The Power to Aspire
Aspirations and Women's Empowerment in Rural Myanmar*

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Abstract

The formation of aspirations depends on both social factors and personal circumstances and experiences. Socially determined aspirational reference points create behavioral incentives to improve one's standing but can also have a frustrating effect, motivating the hypothesis of a non-monotonic relationship between aspirations and forward-looking investments. Moreover, marginalized groups, such as women, facing societal constraints to the pursuit of their life ambitions may also engage in aspirations management by reducing aspirations to a level they can satisfy. In this paper, we draw on primary survey data collected in rural Myanmar to study these issues. First, we show positive associations between aspirations, wealth, and several measures of forward-looking expenditures (health, education, and energy). Behind these positive associations, we find evidence of a non-monotonic relationship between aspirations and investment that is consistent with an aspiration failure at the lower and higher ends of the distribution. Second, we provide novel evidence on the complex relationship between women's empowerment and aspirations. Specifically, we show that aspirations are an S-shape function of empowerment, where moderately under-empowered women engage in aspirations management and exhibit lower aspirations than women at the left-most extreme of the empowerment distribution. As empowerment grows, the relationship turns steeply positive. Overall, this provides a new perspective on how empowerment may constraint women's long-run outcomes.

Keywords: Aspirations; Empowerment; Psychological constraints.

JEL classifications: XXX.

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1 Introduction

A comprehensive understanding of people's difficulties in escaping poverty requires considering both external factors[1] and internal behavioral constraints (Angelucci and Bennett, 2024; Ashraf et al., 2022; Banerjee et al., 2020; Campos et al., 2017; Ghosal et al., 2022; John and Orkin, 2022; Kaur et al., 2025; McKelway, 2025). Among the latter, aspirations are receiving increased attention as a key constraint to the optimal take-up of fruitful investment or work opportunities. As forward-looking goals, aspirations affect people's perceptions of their life possibilities, have a motivating function, and direct attention and effort toward related activities (Locke and Latham, 2002). In line with this, previous studies have shown that raising aspirations can lead to higher educational investments and attainment (Beaman et al., 2012; Bernard et al., 2023; Carlana et al., 2022; Mukherjee, 2017; Riley, 2022), increase savings and productive investments (Bernard et al., 2023; Macours and Vakis, 2014; Seshan and Yang, 2014; Orkin et al., 2024), and improve a range of downstream economic outcomes (Orkin et al., 2024).

Several influential theoretical studies model the formation of aspirations as a socially determined process (Appadurai, 2004; Genicot and Ray, 2017, 2020). Individuals look through their "aspirations window" (Ray, 2006) to form comparisons with relevant peers and access information, thereby setting aspirational reference points. This phenomenon most intuitively creates a behavioral incentive to make investments to improve one's standing, but can also have a frustrating effect (Genicot and Ray, 2020). When socially induced aspirations are too high compared to what is feasible, an aspirations failure may result such that frustration or hopelessness lead to a drop in investment or effort (Appadurai, 2004). Various empirical studies show evidence of this non-monotonic relationship between aspirations and forward-looking behaviors: savings (Janzen et al., 2017), educational expenditures (Janzen et al., 2017; Ross, 2019), real estate investments (Bloem, 2021), and borrowing and business investments (McKenzie et al., 2022) may decline when aspirations become excessively high. Relatedly, Goux et al. (2017) describe how an intervention inducing more realistic aspirations among low-achieving students can improve dropout rates and reduce grade repetition. At excessively low aspiration levels, investments will also remain low, as the related gain may not be sufficient to motivate expending more effort. This insight motivates a complementary model of aspirations failure based on the personal failure to internalize the feedback loop between aspirations and effort (Dalton et al., 2016).

The calibration of aspirations also depends on personal circumstances and experiences. These may affect reference points directly through an anchoring to previous living standards or the internalization of successes or failures in the pursuit of earlier goals, or indirectly by restricting the aspirations window (i.e. the set of "similar, attainable" individuals) to specific subpopulations (Genicot and Ray, 2020). In connection with these effects, and given the potential psychological

[1] Examples of external economic constraints include limited access to credit (Burgess and Pande, 2005; de Mel et al., 2008; McKenzie and Woodruff, 2008) and insurance (Karlan et al., 2014), access to basic public services (Miguel and Kremer, 2004; Burgess et al., 2020), and social and political structures such as land rights and gender norms (Field, 2007; Field et al., 2010, 2021; Goldstein and Udry, 2008; Jayachandran, 2021).

cost of failing to reach one's goals (e.g. see McKenzie et al. (2022)), people may also engage in aspirations management by reducing aspirations to a level they can satisfy (Genicot and Ray, 2020). Marginalized groups facing societal constraints to the pursuit of their life ambitions may be particularly prone to this type of aspirations management. Especially in developing settings, women report lower freedom of choice and agency across many life domains (Jayachandran, 2015). This includes aspects that have direct implications for their ability to set and pursue ambitious goals, such as right or perceived ability to access financial services and engage in entrepreneurship, or participate in decision-making processes that affect them directly. These patterns raise important questions about how women's aspirations are formed and managed under agency constraints.

In this paper, we draw on baseline survey data from a randomized controlled trial (RCT) in Myanmar that evaluates a woman empowerment intervention to study these issues. Our analysis reveals that the relationship between empowerment and aspirations evolves according to an S-shape, where improvements in a women's empowerment index yield depressed aspirations at the lower end of the empowerment distribution before the slope changes sign and becomes progressively steeper as empowerment continues to grow. We also show positive associations between aspirations, wealth, and several measures of forward-looking expenditures (health, education, and energy). Behind these positive associations, we find evidence of a non-monotonic relationship between aspirations and investment that is consistent with an aspiration failure at the lower and higher ends of the distribution.

We contribute to a body of evidence studying aspirations and forward-looking behaviors, such as savings and investments in education and productive inputs (Beaman et al., 2012; Bernard et al., 2023; Carlana et al., 2022; Macours and Vakis, 2014; Orkin et al., 2024; Riley, 2022; Seshan and Yang, 2014). We follow some of this work in the use of income and education aspirations, and innovate by developing a new measure of energy aspirations based on the World Bank's Multi-Tier Framework (MTF) for energy access (ESMAP, 2020). Similarly to Orkin et al. (2024), we combine our multiple dimensions of aspirations into an index to create a measure reflecting a general aspirational mindset. Using this index, as well as its disaggregated components, we show the predictive power of aspirations not just for education spending, but also for health and energy expenditures, controlling for wealth and an additional set of individual, household, and village level controls. We also expand on prior tests of the hypothesized non-monotonic relationship between aspirations and (educational, housing, and business) investments (Bloem, 2021; Janzen et al., 2017; Ross, 2019), showing that it also holds for health and energy expenditures.

Moreover, this paper contributes to the sparse literature connecting aspirations and women's empowerment. While our analysis is broadly in line with the positive linear association between empowerment and aspirations described in Kosec et al. (2022) for women in Kyrgyzstan, the non-linearity between our (richer) measure of empowerment and aspirations sheds light on the complex relationship between these two concepts. Prior ethnographic work in Morocco has documented the existence of a dialectical relationship between empowerment and aspirations linked to sociocultural values and beliefs (Eger et al., 2018). However, we are the first to provide empirical

evidence on this tension, and relate the management of aspirations that may result from it at relatively lower levels of empowerment to social theories of aspirations in economics (Genicot and Ray, 2020).

The remainder of the paper is organized as follows. Section Section 2, describes the context of the study, the sample, and the data used. In Section 3.1, we present our findings on the relationship between aspirations and empowerment. In Section 3.3 we explore the associations of aspirations (and empowerment) with wealth and investment behaviors. Section 4 concludes.

2 Context and data

2.1 Myanmar

Myanmar is a country of around 58 million people (CIA, 2024). The country is highly ethnically diverse, being home to 135 recognized ethnic groups and 108 ethnolinguistic groups. Approximately 68% of the population is of the Bamar ethnic group, whose language, Burmese, is also the official language. Nearly 90% of the population practices Buddhism, the dominant religion in the country.

Myanmar gained independence from British colonial rule in 1947. Much of the country's history has been marked by internal ethnic conflict and military rule, leading to rising poverty and inequality, corruption, isolationist foreign policy, political suppression, and violent conflict between the junta and non-Bamar ethnic groups. The country signed a new constitution in 2008 and held elections in 2010, 2015, and 2020. However, armed conflict between ethnic militias and between militias and the government continued throughout this period. Tensions intensified in 2021, with a new military coup leading to widespread pro-democracy demonstrations across the country that were met by a brutal crackdown. A further escalation, and a potential turning point in the efforts to oust army leaders, occurred in October 2023 when various ethnic militias formed alliances and launched coordinated attacks against government forces (Rising, 2023).

The country is consistently listed as a Least Developed Country (LDC) (DESA, 2024)[2] and has the second lowest electrification rate in Asia (Ritchie et al., 2019), with stark differences in energy access between urban and rural areas (Pearl-Martinez, 2018). Moreover, a recent analysis of two nationally representative surveys showed that traditional gender attitudes and antidemocratic beliefs are prevalent, with a high level of correlation between the two (Htun and Jensenius, 2020).

2.2 Sample and data

The sample and data used for this study are from a baseline survey of an RCT in the states of Ayeyarwady and Tanintharyi in Myanmar.The survey was conducted prior to the design and im-

[2]The criteria for inclusion in the LDC category is to rank below $1,088 in Gross National Income per capita, 60 or below in the Human Assets Index, and 36 or above in the Economic Vulnerability Index. While Myanmar has met the criteria for graduating from this category prior to the re-escalation of the conflict, the UN's Committee for Development Policy decided to defer the decision to the next triennial review in 2027.

plementation of the experiment (see CITE RCT WORKING PAPER? for details about the broader experiment). Starting from a list of 106 rural villages composed of solar mini-grid and unelectrified villages, we constructed a sampling frame of 66 villages evenly split in terms of electricity access within each state (14 and 19 villages of each type in Ayeyarwady and Taninthary, respectively).[3] We initially conducted a village scoping survey to guide the creation of our sampling frame such that village characteristics between solar and unelectrified villages would be largely balanced within each state. We collected information on population size, road quality, proxies of social capital (e.g., number of active village committees) and wealth (e.g. housing type, landownership), livelihoods, and most common modes of transport.

Summary statistics for the data obtained from village representatives show the comparability between solar and unelectrified villages (Table A1). Although solar villages appear to have a higher number of active village committees, the difference is not significant when normalized by population. The only other difference comes from the prevalence of the various (non-mutually exclusive) types of work in Tanintharyi, where agricultural and casual labor is more common in unelectrified villages and more people travel outside of the village for work in solar villages.

We conducted the baseline survey in Spring 2023. We sampled 12 households in each unelectrified village and 23 households in solar mini-grid villages, yielding a total of 1155 households. The eligibility criteria were that (i) the primary cook woman should have a partner and (ii) the availability and willingness to participate in the study of both the woman and her male spouse. We collected data on demographics, time use, assets and income, energy use, financial access, expenditures, and women's psychological well-being and empowerment. We also collected baseline data on women aspirations in a supplement to the baseline survey conducted prior to the intervention.

2.3 Empowerment and aspiration measures

For the analysis below, we construct weighted average indices of empowerment and aspirations following Anderson (2008). The algorithm weights standardized items by the inverse of the covariance matrix of each family of outcomes and creates an index with mean zero and standard deviation one in the chosen reference group or, if none is chosen, in the full sample. This approach ensures that variables that are highly correlated with each other and/or have higher variance receive lower weight, thereby maximizing the information captured by the index. The use of this index can also help reduce random measurement error and increase the power of statistical tests (Anderson, 2008).

The women's empowerment section of the survey included modules on financial agency, business agency, agency over household assets, agency over income and spending decisions, and gender attitudes. We construct a sample sub-index for each of these agency dimensions and combine all sub-indices into an empowerment index. A detailed description of the construction of each

[3]We obtained a list of solar villages from a previous local partner, Smart Power Myanmar. To access unelectrified villages, we asked representatives from solar villages to provide us with contacts for unelectrified villages within the same or nearby village tracts.

sub-index can be found in Appendix B.

Table 1: Sample descriptive statistics by energy access

	Unelectrified μ	Solar coeff	p-value	N
Variables				
Age female respondent	41.425	1.736	0.020	1155
Age male spouse	44.541	1.300	0.106	1155
Education female respondent: middle	0.290	-0.022	0.498	1155
Education male respondent: middle	0.334	0.003	0.917	1155
Agriculture is a main source for main income earner	0.081	0.017	0.337	1155
Main income earner unemployed in last 12m	0.363	-0.062	0.183	1155
Any non-agri business by any Hh member	0.352	0.128	0.012	1136
Wealth index	0.110	0.081	0.439	1155
Total income (last 12m, in 100k's)	54.704	-4.970	0.318	1155
At least 1 woman in at least 1 social group	0.181	0.050	0.276	1155
Owns motor vehicle	0.402	0.035	0.612	1155
Total N of electronic devices	3.637	1.120	0.000	1155
Hh owns entertainment device (TV, radio, computer, tablet)	0.433	0.117	0.021	1155
Hh owns phone (cell or landline)	0.886	0.002	0.938	1155
Hh has electric/general lighting	0.797	0.076	0.163	1155
Hh owns air cooling device (fan, AC)	0.060	0.235	0.000	1155
Hh owns electric cooking appliance	0.042	0.346	0.000	1155
Aspirational MTF index	0.067	0.077	0.597	1062
Aspirations - Education years	11.399	0.056	0.881	948
Aspirations - Income	156.613	-14.038	0.563	1062
Aspirations index	0.016	0.013	0.922	1062
Gender norms index	0.160	0.082	0.461	1155
Household assets agency index	-0.045	0.211	0.117	1155
Financial agency index	0.152	0.091	0.345	1155
Business activity self-efficacy index	0.277	0.049	0.721	1155
Control over income decisions index	0.009	0.141	0.242	1155
Women's empowerment index	0.172	0.215	0.081	1155
Psychological wellbeing index	0.189	0.005	0.964	1155
Violence attitudes index	-0.306	-0.054	0.717	1155

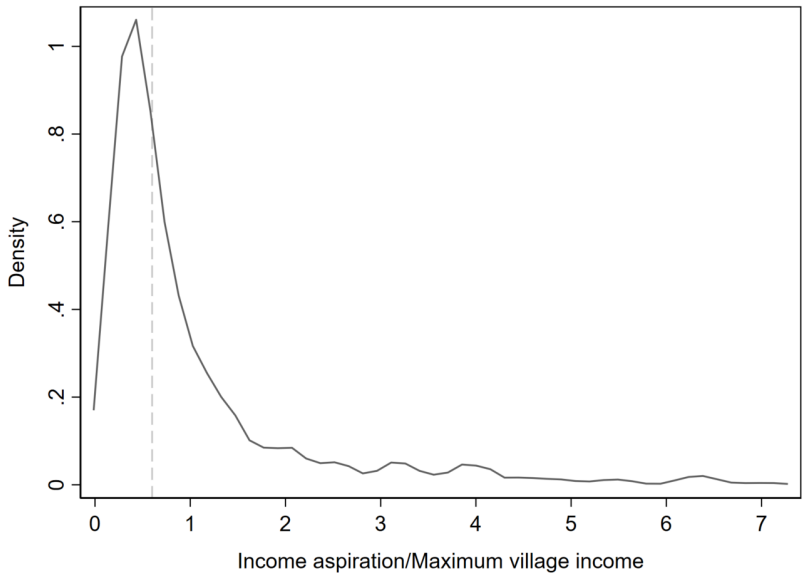
Notes: This table shows variables constructed from the village scoping data used to select the 66 study villages. All comparison tests are implemented by regressing the characteristic on a dummy for the level of energy access at the village level (solar or unelectrified) and a state fixed effect. Inference is performed using heteroskedasticity-robust standard errors, clustered by village.

We also collected data on aspirations along three dimensions. Specifically, we asked about women's aspirations for the level of income they would like the household to have in 5 years ("5 years from now, what is the level of annual income that you would like your family to have?"); the level of education that they would like their children to achieve ("What is the highest level of schooling that you would like your children (or grandchildren) to achieve? "); and the types of energy services that they would like to have access to in 5 years.[4] We also combine these aspirations measuresinto an aspirations index to measure broader changes in mindset. With regards to energy services, we focus on three domains: cooking, lighting, and appliances for income-generating ac-

[4]The aspiration measures for income and education follow the phrasing used in previous studies (Beaman et al., 2012; Janzen et al., 2017; Bernard et al., 2023; Orkin et al., 2024)). The aspirational questions for energy services are an innovation of this study.

tivities. Here, we asked participants to choose from (or add to) a comprehensive list of options for the provision of each energy service and converted the answers into "aspirational Multi-Tier Framework (MTF) tiers". For more information on our approach to the construction of energy aspirations, please see Appendix C.

Figure 1: Ratio of aspirational annual income to maximum annual income in the village



Notes: The figure above depicts shows the distribution for the ratio of aspirational annual income to highest annual income in the village. The dashed vertical line indicates the median ratio, equal to 0.6. The ratio data is bottom and top coded at the 2nd and 98th percentiles. The density is estimated with Epanechnikov kernels of optimal bandwidth.

2.4 Descriptive statistics

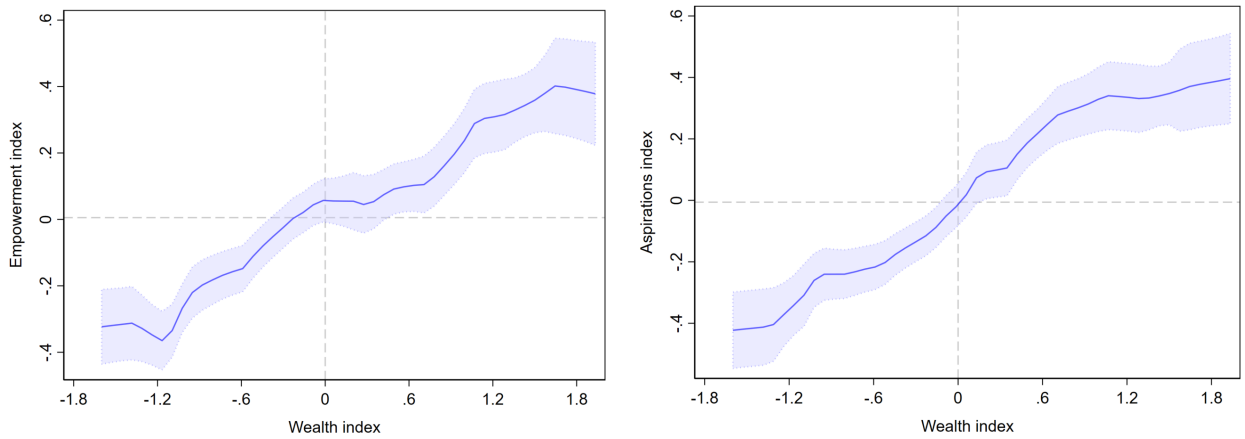
We present descriptive statistics by energy access (with unelectrified villages as the reference group) in Table 1. Households in unelectrified and solar villages are similar, with a few exceptions. The average woman in unelectrified villages is 41.4 years old and around 1.74 years younger (p=0.020) than women in solar villages. Male spouses in solar villages are also slightly older, but the difference is not significant. About 30% of women and 33% of men completed middle school in both types of villages. Business activity is significantly higher in solar villages, with about 48% operating some type of business relative to 35.2% in unelectrified villages (p=0.012). Household wealth and income are not significantly different.[5] As expected the total number of electronic devices owned is higher in solar villages (4.76 versus 3.64, p<0.000). These differences are explained by a higher likelihood of ownership of entertainment devices, cooling devices, and electronic cooking appliances. Aspirations are not significantly different between the two types of villages for any of the three dimensions measures, nor the overall aspirations index. While the same applies to each sub-index of empowerment, the overall measure of empowerment is 0.2 standard devia-

[5]The wealth index, also created according to Anderson (2008), includes information on the type of housing structure, the material of the wall and roof of the house, and the type of toilet used by the household.

tions higher (p=0.081) in solar villages, consistent with previous evidence linking empowerment and the access to energy services (Das et al., 2023). Average psychological well-being index and attitudes towards intimate partner violence are also balanced across levels of energy access.

It is also useful to benchmark our measures of aspirations to participant's personal circumstances and social environment. We do this by first relating the baseline annual income aspirations to the measure of income in the last 12 months. The aspirational increase is substantial but not unrealistic: the sample median ratio of aspirational to real income is 2.31, consistent with prior studies reporting this measure (Janzen et al., 2017; Orkin et al., 2024). Then, as another benchmarking exercise, we relate the aspirational income to the maximum reported annual income within each village. The 25th, median, and 75th percentile ratios are 0.35, 0.6, and 1.2, respectively. This is informative of the variation in aspirations windows within each village and shows that the well-off within each village are likely outside of the aspirations window for a large share of the sample. The full distribution for this ratio is shown in Figure 1 above.

Figure 2: Empowerment and aspiration by wealth



Notes: This figure shows the relationship between the wealth index and the aspirations and empowerment indices. Specifically, the graph is the result of estimating a local polynomial regression of degree zero of each index on wealth. All variables are winsorized at the 2nd and 98th percentiles. The local polynomial regression uses an Epanechnikov kernel with a rule-of-thumb bandwidth. The dotted lines indicate the sample mean of each index.

3 Aspirations, empowerment, wealth, and investments

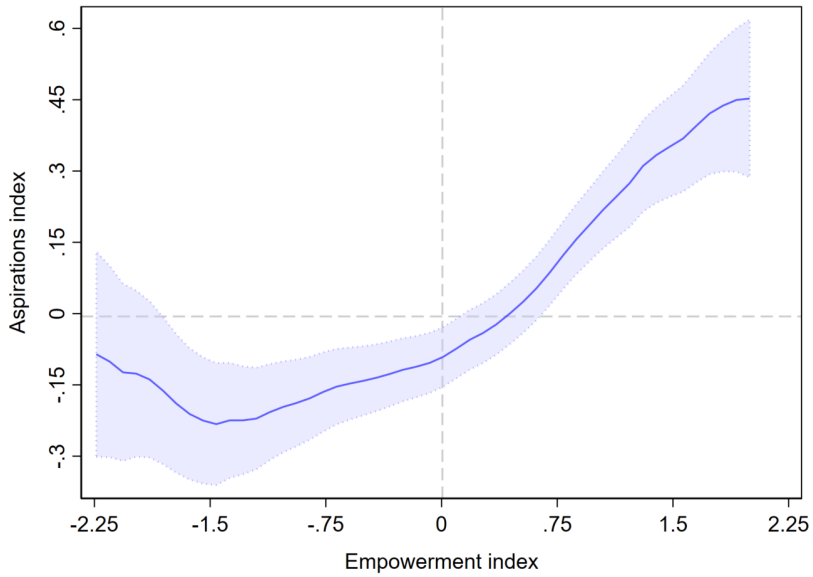
In Section 3.1 below, we explore (i) the relationship between wealth and aspirations, and wealth and empowerment; and (ii) the relationship between empowerment and aspirations. Next, Section 3.2 describes the relationships between psychological factors (aspirations, empowerment, and well-being) and consumption and investment behavior. Finally, in Section 3.3, we test the existence of a non-monotonic relationship between aspirations and our investment measures.

3.1 Wealth, empowerment, and aspirations

The right panel in Figure 2 above plots the relationship between the aspirations and wealth indices as estimated by a local polynomial regression of degree zero. The conditional local mean shows a monotonic, close to linear relationship between wealth and predicted aspirations. A noticeable result is that aspirations are above the full sample mean (indicated by the dashed y-line) only for individuals that have above average wealth (indicated by the dashed x-line). The left panel in Figure 2 shows the same local mean function for the women's empowerment index. Similar to aspirations, empowerment appears to be a strictly increasing, near linear function of wealth.[6] [7]

Next, Figure 3 shows the baseline relationship between women's empowerment and aspirations. While the relationship is not causal, it reveals a fresh perspective on how empowerment may constrain women's outcomes: long-term aspirations are an S-shaped function of empowerment.

Figure 3: Aspirations and empowerment



Notes: This figure shows the relationship between the index of woman empowerment and the aspirations indices. Specifically, the graph is the result of estimating a local polynomial regression of degree zero of aspirations on empowerment. Both indices are winsorized at the 2nd and 98th percentiles. The local polynomial regression uses an Epanechnikov kernel with a rule-of-thumb bandwidth. The dotted lines indicate the sample mean of each index.

As we move from left to right at the lower end of the empowerment distribution, aspirations

[6] A regression of wealth on aspirations, wealth, psychological well-being, and a set of additional controls (age, education, household size, the number of members under 18, a dummy indicator for whether the household is in an unelectrified village, and a dummy for whether the household lives in Tanintharyi) shows the stronger predictive power of aspirations. One standard deviation increase in the aspirations index is associated with a 0.223 standard deviation increase in the wealth index ($p<0.000$). This increase almost doubles the magnitude of the positive association between the empowerment index and wealth (0.115 standard deviation increase ($p=0.018$)). Psychological well-being appears to be less strongly associated with wealth, although the relationship has the expected positive sign.

[7] Figure A1 in Appendix A shows a similarly positive, but noisier, relationship between the aspirations and empowerment indices and household income for the 12 months preceding the baseline survey.

are progressively more depressed relative to the sample mean (shown by the dotted y-line). This pattern is consistent with the concept of aspirations management (Genicot and Ray, 2020). Moderately under-empowered women may choose to forego aspirations that are likely beyond reach given their circumstances in order to avoid utility reductions that would stem from a failure to reach their aspirational reference point. It is possible that this attempt to manage aspirations occurs through (consciously or unconsciously) decreasing their social contact with more empowered women, although we lack the network data to explore this hypothesis. As developed in Genicot and Ray (2020), individuals who would still fall short of achieving those reduced aspirations have no incentive to manage their aspirations, explaining the relatively higher aspirations for even less empowered women.

Another possible, complementary angle on this phenomenon comes from the idea of consolation prices (Genicot and Ray, 2020). Aspirations are a multi-dimensional concept that is both socially and culturally dependent, and traditional gender norms could be introducing additional aspirational targets (e.g., being a good housewife) that are inconsistent with empowerment gains. Faced with practical and social challenges to set and pursue ambitious goals that may challenge the social order, women may pursue such second-best sources of satisfaction at the cost of those goals. This dynamic could also block positive changes in empowerment and communities' perceptions of gender roles that could arise from women pursuing those goals, potentially contributing to an empowerment trap.

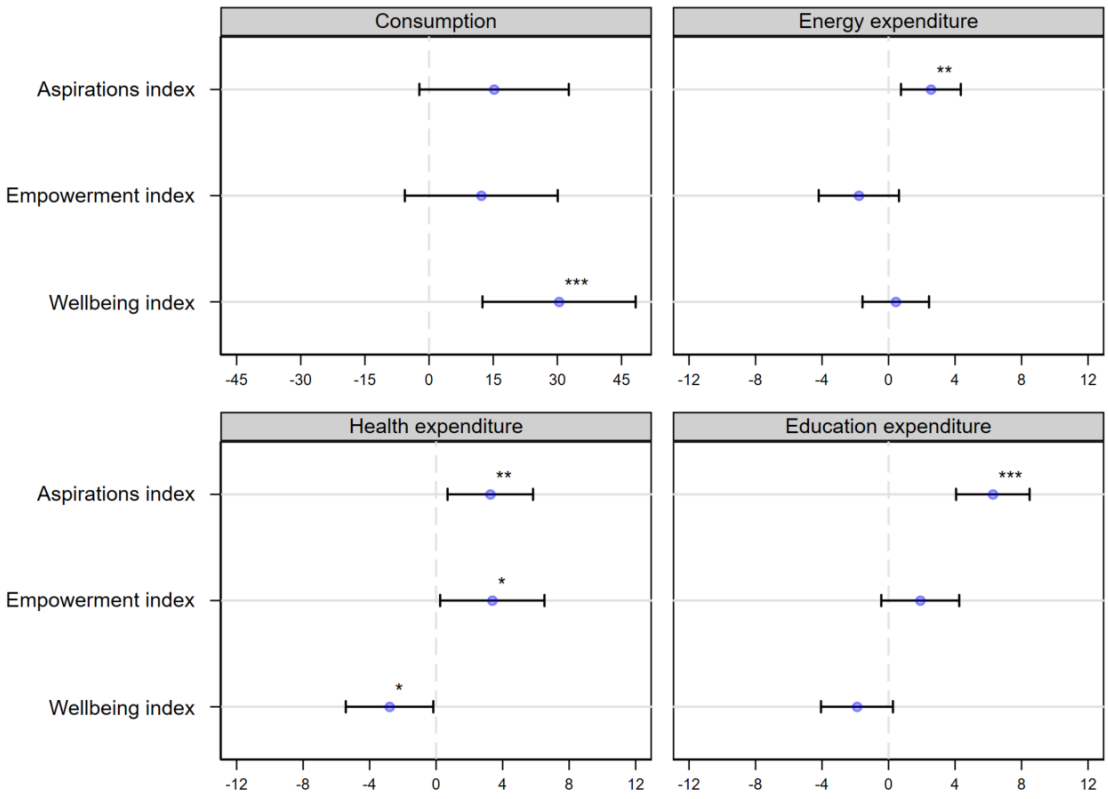
However, as we approach the mean of the empowerment index (shown by the dotted x-line), the slope of the relationship changes sign and becomes progressively steeper after crossing that threshold. This indicates that, as empowerment grows (e.g., along dimensions such financial or business agency), women feel and are more capable of successfully pursuing higher aspirations. Interestingly, only moderately empowered women show above-average aspirations. This strictly increasing relationship continues until we reach the top of the empowerment distribution, where the slope begins to decrease. This tapering suggests a satisficing effect for the most ambitious women, possibly linked to a combination of realism and the lack of more ambitious role models that could continue spurring aspirations.

3.2 Aspirations, empowerment, well-being, and expenditures

Next we explore the relationships between psychological factors (aspirations, empowerment, and psychological well-being) and four mutually-exclusive expenditure categories in the last 30 days, with a focus on aspirations. These are (i) consumption (food and other non-durable items), and three measures of forward-looking investment behavior: energy (electricity and clean fuels), health, and education expenditures. Although already shown for aspirations and empowerment through Figure 3, it is important to point out that, while related, the three psychological variables measure different concepts: the pairwise correlation is 0.18 between aspirations and empowerment, 0.03 between aspirations and psychological well-being, and 0.29 between empowerment and psychological well-being.

To investigate the associations of interest, we first regress each outcome on the index of aspirations, empowerment, and psychological health, including age, education, the household wealth index, household size, the number of members under 18, a dummy indicator for whether the household is in an unelectrified village, and a dummy for whether the household lives in Tanintharyi as additional controls. The addition of wealth as a control allows us to compare investment behavior by households with different psychological features while keeping wealth constant, following Orkin et al. (2024). After showing the results for the aggregate index capturing women's general aspirational mindset, we enrich this analysis by disaggregating the aspirations index into its three sub-components.

Figure 4: Psychological factors and investments



Notes: This figure shows coefficients and 90% confidence intervals from regressing wealth and two proxies for forward-looking investment behavior (health and education expenditures) on aspirations, empowerment and psychological wellbeing indices. All regressions include controls for age, education, household size, number of members under 18, and a dummy indicator for whether the household is in an unelectrified village. The two investment regressions also include the wealth index as a control and show coefficients in 1000s MMK. Sample size is between 1,062 and 1,053 depending on the wealth and investment measure. The confidence intervals are estimated using heteroskedasticity-robust standard errors, clustered at the village level.

In line with theoretical predictions, aspirations predict higher levels of consumption and forward looking investments (Figure 4). A one standard deviation increase in the aspiration index is linked to 2,547 MMK, 6,274 MMK, and 3,258 MMK higher expenditures on energy (p=0.021), education (p<0.000), and health (p=0.038), respectively. Aspirations also predict higher consumption, but the relationship is not significant (15,195 MMK, p=0.151). Empowerment also shows

positive associations with three out of the four expenditure measures, although the coefficients are generally smaller in magnitude and do not reach statistical significance. Surprisingly, the relationship has the opposite sign for energy expenditures (not significant). Overall, this is consistent with the argument that women tend to invest money on expenditure categories that improve the well-being of families (Duflo, 2003, 2012; Thomas, 1990, 1993). The association between psychological well-being and investments is negative for the less regular spending categories (i.e. education (p=0.149) and health (p=0.080)), which we attribute to the possibility that these may be correlated with shocks to household finances and higher stress. On the other hand, higher consumption is strongly positively correlated with consumption (30,397 MMK, p=0.006).

When the aspirations index is disaggregated into its three components (income, education, energy services), we generally see expected patterns between domain-specific aspirations and the variables of interest (see Figure A2 in Appendix A).[8] First, only education aspirations predict educational investments: an additional year of aspired educational attainment for one's children is linked to 2,960 MMK (p<0.000) higher spending on education. Education aspirations are also positively linked to consumption (4,760, p=0.075). Similarly, energy aspirations are positively associated with energy expenditures: one standard deviation increase in the MTF aspirational index is linked to 2,780 MMK (p=0.018) more spent on energy. Health expenditures are also positively, though not signicantly, related to the three dimensions of aspirations.

3.3 Non-monotonic relationship between aspirations and investment

As others before us (for example, see Janzen et al. (2017), Orkin et al. (2024)), we also use this data to test the theory-driven hypothesis of a non-monotonic relationship between aspirations and investment linked to two types of aspirations failure. First, when aspirations are too low, there is no incentive to invest to reach those standards. Second, when aspirations grow too large a frustrated response emerges that also leaves little incentive to invest, as even after significant effort and money spent one would remain too far from the goal for that investment to have been worthwhile (Ray, 2006; Genicot and Ray, 2020).

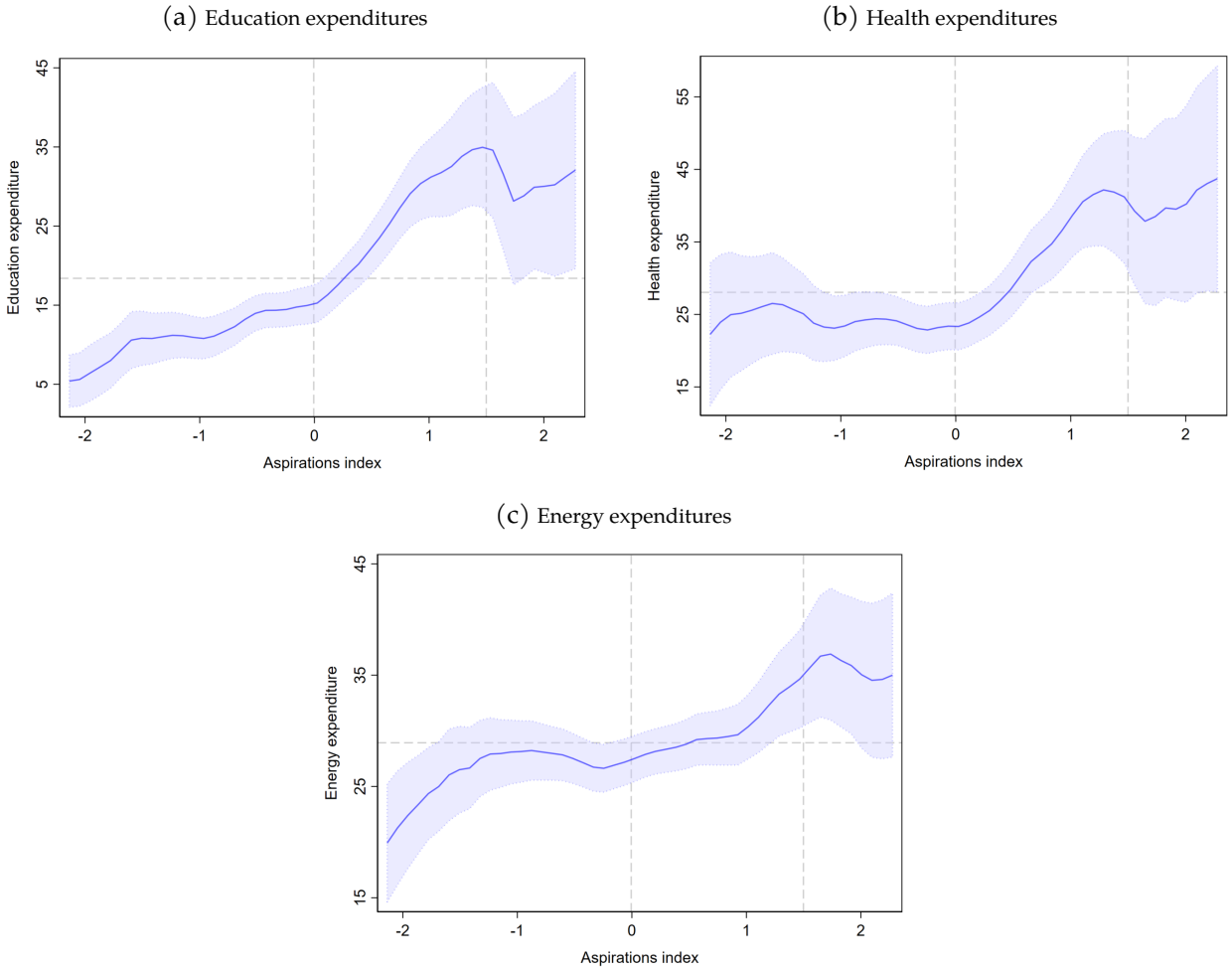
We focus the remainder of this analysis on the three measures of investment (energy, health, and education), using the overall aspirations index to test this hypothesis.[9] To do so, we first estimate local polynomial regressions of degree zero of each investment measure on the aspirations index to non-parametrically track the evolution of investment relative to aspirations. Second, we test the significance of the non-linearities in this relationship through spline regressions.

The results of the non-parametric estimation show strong suggestive evidence of a non-monotonic

[8] All dimensions of aspirations are also strongly and positively linked with the wealth index.

[9] For education and health investments, the relationship between spending and the overall aspirations index is stronger (the coefficient is larger and the corresponding level of significance is at least as high) relative to the three sub-components of aspirations, including education aspirations for education spending. For energy spending, the coefficient on the MTF aspirational index is only marginally higher and the p-value marginally lower than for the overall aspirations index. Overall, we take this as evidence that there are both informational and efficiency gains from combining the three dimensions of aspirations.

Figure 5: Non-parametric relationship between aspirations and investment



Notes: Each panel shows the relationship between the aspirations index and the corresponding investment measure as estimated by a local polynomial regression of degree zero. All variables are winsorized at the 2nd and 98th percentiles. The local polynomial regression uses an Epanechnikov kernel with a rule-of-thumb bandwidth. The dotted lines intersecting at the center of the graph indicate the sample mean of each variable, while the right vertical dotted line indicates the 95th percentile of the aspirations distribution.

relationship between aspirations and investment, with some nuances across the three investment measures (Figure 5). Panel (a) shows evidence of the hypothesized inverse-U relationship between aspirations and education investment. Spending on children's education grows steadily but slowly below the aspirations mean before steeply increasing to the right of the vertical dotted line. This strictly increasing relationship continues until the top 5% of the aspirations distribution, where we see a clear turning point. Panel (b) shows a similar pattern for health expenditures, although in this case spending is much less responsive to aspirations to the left of the sample mean and the turning point occurs around the 93rd percentile. The pattern for energy expenditures is also inverse-U-shaped (panel (c)). However, there are turning points both below and above the dotted line indicating mean of energy spending. Given the strong positive relationship between aspirations and wealth, we hypothesize that this pattern may be indicative of the difficulties households face in adopting more and higher powered appliances. At lower levels of aspirations, households

may focus on owning lighting, cooling, or entertainment devices. Higher aspirers may not only have more of all types of electric devices, but show a higher jump in the number of productive appliances with higher power ratings. This is consistent with the data between the two groups: The ratio for entertainment, lighting, cooling, and even total appliances ranges from 1.28 to 1.33, but the ratio for electric cooking devices and other productive appliances is 1.75 and 2.31, respectively.

Running restricted cubic spline regressions, with the same set of controls as those used in Section 3.2 and with knots at the 5th, 27.5th, 50th, 72.5th and 95th percentiles of the aspirations distribution,[10] further shows the importance of these non-linearities.[11] The non-linear spline terms are jointly significant for education ($p<0.000$), health ($p=0.022$), and energy ($p=0.055$) expenditures, providing additional evidence of the non-monotonic relationship between aspirations and all three expenditure categories. Looking at the relative contributions of each spline basis function to the model fit, only the two basis functions for the segments between the 50th and 72.5th, and the 72.5th and 95th percentiles (corresponding to -0.007, 0.539, and 1.498 aspirations index values, respectively) are significant for education ($p=0.062$ for the former, $p=0.046$ for the latter) and health expenditures ($p=0.088$ for the former, $p=0.070$ for the latter). For energy, the contributions of the basis functions are more balanced, but only the one capturing the curvature between the 5th and 27.5th percentiles (corresponding to -1.648 and -.567 aspirations index values, respectively) is significant ($p=0.019$).

4 Conclusions

This paper uses baseline data from a RCT in Myanmar to study two sets of non-linear relationships: between aspirations and three different measures of forward-looking investments (education, health, and energy), and between aspirations and empowerment.

Consistent with prior empirical and theoretical studies, we find evidence that internal behavioral constraints like aspirations can keep individuals from making worthwhile investments that could help them escape poverty. First, we show the positive relation between aspirations and in-

[10] The placement of 5 knots is a common choice to capture most non-linear patterns without overfitting and their placement at those percentiles follows the recommendation in Harrell (2015), a main reference for STATA's *mkspline* command.

[11] Orkin et al. (2024) explore this hypothesis using spline regressions and fail to identify a non-monotonic relationship. Janzen et al. (2017) do not use splines and instead complement their non-parametric analysis by running Lind and Mehlum (2010)'s test for an inverse-U shape. However, this test assumes a quadratic form and, as Janzen et al. (2017) acknowledge themselves, more flexible approaches may be better suited to modeling potentially complex non-monotonic relationships such as those between aspirations and investment. Lind and Mehlum (2010)'s approach uses the data and the required quadratic specification to determine whether to test against a U-shape or an inverse U-shape. Given the shape of our bi-variate distributions of aspirations and expenditures, applying this method to the full sample (i) produces tests against an inverse U-shape and fails to reject the null of monotone or U-shape for energy expenditures; and (ii) tests against a U-shape a fails to reject the null of monotone or inverse U-shape for both health and education expenditures. If we instead restrict the test to the upper half of the distribution for health and education investments, we identify an inverse U-shape for health (Sasabuchi $p=0.069$) and education (Sasabuchi $p=0.055$). For energy expenditures, given the two turning points, we do this exercise for each half of the distribution. The test identifies an inverse U-shape for the lower half (Sasabuchi $p=0.026$) and fails to reject the null of monotone or an inverse U-shape for the upper half.

vestments conditional on household wealth and a broader set of woman, household, and village controls. We do this using both an index of general aspirational mindset (combining aspirations for income, children's education, and energy services), as well as its disaggregated components. The latter approach shows the expected patterns between domain-specific aspirations and the corresponding expenditure category (e.g., only education aspirations predict education expenditures and only energy aspirations predict energy spending). However, the associations with the overall index are stronger (or comparable) for all categories of spending, indicating the added value of this broader measure. Second, we provide evidence in support of a non-monotonic relationship between aspirations and expenditures in line with the theory-based hypothesis of aspiration failure at the lower and higher ends of the distribution using local polynomials and spline regressions.

Moreover, we provide novel evidence on the complex relationship between women's empowerment and aspirations. Specifically, we show that aspirations are an S-shape function of empowerment. Moderately under-empowered women engage in aspirations management (Genicot and Ray, 2020) and exhibit lower aspirations than women at the left-most extreme of the empowerment distribution. As empowerment grows, the relationship quickly turns steeply positive until reaching the right extreme of the distribution, suggesting a satisficing effect. Overall, this provides a new angle on how empowerment may constraint women's long-run outcomes and highlights the importance of expanding woman agency, particularly across domains that will significantly expand their perceived and real capacity to set and pursue meaningful goals.

References

Anderson, Michael L., "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects," *Journal of the American Statistical Association*, December 2008, *103* (484), 1481–1495.

Angelucci, Manuela and Daniel Bennett, "The Economic Impact of Depression Treatment in India: Evidence from Community-Based Provision of Pharmacotherapy," *American Economic Review*, January 2024, *114* (1), 169–198.

Appadurai, Arjun, "The Capacity to Aspire: Culture and the Terms of Recognition," in V Rao and M Walton, eds., *Culture and Public Action*, Palo Alto, California: Stanford University Press, 2004, pp. 59–84.

Ashraf, Nava, Gharad Bryan, Alexia Delfino, Emily Holmes, Leonardo Iacovone, and Ashley Pople, "Learning to See the World's Opportunities: The Impact of Imagery on Entrepreneurial Success," Working Paper, London School of Economics & Political Science 2022.

Banerjee, Abhijit, Dean Karlan, Hannah Trachtman, and Christopher R Udry, "Does Poverty Change Labor Supply? Evidence from Multiple Income Effects and 115,579 Bags," Working Paper 27314, National Bureau of Economic Research June 2020.

Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova, "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India," *Science*, February 2012, *335* (6068), 582–586.

Bernard, T., S. Dercon, S. Orkin, G. Schinaia, and A. Seyoum Taffesse, "The Future in Mind: Aspirations and Long-Term Outcomes in Rural Ethiopia," 2023.

Bhatia, Mikul and Niki Angelou, "Beyond Connections: Energy Access Redefined," Technical Report 008/15, World Bank, Washington, DC 2015.

Bloem, Jeffrey R., "Aspirations and investments in rural Myanmar," *The Journal of Economic Inequality*, December 2021, *19* (4), 727–752.

Burgess, Robin and Rohini Pande, "Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment," *American Economic Review*, June 2005, *95* (3), 780–795.

_ , Michael Greenstone, Nicholas Ryan, and Anant Sudarshan, "The Consequences of Treating Electricity as a Right," *Journal of Economic Perspectives*, February 2020, *34* (1), 145–169.

Campos, Francisco, Michael Frese, Markus Goldstein, Leonardo Iacovone, Hillary C. Johnson, David McKenzie, and Mona Mensmann, "Teaching Personal Initiative Beats Traditional Training in Boosting Small Business in West Africa," *Science*, September 2017, *357* (6357), 1287–1290.

Carlana, Michela, Eliana La Ferrara, and Paolo Pinotti, "Goals and Gaps: Educational Careers of Immigrant Children," *Econometrica*, 2022, *90* (1), 1–29.

CIA, "Burma Country Summary," *The World Factbook 2024 - Burma Country Summary*, 2024.

Dalton, Patricio S., Sayantan Ghosal, and Anandi Mani, "Poverty and Aspirations Failure," *The Economic Journal*, February 2016, *126* (590), 165–188.

Das, Ipsita, Thomas Klug, P. P. Krishnapriya, Victoria Plutshack, Rajah Saparapa, Stephanie Scott, Erin Sills, Njeri Kara, Subhrendu K. Pattanayak, and Marc Jeuland, "Frameworks, Methods and Evidence Connecting Modern Domestic Energy Services and Gender Empowerment," *Nature Energy*, April 2023, pp. 1–15.

de Mel, Suresh, David McKenzie, and Christopher Woodruff, "Returns to Capital in Microenterprises: Evidence from a Field Experiment*," *The Quarterly Journal of Economics*, November 2008, *123* (4), 1329–1372.

DESA, UN, "Least Developed Countries (LDCs)," 2024.

Duflo, Esther, "Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa," *The World Bank Economic Review*, June 2003, *17* (1), 1–25.

_ , "Women Empowerment and Economic Development," *Journal of Economic Literature*, December 2012, *50* (4), 1051–1079.

Eger, Claudia, Graham Miller, and Caroline Scarles, "Gender and Capacity Building: A Multi-Layered Study of Empowerment," *World Development*, June 2018, *106*, 207–219.

ESMAP, "The State of Access to Modern Energy Cooking Services," Technical Report, World Bank, Washington, DC 2020.

Field, Erica, "Entitled to Work: Urban Property Rights and Labor Supply in Peru*," *The Quarterly Journal of Economics*, November 2007, *122* (4), 1561–1602.

_ **, Rohini Pande, Natalia Rigol, Simone Schaner, and Charity Troyer Moore**, "On Her Own Account: How Strengthening Women's Financial Control Impacts Labor Supply and Gender Norms," *American Economic Review*, July 2021, *111* (7), 2342–2375.

_ **, Seema Jayachandran, and Rohini Pande**, "Do Traditional Institutions Constrain Female Entrepreneurship? A Field Experiment on Business Training in India," *American Economic Review*, May 2010, *100* (2), 125–129.

Genicot, Garance and Debraj Ray, "Aspirations and Inequality," *Econometrica*, 2017, *85* (2), 489–519.

_ **and** _ , "Aspirations and Economic Behavior," *Annual Review of Economics*, 2020, *12* (1), 715–746.

Ghosal, Sayantan, Smarajit Jana, Anandi Mani, Sandip Mitra, and Sanchari Roy, "Sex Workers, Stigma, and Self-Image: Evidence from Kolkata Brothels," *The Review of Economics and Statistics*, May 2022, *104* (3), 431–448.

Goldstein, Markus and Christopher Udry, "The Profits of Power: Land Rights and Agricultural Investment in Ghana," *Journal of Political Economy*, December 2008, *116* (6), 981–1022.

Goux, Dominique, Marc Gurgand, and Eric Maurin, "Adjusting Your Dreams? High School Plans and Dropout Behaviour," *The Economic Journal*, June 2017, *127* (602), 1025–1046.

Harrell, Frank E., *Regression Modeling Strategies: With Applications to Linear Models, Logistic and Ordinal Regression, and Survival Analysis* Springer Series in Statistics, Cham: Springer International Publishing, 2015.

Htun, Mala and Francesca R. Jensenius, "Political Change, Women's Rights, and Public Opinion on Gender Equality in Myanmar," *The European Journal of Development Research*, April 2020, *32* (2), 457–481.

Janzen, Sarah A., Nicholas Magnan, Sudhindra Sharma, and William M. Thompson, "Aspirations Failure and Formation in Rural Nepal," *Journal of Economic Behavior & Organization*, July 2017, *139*, 1–25.

Jayachandran, Seema, "The Roots of Gender Inequality in Developing Countries," *Annual Review of Economics*, August 2015, *7* (Volume 7, 2015), 63–88.

_ , "Social Norms as a Barrier to Women's Employment in Developing Countries," *IMF Economic Review*, September 2021, *69* (3), 576–595.

John, Anett and Kate Orkin, "Can Simple Psychological Interventions Increase Preventive Health Investment?," *Journal of the European Economic Association*, June 2022, *20* (3), 1001–1047.

Karlan, Dean, Robert Osei, Isaac Osei-Akoto, and Christopher Udry, "Agricultural Decisions after Relaxing Credit and Risk Constraints *," *The Quarterly Journal of Economics*, May 2014, *129* (2), 597–652.

Kaur, Supreet, Sendhil Mullainathan, Suanna Oh, and Frank Schilbach, "Do Financial Concerns Make Workers Less Productive?*," *The Quarterly Journal of Economics*, February 2025, *140* (1), 635–689.

Kosec, Katrina, Kamiljon Akramov, Bakhrom Mirkasimov, Jie Song, and Hongdi Zhao, "Aspirations and Women's Empowerment: Evidence from Kyrgyzstan," *Economics of Transition and Institutional Change*, 2022, *30* (1), 101–134.

Krishnapriya, P. P., Maya Chandrasekaran, Marc Jeuland, and Subhrendu K. Pattanayak, "Do Improved Cookstoves Save Time and Improve Gender Outcomes? Evidence from Six Developing Countries," *Energy Economics*, October 2021, *102*, 105456.

Lind, Jo Thori and Halvor Mehlum, "With or Without U? The Appropriate Test for a U-Shaped Relationship," *Oxford Bulletin of Economics and Statistics*, 2010, *72* (1), 109–118.

Locke, Edwin A. and Gary P. Latham, "Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-Year Odyssey," *American Psychologist*, 2002, *57* (9), 705–717.

Macours, Karen and Renos Vakis, "Changing Households' Investment Behaviour through Social Interactions with Local Leaders: Evidence from a Randomised Transfer Programme," *The Economic Journal*, May 2014, *124* (576), 607–633.

McKelway, Madeline, "Women's Self-Efficacy and Economic Outcomes: Experimental Evidence from India," 2025.

McKenzie, David, Aakash Mohpal, and Dean Yang, "Aspirations and Financial Decisions: Experimental Evidence from the Philippines," *Journal of Development Economics*, May 2022, *156*, 102846.

_ **and Christopher Woodruff**, "Experimental Evidence on Returns to Capital and Access to Finance in Mexico," *The World Bank Economic Review*, January 2008, *22* (3), 457–482.

Miguel, Edward and Michael Kremer, "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities," *Econometrica*, 2004, *72* (1), 159–217.

Mukherjee, Priya, "The Effects of Social Identity on Aspirations and Learning Outcomes: A Field Experiment in India," 2017.

Mullen, Chris and Neal Wade, "Appliance Data and Multi-Tier Framework for Household Electrical Load Modelling," 2020.

Orkin, Kate, Robert Garlick, Mahreen Mahmud, Richard Sedlmayr, Johannes Haushofer, and Stefan Dercon, "Aspiring to a Better Future: Can a Simple Psychological Intervention Reduce Poverty?," 2024.

Pearl-Martinez, Rebecca, "Levers of Change: How Global Trends Impact Gender Equality and Social Inclusion in Access to Sustainable Energy," Technical Report, Sustainable Energy for All 2018.

Ray, Debraj, "Aspirations, Poverty and Economic Change," in "Understanding Poverty," Oxford: Oxford University Press, 2006, pp. 409–421.

Riley, Emma, "Role Models in Movies: The Impact of Queen of Katwe on Students' Educational Attainment," *The Review of Economics and Statistics*, January 2022, pp. 1–48.

Rising, David, "Myanmar's Military Is Losing Ground against Coordinated Nationwide Attacks, Buoying Opposition Hopes," *AP News*, December 2023.

Ritchie, Hannah, Pablo Rosado, and Max Roser, "Access to Energy," *Our World in Data*, 2019. https://ourworldindata.org/energy-access.

Ross, Phillip H., "Occupation Aspirations, Education Investment, and Cognitive Outcomes: Evidence from Indian Adolescents," *World Development*, November 2019, *123*, 104613.

Seshan, Ganesh and Dean Yang, "Motivating Migrants: A Field Experiment on Financial Decision-Making in Transnational Households," *Journal of Development Economics*, May 2014, *108*, 119–127.

Tenenbaum, Bernard, Chris Greacen, Tilak Siyambalapitiya, and James Knuckles, "From the Bottom Up: How Small Power Producers and Mini-Grids Can Deliver Electrification and Renewable Energy in Africa," Technical Report, World Bank, Washington, DC 2014.

Thomas, Duncan, "Intra-Household Resource Allocation: An Inferential Approach," *The Journal of Human Resources*, 1990, *25* (4), 635–664.

__ , "The Distribution of Income and Expenditure within the Household," *Annales d'Économie et de Statistique*, 1993, (29), 109–135.

USAID, "Multi-Tier Framework For Measuring Household Electricity Access," https://www.usaid.gov/energy/mini-grids/economics/cost-effectiveness/tiers-of-service 2023.

Ethics statement: .

Conflict of interest statement: The authors declare that they have no conflicts of interest.

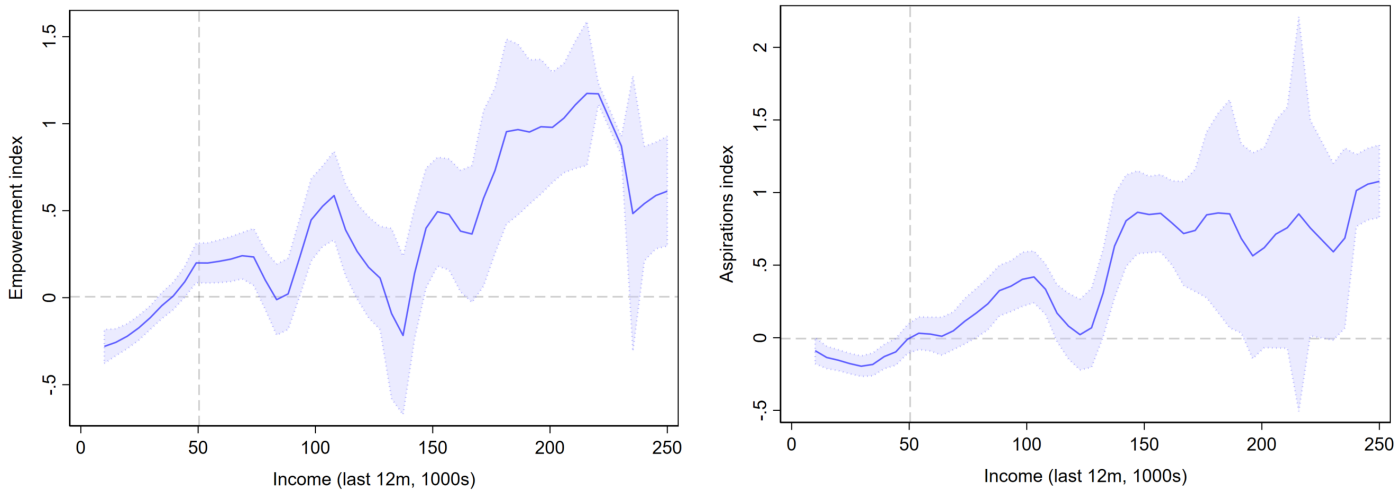
Appendix A - Additional tables and figures

Table A1: Village level comparison by energy access

	Tanintharyi				Ayeyarwady			
	Solar	No solar	Diff	p-value	Solar	No solar	Diff	p-value
Outcomes								
N of people	1847.32	1522.79	324.53	0.328	1526.14	1469.64	56.50	0.839
N of households	371.32	324.00	47.32	0.473	348.43	357.29	-8.86	0.888
Main road - dirt or gravel	0.11	0.16	-0.05	0.642	0.50	0.50	0.00	1.000
N of public spaces	4.68	3.58	1.11	0.151	5.21	4.79	0.43	0.620
N of public spaces/N of ppl	0.23	0.24	-0.01	0.829	0.31	0.28	0.02	0.633
N of active committees	2.37	1.42	0.95	0.014	2.57	1.86	0.71	0.008
N of active committees/N of ppl	0.25	0.16	0.09	0.175	0.28	0.20	0.07	0.188
N of schools (any)	1.37	1.05	0.32	0.125	0.93	1.00	-0.07	0.668
N of schools (any)/N Hh	0.33	0.29	0.05	0.461	0.21	0.21	-0.01	0.904
Landless share >= 50	0.21	0.16	0.05	0.686	0.86	0.71	0.14	0.376
Main house (wooden, bamboo, hut)	0.95	0.89	0.05	0.560	1.00	1.00	0.00	1.000
Agriculture is a main livelihood	0.84	1.00	-0.16	0.083	0.93	1.00	-0.07	0.336
Fishery is a main livelihood	0.89	0.84	0.05	0.642	0.50	0.29	0.21	0.262
Casual labor is main livelihood	0.32	0.74	-0.42	0.008	0.86	0.86	0.00	1.000
Migrant work is main livelihood	0.21	0.00	0.21	0.042	0.00	0.00	0.00	1.000
Within-village transport: walking	0.53	0.84	-0.32	0.038	0.93	1.00	-0.07	0.336
Within-village transport: mbike	0.47	0.16	0.32	0.038	0.07	0.00	0.07	0.336
Between-village transport: mbike	0.63	0.53	0.11	0.524	0.93	1.00	-0.07	0.336
Between-village transport: mboat	0.37	0.47	-0.11	0.524	0.07	0.00	0.07	0.336

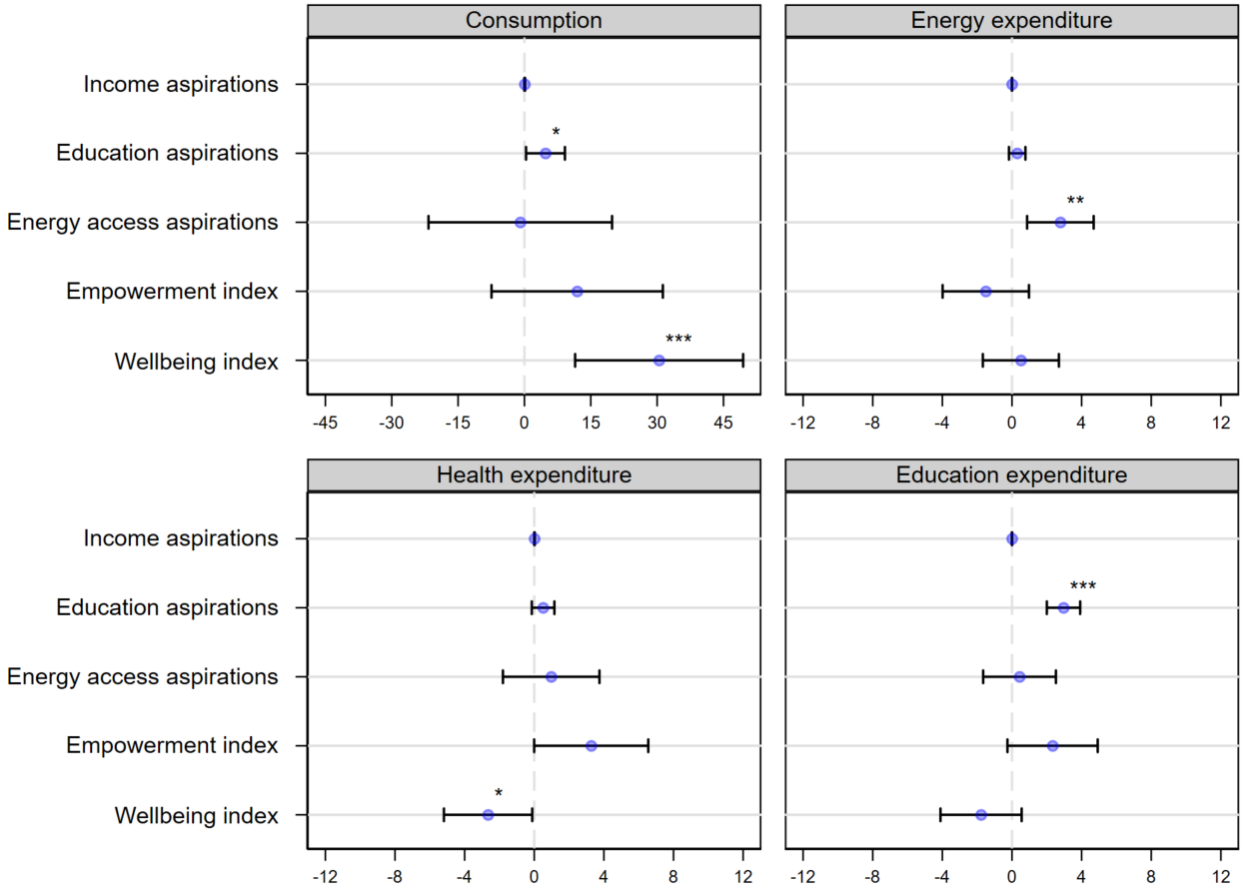
Notes: This table shows variables constructed from the village scoping data used to select the 66 study villages.

Figure A1: Empowerment and aspiration by income



Notes: This figure shows the relationship between annual income and the aspirations and empowerment indices as estimated by a local polynomial regression of degree zero of each index on wealth. All variables are winsorized at the 2nd and 98th percentiles. The local regression uses an Epanechnikov kernel with a rule-of-thumb bandwidth. The dotted lines indicate the sample mean of each variable.

Figure A2: Psychological factors, wealth, and investments



Notes: This figure shows coefficients and 90% confidence intervals from regressing wealth and two proxies for forward-looking investment behavior (health and education expenditures) on the three dimensions of aspirations, empowerment and psychological wellbeing indices. All regressions include controls for age, education, household size, number of members under 18, and a dummy indicator for whether the household is in an unelectrified village. The two investment regressions also include the wealth index as a control and show coefficients in 1000s MMK. For all regressions, the sample size is 948 - lower than in Figure 4 due to the higher number of missing values for education aspirations, which are missing for child-less households. The confidence intervals are estimated using heteroskedasticity-robust standard errors, clustered at the village level.

Appendix B - Construction of empowerment index

Subindices

1. The financial agency index uses questions about the woman's access and ownership of financial assets. The index dummy variable equal to 1 if the woman owns a bank account, cash for small purchases, savings, credit or loans, and mobile money account, and use these variables to construct a financial agency index.

2. The business agency index uses questions that ask the woman to rank from 1 (very low or no ability) to 5 (very high ability) her perceived ability to conduct the following business activities: (i) run her own business; (ii) manage financial accounts; (iii) bargain to buy at low prices; (iv) bargain to sell at high prices; (v) collect debt; (vi) identify new business opportunities; (vii) saving for future needs; and (viii) hire and manage others to work for the household.

3. The index over households assets uses a series of dummy variables equal to 1 if the woman (i) has her own cellphone; (ii) is the joint or sole owner of the household home; (iii) is the joint or sole owner of any household large durable assets (e.g., refrigerator, TV); (iv) is the joint or sole owner of any household small durable assets (e.g., radio, cookware); (v) is the joint or sole owner of agricultural land; (vi) is the joint or sole owner of other non-farm land; (vii) is the joint or sole owner of means of transportation (e.g. bike, motorcycle); (viii) is the joint or sole owner of business related assets.

4. To construct the agency over income decisions index, we use a series of dummies equal to 1 if (i) she handles the money to buy food for the household; (ii) buy and sell at the market without permission; (iii) is part of the decision making on how to spend her husband's income; (iv) makes her own health decisions, particularly for reproductive health; (v) decides alone when to visit her family; (vi) and alone or jointly makes decisions regarding the wellbeing of children.

5. The gender norms index uses questions that ask the woman to rank from 1 (strongly disagree) to 5 (strongly agree) her level of agreement with the following nine statements: (i) "women are treated equally relative to men"; (ii) "A wife should obey her husband, even if she disagrees with him"; (iii) "Women should not be community leaders"; (iv) "A woman should be able to choose her own friends, even if her husband disapproves"; (v) "A man should decide how to spend his free time on his own"; (vi) "A woman should decide how to spend her free time on her own"; (vii) "If a woman has power in the household, it means she is taking power away from her husband"; (viii) "Girls' education is as important as boys'"; and "Men should participate in child-rearing and household chores rather than leaving it all to the women". Any statements for which a higher level of agreement indicates a worse outcome are recoded to the opposite direction before entering the index.

Appendix C - Construction of energy aspirations

The Multi-Tier Framework (MTF) is a framework developed by the Energy Sector Management Assistance Program (ESMAP) with the goal of creating a harmonized measure of energy access that could be used to track progress with respect to SDG7 worldwide. The MTF moves away from binary measures of energy access. It adopts a multidimensional approach that considers the adequacy, availability, reliability, quality, convenience, legality, and safety of energy access to produce a tiered ranking ranging from 0 for no access to 5 for high quality access (Bhatia and Angelou, 2015). Subsequent work has refined the MTF rating to adapt it to different components of energy access (e.g. cooking, lighting, household appliances) or energy systems.

In a report by ESMAP (2020) on the state of access to modern energy cooking services (MECS), the MTF tiers for MECS are defined by considering (a) exposure to pollutants; (b) efficiency; (c) convenience (as measured by the time spent collecting or purchasing fuel and stove preparation); (d) safety; affordability (as measured by share of budget spent on fuel); and (e) availability or readiness of use. In our survey, we ask participants about the type of cook stove and cooking fuel they would like to use as their primary cooking method 5 years from now. To create an aspirational MTF rating for access to MECS, we first follow the criteria of Krishnapriya et al. (2021) to classify answers into five categories of cook stove (traditional cook stove, simple improved cook stove (ICS) using firewood, simple ICS using charcoal, coal, peat etc., advanced ICS using kerosene or pellets, clean ICS using electricity, biogas, liquefied petroleum gas, piped natural gas, or solar power), using Myanmar-specific definitions. We then disaggregate these categories further to re-classify them into MTF tiers. We define a Tier 0 cook stove as a traditional cook stove, i.e. any self-made stove (including stone stoves) using firewood (or other combustion fuels); a Tier 1 cook stove as a simple ICS using firewood; a Tier 2 cook stove as a simple ICS using charcoal, coal briquettes, peat etc.; a Tier 3 cook stove as an advanced ICS; a Tier 4 cook stove as a clean ICS using liquefied petroleum gas (LPG); and a Tier 5 cook stove as an clean ICS using electricity.

We also asked participants about the electronic devices that they would like to use for income-generating activities 5 years from now. We use the insights developed by Tenenbaum et al. (2014), and summarized in USAID (2023), to categorize the answers to this question into aspirational MTF rating for appliances for income-generating activities. For example, reporting no appliances is defined as Tier 0. In determining the aspirational tier for all other answers, we take the conservative approach of assigning to each appliance the minimum tier to which that appliance could belong (tiers can vary for a given appliance depending on the number of hours of supply overall and in the evening or peak available capacity in Watts required). For instance, a mobile phone (and the ability to charge it) is classified as Tier 1; a sewing machine or a television are classified as Tier 2; a rice cooker or food processor are classified as Tier 3; a water pump or a refrigerator are classified as Tier 4; and air conditioning, or welding or woodshop tools are classified as Tier 5.

Finally, for lighting, we ask participants about the type of lighting they would like to use and how long they would like to be able to have the light on at night 5 years from now. We once again use the information from specialized reports (Mullen and Wade, 2020; USAID, 2023), to classify these answers into an aspirational MTF rating for lighting. Specifically, I follow Figure A3 below focusing on whether the lighting solution is task or multi-point general lighting, the typical supply technology, and the number of hours of available lighting at night. We define Tier 0 as having less than one hour of available light at night; Tier 1 as using task lighting

such as candles, kerosene lamps, a solar powered light with no battery, or having multi-point general lighting (powered by the mini-grid, the main grid, a battery, a generator, or some other electricity source) for at least one hour and less than two hours at night; Tier 2 as using a rechargeable lamp, battery powered light bulb, a solar lamp, or having multi-point general lighting (powered by the mini-grid, the main grid, a battery, a generator, or some other electricity source) for at least two and less than three hours at night; Tier 3 as having multi-point general lighting (powered by the mini-grid, the main grid, a battery, a generator, or some other electricity source) for at least three and less than four hours at night; Tier 4 as having multi-point general lighting (powered by the mini-grid, the main grid, a battery, a generator, or some other electricity source) for at least four and less than eight hours at night; and Tier 5 as having multi-point general lighting (powered by the mini-grid, the main grid, a battery, a generator, or some other electricity source) for more than eight hours at night.

Figure A3: Minimum requirements of power capacity, services, and durations by Tier with appliances

		Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Peak capacity	Power ratings in W or daily Wh		min 3 W	min 50 W	min 200 W	min 800 W	min 2 kW
			min 12 Wh	min 200 Wh	min 1.0 kWh	min 3.4 kWh	min 8.2 kWh
	OR Services		Lighting of 1,000 lmhr/day	Electrical lighting, air circulation, TV and phone charging are possible			
Descriptive	Supported appliances		Very low-power	Low-power	Medium-power	High-power	Very high-power
	Typical supply technologies		Solar lantern	Rechargeable battery, SHS	Medium SHS, fossil fuel based generator, mini-grid	Large SHS, fossil fuel based generator, mini-grid, central grid	Large fossil based generator, central grid
Typical household electric appliances	Lighting		Task lighting	Multi-point general lighting			
Availability (duration)	Hours per day		min 4 hrs	min 4 hrs	min 8 hrs	min 16 hrs	min 23 hrs
	Hours per evening		min 1 hr	min 2 hrs	min 3 hrs	min 4 hrs	min 4 hrs

Notes: The figure above depicts our approach to converting aspirational responses about lighting access respondents would like to have the light 5 years from now, following guidelines outlined in Mullen and Wade (2020)'s technical report.