7) HappyE1	(8) HappyE2
Aspirations Spouse	-0.32*	-0.16	0.16	0.16				
	(0.19)	(0.21)	(0.23)	(0.22)				
Expectations Spouse					-0.15	0.03	0.16	0.17
					(0.22)	(0.22)	(0.24)	(0.21)
Spouse Age31-50	-0.05	-0.05	0.35	0.31	-0.11	-0.08	0.37	0.33
	(0.32)	(0.33)	(0.31)	(0.30)	(0.32)	(0.33)	(0.31)	(0.30)
Spouse Age above51	-0.47	-0.54	0.26	0.31	-0.58	-0.58	0.33	0.38
	(0.39)	(0.39)	(0.37)	(0.35)	(0.38)	(0.38)	(0.38)	(0.36)
Spouse education: 0-4	0.09	0.17	0.08	-0.07	0.08	0.18	0.09	-0.06
	(0.27)	(0.27)	(0.29)	(0.28)	(0.28)	(0.28)	(0.29)	(0.28)
Spouse education: 5-8	0.09	0.18	0.38	0.20	0.13	0.19	0.35	0.17
	(0.31)	(0.33)	(0.32)	(0.33)	(0.32)	(0.33)	(0.32)	(0.32)
Spouse education: 8+	0.33	0.49	0.13	-0.01	0.30	0.45	0.11	-0.05
	(0.36)	(0.35)	(0.38)	(0.41)	(0.35)	(0.35)	(0.39)	(0.41)
HH size(ln)	0.71*	0.48	0.48	0.06	0.69*	0.45	0.47	0.04
	(0.41)	(0.42)	(0.42)	(0.43)	(0.41)	(0.42)	(0.42)	(0.43)
Dependency ratio	0.15	0.51	0.11	0.90	0.17	0.51	0.10	0.89
	(0.55)	(0.59)	(0.60)	(0.60)	(0.55)	(0.59)	(0.60)	(0.60)
Spouse in business/wage	-0.90***	-0.85***	-1.06***	-0.94***	-0.90***	-0.86***	-1.07***	-0.95***
	(0.24)	(0.25)	(0.26)	(0.26)	(0.24)	(0.26)	(0.26)	(0.26)
Change in Incom (2006-10)	-0.00	-0.00	0.00	0.00	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Income per-adult equiv.(ln)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Expenditue quintile	0.18**	0.20**	0.09	0.12	0.19**	0.20**	0.09	0.12
	(0.09)	(0.08)	(0.09)	(0.09)	(0.09)	(0.08)	(0.09)	(0.09)
Wealth quintile	0.17	0.16	0.01	0.03	0.21	0.17	-0.01	0.02
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Value of assets (ln)	-0.08	-0.12	0.11	0.03	-0.11	-0.13	0.12	0.04
	(0.13)	(0.12)	(0.13)	(0.12)	(0.13)	(0.12)	(0.13)	(0.12)
Livestock holding(TLU)	0.05	0.06*	0.02	0.02	0.04	0.05*	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Land in ha(ln)	0.11	0.16	-0.06	0.13	0.09	0.14	-0.05	0.13
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.24)	(0.23)	(0.23)
Too much rain or flood	0.07	-0.06	-0.63	-0.72	0.03	-0.08	-0.61	-0.70
	(0.32)	(0.33)	(0.54)	(0.53)	(0.33)	(0.33)	(0.54)	(0.53)
Livestock diseases	0.15	0.30	0.52	0.62	0.15	0.32	0.53	0.63
	(0.39)	(0.41)	(0.45)	(0.47)	(0.39)	(0.41)	(0.45)	(0.47)
Increased input prices	-1.04***	-0.79***	-0.36	-0.17	1.04***	0.77***	-0.35	-0.16
	(0.22)	(0.24)	(0.38)	(0.40)	(0.22)	(0.24)	(0.38)	(0.40)
Death or loss of livestock	-0.61**	-0.57*	0.15	0.12	-0.59**	-0.56*	0.14	0.10
	(0.27)	(0.30)	(0.43)	(0.43)	(0.28)	(0.30)	(0.43)	(0.44)
Illness of head/spouse	-0.42	-0.27	-0.81*	-0.75	-0.41	-0.25	-0.81*	-0.75
	(0.39)	(0.38)	(0.48)	(0.47)	(0.39)	(0.38)	(0.48)	(0.47)
Illness of other family	0.26	0.26	0.11	-0.11	0.27	0.27	0.11	-0.12
	(0.37)	(0.39)	(0.44)	(0.46)	(0.38)	(0.39)	(0.45)	(0.46)
Road (minutes)(ln)	-0.05	-0.05	0.02	0.05	-0.06	-0.05	0.02	0.05
	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)
Market(minutes)(ln)	-0.26**	-0.27**	-0.20*	-0.22*	-0.26**	-0.27**	-0.20*	-0.22*
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Micro-finance (minutes)(ln)	-0.23	-0.25	0.17	0.15	-0.23	-0.25	0.17	0.15
	(0.19)	(0.18)	(0.19)	(0.20)	(0.19)	(0.18)	(0.19)	(0.20)
Locus of control		-0.12		0.20		-0.14		0.19
		(0.31)		(0.32)		(0.31)		(0.31)
Self-esteem		0.33		0.31		0.34		0.30
		(0.31)		(0.29)		(0.31)		(0.29)
Perceptions on causes of poverty		0.87***		0.99***		0.91***		0.98***
		(0.26)		(0.29)		(0.26)		(0.29)
Openness to change		0.17		0.70***		0.15		0.72***
		(0.26)		(0.21)		(0.26)		(0.21)

Envy		-0.19		-0.16		-0.19		-0.15
		(0.13)		(0.12)		(0.13)		(0.12)
Trust		-0.05		-0.08		-0.06		-0.07
		(0.14)		(0.12)		(0.14)		(0.12)
Exposure to media and information		0.12		0.25		0.12		0.25
		(0.19)		(0.16)		(0.19)		(0.16)
Travel outside residence		0.15		0.53***		0.14		0.53***
		(0.23)		(0.19)		(0.23)		(0.19)
Bako-Sire	0.03	0.05	0.27	0.46	0.06	0.05	0.26	0.44
	(0.37)	(0.39)	(0.36)	(0.35)	(0.38)	(0.40)	(0.36)	(0.35)
Hitossa-Tiyo	-0.30	-0.34	-0.25	-0.34	-0.30	-0.34	-0.25	-0.34
	(0.30)	(0.30)	(0.30)	(0.28)	(0.30)	(0.30)	(0.30)	(0.28)
Constant	6.55***	7.04***	5.87***	6.99***	6.85***	7.23***	5.79***	6.92***
	(1.55)	(1.53)	(1.59)	(1.63)	(1.57)	(1.54)	(1.59)	(1.63)
Observations	302	302	301	301	302	302	301	301
R-squared	0.24	0.28	0.16	0.26	0.23	0.28	0.16	0.26

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Table A4. Correlation of aspirations and other factors with life satisfaction and/or happiness of the household head

	(1) BestA1	(2) BestA2	(3) HappyA1	(4) HappyA2	(5) BestE1	(6) BestE2	(7) HappyE1	(8) HappyE2
Aspirations Head	0.24*	0.29**	0.42***	0.41***				
	(0.13)	(0.13)	(0.14)	(0.14)				
Expectations Head					0.27	0.37**	0.27	0.34**
					(0.17)	(0.17)	(0.16)	(0.16)
HH head Age31-50	-0.26	-0.09	0.20	0.35	-0.21	-0.03	0.29	0.43
	(0.40)	(0.35)	(0.46)	(0.47)	(0.39)	(0.34)	(0.45)	(0.46)
HH head Age above51	-0.53	-0.35	-0.00	0.26	-0.48	-0.28	0.10	0.35
	(0.42)	(0.39)	(0.49)	(0.50)	(0.41)	(0.38)	(0.48)	(0.50)
Head education: 0-4	0.06	-0.03	-0.32	-0.52*	0.02	-0.10	-0.38	-0.59**
	(0.25)	(0.25)	(0.28)	(0.28)	(0.26)	(0.25)	(0.28)	(0.28)
Head education: 5-8	-0.43*	-0.48*	-0.30	-0.51*	-0.49**	-0.55**	-0.33	-0.56*
	(0.24)	(0.25)	(0.27)	(0.29)	(0.24)	(0.25)	(0.28)	(0.29)
Head education: 8+	-0.67**	-0.75***	-0.61*	-0.86***	-0.75***	-0.85***	-0.65**	-0.92***
	(0.28)	(0.28)	(0.32)	(0.32)	(0.29)	(0.29)	(0.33)	(0.32)
HH size(ln)	0.61**	0.42	0.34	0.07	0.59**	0.37	0.37	0.06
	(0.26)	(0.27)	(0.31)	(0.31)	(0.27)	(0.27)	(0.31)	(0.31)
Dependency ratio	0.59	0.58	0.31	0.38	0.56	0.54	0.29	0.36
	(0.47)	(0.46)	(0.51)	(0.51)	(0.47)	(0.46)	(0.51)	(0.51)
HH head in business/wage	-0.17	-0.15	-0.35	-0.28	-0.17	-0.13	-0.34	-0.25
	(0.20)	(0.21)	(0.22)	(0.24)	(0.20)	(0.21)	(0.23)	(0.24)
Change in Incom (2006-10)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Income per-adult equiv.(ln)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Expenditue quintile	0.18**	0.13*	0.22***	0.18**	0.18**	0.12	0.22***	0.17**
	(0.07)	(0.07)	(0.08)	(0.08)	(0.08)	(0.07)	(0.08)	(0.08)
Wealth quintile	0.27**	0.30**	0.32**	0.37***	0.27**	0.31**	0.33**	0.38***
	(0.13)	(0.13)	(0.14)	(0.14)	(0.13)	(0.13)	(0.14)	(0.14)
Value of assets (ln)	0.22*	0.16	-0.01	-0.08	0.22**	0.17	-0.01	-0.08
	(0.11)	(0.11)	(0.12)	(0.12)	(0.11)	(0.11)	(0.12)	(0.12)
Livestock holding(TLU)	0.01	0.01	0.03	0.03	0.01	0.01	0.03	0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Land in ha(ln)	0.17	0.23	-0.06	-0.07	0.16	0.21	-0.04	-0.06
	(0.18)	(0.18)	(0.23)	(0.23)	(0.18)	(0.17)	(0.24)	(0.23)
Too much rain or flood	0.36	0.33	0.44	0.36	0.35	0.31	0.42	0.33
	(0.29)	(0.27)	(0.36)	(0.36)	(0.29)	(0.27)	(0.36)	(0.36)
Livestock diseases	-0.07	-0.11	0.16	0.14	-0.08	-0.14	0.14	0.12
	(0.25)	(0.24)	(0.42)	(0.40)	(0.25)	(0.24)	(0.43)	(0.40)
Increased input prices	-0.70***	-0.51*	-1.16***	-1.08***	-0.68**	-0.46	-1.14***	-1.04***
	(0.26)	(0.29)	(0.37)	(0.37)	(0.26)	(0.29)	(0.37)	(0.37)
Death or loss of livestock	-0.15	-0.09	0.04	0.06	-0.14	-0.06	0.05	0.08
	(0.31)	(0.29)	(0.42)	(0.39)	(0.31)	(0.29)	(0.42)	(0.40)
Illness of head/spouse	-0.22	-0.18	-0.16	-0.09	-0.21	-0.17	-0.13	-0.06
	(0.27)	(0.26)	(0.38)	(0.35)	(0.27)	(0.26)	(0.38)	(0.35)
Illness of other family	0.11	0.08	0.41	0.40	0.10	0.05	0.37	0.36
	(0.30)	(0.30)	(0.41)	(0.39)	(0.29)	(0.29)	(0.42)	(0.39)
Road (minutes)(ln)	0.04	0.04	0.11*	0.11**	0.05	0.05	0.11*	0.12**
	(0.04)	(0.04)	(0.06)	(0.06)	(0.04)	(0.04)	(0.06)	(0.06)
Market(minutes)(ln)	0.13	0.20**	-0.14	-0.10	0.14	0.22**	-0.12	-0.08
	(0.09)	(0.10)	(0.11)	(0.11)	(0.09)	(0.10)	(0.11)	(0.11)
Micro-finance (minutes)(ln)	0.29**	0.23*	0.08	0.05	0.30**	0.23*	0.08	0.05
	(0.13)	(0.13)	(0.16)	(0.16)	(0.13)	(0.13)	(0.16)	(0.16)
Locus of control		0.15		-0.07		0.05		-0.17
		(0.30)		(0.30)		(0.30)		(0.30)
Self-esteem		0.14		0.37		0.15		0.40
		(0.29)		(0.32)		(0.29)		(0.32)
Perceptions on causes of poverty		0.73***		0.36		0.71**		0.34
		(0.28)		(0.34)		(0.28)		(0.34)
Openess to change		0.11		0.20		0.16		0.26
		(0.19)		(0.21)		(0.18)		(0.21)
Envy		-0.06		0.10		-0.05		0.10

		(0.10)		(0.12)		(0.10)		(0.12)
Trust		-0.24**		-0.15		-0.26**		-0.16
		(0.10)		(0.12)		(0.10)		(0.12)
Exposure to media and information		0.18		0.50**		0.19		0.51**
		(0.16)		(0.20)		(0.16)		(0.20)
Travel outside residence		0.22		-0.02		0.19		-0.04
		(0.19)		(0.22)		(0.19)		(0.23)
Bako-Sire	0.95***	0.98***	0.25	0.35	1.02***	1.07***	0.35	0.45
	(0.29)	(0.30)	(0.32)	(0.33)	(0.30)	(0.30)	(0.32)	(0.32)
Hitossa-Tiyo	0.72***	0.74***	0.02	-0.08	0.76***	0.79***	0.04	-0.05
	(0.22)	(0.23)	(0.25)	(0.26)	(0.23)	(0.23)	(0.26)	(0.27)
Constant	-0.75	-0.08	5.57***	6.54***	-0.82	-0.14	5.29***	6.31***
	(1.14)	(1.19)	(1.30)	(1.31)	(1.13)	(1.19)	(1.27)	(1.29)
Observations	373	373	372	372	373	373	372	372
R-squared	0.30	0.34	0.21	0.25	0.30	0.35	0.21	0.24

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Table A5. Pairwise correlation amongst internal (or psychosocial) indicators

	Aspindex	LCi	SEi	OCi	Ei	Ti	SWi	TPi	Ri
Aspindex	1.0000								
LCi	0.2253	1.0000							
SEi	0.2639	0.5859	1.0000						
OCi	0.1242	0.2223	0.2894	1.0000					
Ei	0.0422	-0.0668	-0.0879	0.2014	1.0000				
Ti	0.1337	0.2038	0.1973	0.0358	-0.0431	1.0000			
SWi	0.2559	0.0300	0.0846	0.0575	0.0244	-0.1500	1.0000		
TPi	0.0383	0.0505	0.1183	0.1593	0.1036	0.1321	0.0377	1.0000	
Ri	0.0228	0.0892	0.0378	-0.0471	-0.0245	0.1594	-0.0254	-0.0411	1.0000

FOODSECURE
FOR POLICIES THAT MATTER

The FOODSECURE project in a nutshell

Title	FOODSECURE – Exploring the future of global food and nutrition security
Funding scheme	7th framework program, theme Socioeconomic sciences and the humanities
Type of project	Large-scale collaborative research project
Project Coordinator	Hans van Meijl (LEI Wageningen UR)
Scientific Coordinator	Joachim von Braun (ZEF, Center for Development Research, University of Bonn)
Duration	2012 - 2017 (60 months)

Short description

In the future, excessively high food prices may frequently reoccur, with severe impact on the poor and vulnerable. Given the long lead time of the social and technological solutions for a more stable food system, a long-term policy framework on global food and nutrition security is urgently needed.

The general objective of the FOODSECURE project is to design effective and sustainable strategies for assessing and addressing the challenges of food and nutrition security.

FOODSECURE provides a set of analytical instruments to experiment, analyse, and coordinate the effects of short and long term policies related to achieving food security.

FOODSECURE impact lies in the knowledge base to support EU policy makers and other stakeholders in the design of consistent, coherent, long-term policy strategies for improving food and nutrition security.

EU Contribution	€ 8 million
Research team	19 partners from 13 countries

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