Aspirations and Investments in Rural Myanmar*

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Abstract

The aspirations gap is the distance between an individual's current and aspired standard of livelihood. A growing theoretical literature predicts that aspirations both "too close" and "too far" away from current standards lead to less investment in the future. These theories imply an inverted U-shaped relationship between the aspirations gap and investments. I test this hypothesis and extend existing empirical findings to rural Myanmar by examining the relationship between the income aspirations gap and real estate investment choices. I find that income aspirations that are ahead, but not too far ahead, of current income levels provide the best incentive for investment. Such a relationship between the income aspirations gap and financial investments suggests the presence of psychological constraints to poverty alleviation and development in rural Myanmar. Supplemental analyses examine (i) heterogeneity in the inverted U-shaped relationship and (ii) the formation of aspirations.

Keywords: Aspirations, Investments, Inequality, Poverty, Peer-effects

JEL Codes: D19, O18, R11, E71

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"[A] period of fast growth in a poor country can put significant stress on the system which it must cope with. Growth can also unleash powerful aspirations as well as frustrations..."

- Ghatak et al. (2014); quoted in Genicot and Ray (2017) "Aspirations and Inequality," *Econometrica*

1 Introduction

Within many countries around the world economic inequality is growing. This is particularly the case for lower income countries, many of whom enjoy fast-growing economies but have increasingly unequal populations (Page and Pande 2018). Myanmar represents an illustrative example of this phenomena. In 2015, Myanmar was the fastest growing economy in the world—with a projected growth rate of 8.6 percent—and would soon elect its first civilian president since 1962. At the same time, over 32 percent of Myanmar's population—roughly 17 million people—lived below the national poverty line (Asian Development Bank 2018).

The topic of inequality represents a classic literature in economics.[1] A subset of this literature considers potential psychological constraints to investment and asset accumulation that could generate poverty traps and widen within-country economic inequality (Appadurai 2004; Ray 2006; Banerjee and Mullainathan 2010; Mookherjee et al. 2010; Bogliacino and Ortoleva 2013; Bernheim et al. 2015; Besley 2016; Dalton et al. 2016; Genicot and Ray 2017; Janzen et al. 2017; Lybbert and Wydick 2018). Among these is a model of socially determined aspirations and individual incentives to invest in the future (Genicot and Ray 2017). The central idea of this model is that swift economic growth in a poor country can have competing consequences. It can either: (i) inspire powerful aspirations and incentives for investment or (ii) lead to frustration and despair.

A core concept in the model of Genicot and Ray (2017) is the "aspirations gap" or the distance between an individual's current standard of living and their aspired standard of living. According to this theory, the aspirations gap drives the relationship between aspirations and investments in the future. Too small of a gap and an individual has very little incentive to forgo present-day consumption to achieve their aspiration—leading to "aspiration failure." Too large of a gap and the necessary investment in the future takes away too much present-day consumption—leading to "aspiration frustration." This results in a theoretical prediction of an inverted U-shaped relationship between the aspirations gap and investment choices.

In this paper I aim to test this theory by examining the question: Do psychological constraints

[1] See, e.g., Becker and Tomes 1979; Loury 1982; Freeman 1996; Mookerjee and Ray 2003; and Piketty 2014.

limit investment in the future? Specifically, I test the hypothesis of an inverted U-shaped relationship between the income aspirations gap and investment choices (Ray 2006; Genicot and Ray 2017). Using data collected in rural Mon State, Myanmar—a coastal region with close proximity to Thailand—I find empirical evidence supporting theories predicting an inverted U-shaped relationship. Specifically, I find that income aspirations that are ahead, but not too far ahead, of the current level of income provide the best incentives for real estate investment—measured as expenditures of household construction materials and land.

A growing literature empirically tests the relationship between aspirations and future-oriented behavior in the context of poverty. Many of these studies examine the relationship between aspirations and the acquisition of human capital through education (Beaman et al. 2012; Dercon and Singh 2013; Bernard et al. 2014; Macours and Vakis 2014; Pasquier-Doumer and Brandon 2015; and Ross 2017; Janzen et al. 2017; Favara 2017; Garcia et al. 2019; and Rizzica 2020). A subset also examine savings as an alternative form of future oriented behavior (Bernard et al. 2014; Janzen et al. 2017). Thus, a direct test of the relationship between income aspirations and investment choices is still relatively understudied in this literature to date.[2] Moreover, only a small number of studies explicitly test for an inverted U-shaped relationship between aspirations and future-oriented behavior and the evidence so far is mixed. Although initial investigations showed no such relationship (Pasquier-Doumer and Brandon 2015), more resent studies find evidence that supports theories predicting an inverted U-shaped relationship (Janzen et al. 2017; Ross 2017). Therefore, my results add to this literature in two important ways. First, I directly test the relationship between income aspirations and investment choices. Second, I aim to improve the credibility of the empirical estimation of the inverted U-shaped relationship.

Credibly identifying the relationship between aspirations and individual behavior presents a difficult empirical problem. Most fundamentally, socially determined aspirations are endogenous. Therefore, it may seem natural to consider an experimental study that exogenously influences an individual's aspirations (see, e.g., Bernard et al. 2014). Ethical issues, however, complicate the feasibility of such an empirical approach. If the theory of the inverted U-shaped relationship is taken seriously, then exogenously increasing an individual's aspirations via the use of experimental

[2]One exception is the work of Galiani et al. (2018), who examine the impact of a household improvement project in slums across multiple countries. In the experiment implemented by Galiani et al. (2018), slum-dwelling households are randomly selected to receive household improvements. The authors find that aspirations for non-beneficiary neighboring households increase, but that these increased aspirations did not lead to systematic investment in household improvements. One possible explanation of this finding is the presence of an inverted U-shaped relationship between aspirations and financial investments in real estate.

variation implemented by a researcher could make the individual worse off (La Ferrara 2019). If the experiment increased aspirations so that investment in the future or some other future-oriented behavior began to decrease, then the individual could be harmed due to their participation in the experiment. This being the case, the best way forward to understand the relationship between the aspirations gap and future-oriented behavior may be using econometric methods with observational data, despite the associated limitations.

The primary contribution of this paper is the implementation of a number of empirical strategies investigating the credibility of the observed inverted U-shaped relationship. The first strategy is to control for relevant confounding covariates. This strategy incorporates factors included in analysis by Janzen et al. (2017), such as education, age, gender, income level, current migration status of household members, and the respondent's influence over household decisions. I find that the inverted U-shaped relationship is robust in specifications controlling for these observable characteristics. The second strategy is to use an alternative measure of aspirations and an alternative measure of expenditures in the regression analysis. While the alternative measure of aspirations serves as a robustness test, the alternative measure of expenditures serves as a falsification test on the core findings. I find that the inverted U-shaped relationship is robust to the alternative measure of aspirations and does not persist in the falsification test using an alternative measure of expenditures. Finally, the third strategy uses the insights of Altonji et al. (2005) and methods of Oster (2017) to calculate how much greater the influence of unobservable factors would need to be, relative to observable factors, to completely explain away the inverted U-shaped relationship. I find that it is unlikely that the inverted U-shaped relationship can be fully attributed to unobserved heterogeneity.

This paper also provides a methodological contribution on the quantitative measurement of aspirations. Previous research on the measurement of aspirations suggests asking respondents the following question: "What level of some dimension—say, for example, income—would you *like to achieve in your life*?" (Bernard and Taffessee 2014). Serious concern about the ability of this question to elicit legitimate measures of aspirations persists. After all, what would provoke anyone to answer any finite number? In the present study I also ask an alternative question to measure aspirations: "What level of some dimension—again, for example, income—do you *need to feel financially secure*?"[3] This study is the first to have the benefit of two measures of income aspirations. Comparing results using each of these measures (i.e., "wants" vs. "needs") allows for

[3]This is similar to the phrasing of questions measuring aspirations in Knight and Gunatilaka (2012).

a discussion of important questions regarding the quantitative measurement of aspirations.

I also explore heterogeneity in the inverted U-shaped relationship. Heterogeneity is important in the context of the relationship between aspirations and future-oriented behavior for several reasons. First, and perhaps foremost, aspirations are inherently endogenous to a variety of social and economic factors. Therefore, it is possible that this relationship in general is driven by some factor of omitted heterogeneity. Second, comparative static analysis by Janzen et al. (2017) suggests that the "turning point," at which a larger aspirations gap no longer inspires more investment in the future, is increasing in wealth. I find evidence that supports this prediction. Specifically, those with higher present levels of income have a higher turning point in their aspirations gap. Third, an implication of the inverted U-shaped relationship between aspirations and future-oriented behavior is that aspirations by themselves may not always be sufficient in encouraging future-oriented behavior. Instead, aspirations must be accompanied by attitudes and beliefs in one's own ability to achieve a given aspiration (Lybbert and Wydick 2018; Wuepper and Lybbert 2016; Rizzica 2020). I find that the strength of the inverted U-shaped relationship may partly depend on attitudes and beliefs in one's own ability to achieve aspirations.

Finally, I investigate the formation of aspirations. Foundational work by Ray (2006) suggests that individuals build their aspirations by observing other "similar" people who exist in an individual's "cognitive neighborhood." I find that aspirations measured in terms of "wants" are positively correlated with peers, and most strongly with peers of a similar income level. Additionally, aspirations measured in terms of "needs" are negatively correlated with peers, and most strongly with peers of a similar age and gender. These findings can help inform the design of policies and programs aiming to leverage aspirations, promoting psychological spillover effects (Carter 2016).

This paper continues, in the next section, with a brief discussion summarizing current theoretical predictions about how the aspirations gap relates to investment choices. Section three presents the empirical framework of this analysis. This includes a discussion of the data, the study context, and the empirical strategies used to understand the relationship between income aspirations and investments. In the fourth section, I present and discuss the empirical results. Section five presents an exploratory investigation of heterogeneity in the inverted U-shaped relationship. Section six investigates the role of peers in the formation of aspirations. Finally, section seven concludes.

2 Theoretical Framework

For the purpose of motivating the subsequent empirical analysis I discuss the core concepts and mechanics of the model presented in Genicot and Ray (2017), and summarized in Janzen et al. (2017). This model provides a testable prediction: an inverted U-shaped relationship between aspirations for income and investment. In this section, I only make minor adaptations to this model and comment on the context of rural Myanmar. Interested readers should consult the work of Genicot and Ray (2017) and Janzen et al. (2017) for additional detail and explanation of this model.

Genicot and Ray (2017) begin by defining an inter-temporal utility function that models aspirations as a reference point (see, e.g., Kahneman and Tversky 1979). In this framework, when an aspiration is achieved or when an individual's outcomes reach some reference point, the individual realizes a "bonus" in utility. Janzen et al. (2017) summarize this aspirations-based utility function as follows. An individual maximizes utility over two time periods, period 1 and period 2. The individual is endowed with wealth (y_1), which can be either consumed (c) or invested in the future (k) with a positive return (ρ).

In rural Mon State, Myanmar, one of the most salient ways to invest in the future is by purchasing land or making improvements to a household structure.[4] This reality is due to two reasons. First, land—and more specifically a land title ("Form 7")—is a necessary requirement to access formal forms of credit in Myanmar. Therefore it follows that expenditures in land can be realistically modeled with a positive return ρ. Second, Mon State is a coastal region which routinely suffers from exposure to extreme wind, rain, and flooding in the monsoon season. In qualitative focus group interviews, many respondents raised the point that building a household structure that can withstand exposure to extreme wealth presents a positive long-run payoff. This long-run payoff is captured in the model through ρ.

In period 1, the individual derives utility solely from consumption. In period 2, the individual derives utility from income net of any costs of repair (r). These costs of repair should be understood as necessary costs associated with living in an area that is annually affected by extreme weather events. Therefore, in period 2, the individual has $y_2 = \rho(k - r)$ in wealth. Utility in period 2 is derived by whether net income falls short, meets, or exceeds aspirations. If the level of net income is higher than the individual's aspirations, the individual experiences a "bonus" in utility, denoted

[4] This detail is discussed in more detail and qualitatively validated in Section 3.1.2.

as w.[5] The individual then maximizes the following utility function, where β serves as a discount factor between periods 1 and 2:

$$u(c,k) = v_1[c] + \beta\Big[v_2[\rho(k-r)] + w \times I[\rho(k-r) \geq a]\Big] \tag{1}$$

Following both Genicot and Ray (2017) and Janzen et al. (2017), I assume that v_1 and v_2 are both smooth, increasing, and strictly concave. The cost of investment is defined in terms of the opportunity cost of present consumption. Following Genicot and Ray (2017) and Janzen et al. (2017), I assume that the cost function is both concave and invariant to the amount by which outcomes exceed or fall short of aspirations. Therefore, the cost function is defined as follows:

$$C(k) = v_1[y_1] - v_1[y_1 - (k-r)] \tag{2}$$

With this inter-temporal utility function and cost function, the individual decides how much to consume now (c) and how much to invest in the future (k). Due to the "bonus" in utility realized by the individual when aspirations are achieved, the benefits of investing in the future are defined by the following piece-wise function:

$$B(k) = \begin{cases} \beta\Big[v_2[\rho(k-r)]\Big] & \text{if} \quad \rho(k-r) = y_2 < a \\ \beta\Big[v_2[\rho(k-r)] + w\Big] & \text{if} \quad \rho(k-r) = y_2 \geq a \end{cases} \tag{3}$$

Equation (3) suggests that there is a discontinuity in the benefits the individual receives from investment in the future. On either side of some level of the aspirations gap (a) there is at most one local solution that maximizes the benefits. When the aspirations gap (a) is close to zero, then it is likely that the chosen level of investment and corresponding net income ($k-r$) exceeds the aspirations gap. In this case, aspirations are "satisfied" and their is a positive relationship between the aspirations gap and investment. When the aspirations gap (a) is relatively high, then it is likely that the aspirations gap exceeds net income ($k-r$). In this case, aspirations are "frustrated," there is a sudden decrease in the level of investment, and any further increase in the aspirations gap (a) will not influence investment choices. The point at which aspirations switch from being "satisfied" to being "frustrated" is the turning point ($\hat{a}$) in an individual's aspirations gap. This leads directly

[5]Note that Genicot and Ray (2017) treat this "bonus" utility as a function of the amount by which outcomes exceed and aspiration. Janzen et al. (2017) simplify this detail by assuming that the "bonus" is constant and does not depend on the difference between outcomes and aspirations. For simplicity, I follow the approach of Janzen et al. (2017). This detail is merely cosmetic and does not influence the core prediction of the model.

to a paraphrased version of Proposition 2 from Genicot and Ray (2017):

> "There is a unique [turning point] value of aspirations below which aspirations are satisfied, and above which they are frustrated. As long as aspirations are satisfied, chosen [investment] grows with aspirations. Once aspirations are frustrated, chosen [investment] becomes insensitive to aspirations."

Janzen et al. (2017) go on to show that if every individual within some population had the same turning point value in their aspirations gap, then an empirical investigation of the relationship between the aspirations gap and investment choices would show an upward sloping relationship for aspiration gap values below $\hat{a}$, a discontinuous drop at $\hat{a}$, and a flat relationship for aspiration gap values above $\hat{a}$. However, since each individual within a given population likely holds a different turning point value in their aspirations gap ($\hat{a}$), this conceptual framework predicts an inverted U-shaped relationship between the aspirations gap and investment choices. As the aspirations gap (a) increases so does the level of investment. At some point, however, an increasing share of the population exceeds their turning point values ($\hat{a}$) and as the aspirations gap increases investment on average across the population decreases. Therefore, empirical analysis should reveal an inverted U-shape relationship.

3 Empirical Framework

The empirical analysis in this paper tests the predictions of the model developed by Genicot and Ray (2017) and summarized in the previous section. As the aspirations gap increases so do investments in the future up until some point, whereafter as the aspirations gap grows investment decreases. This theory is tested in the context of rural Mon State, Myanmar.

3.1 Data and Context

Modern-day rural Myanmar presents a relevant setting to study the relationship between aspirations and investment choices. After almost 50 years of violent civil wars and economic mismanagement, Myanmar is now transitioning into a period of swift economic growth associated with far-reaching political and economic reforms. At the same time, a relatively large share of the population live in poverty and economic inequality is growing. This study takes place in Mon State, a region in the south-east of Myanmar, with close proximity to Thailand. Mon State is primarily comprised

Table 1: Summary Statistics

	Hope Survey			MSRHS		
	Mean	Standard Deviation	Obs.	Mean	Standard Deviation	Obs.
IHS land and materials expenditure[a]	3.53	6.12	482	3.93	6.38	1,637
Binary land and materials expenditure	0.26	0.44	482	0.29	0.45	1,637
IHS ceremonies and banquets expenditure[a]	5.25	6.78	482	5.35	6.81	1,637
Binary ceremonies and banquets expenditure	0.39	0.49	482	0.39	0.49	1,637
Income aspirations	663,937	1,249,137	491			
Income aspirations gap	0.55	0.28	482			
Squared income aspirations gap	0.37	0.29	482			
Alt. Income aspirations[b]	547,229	4,509,522	498			
Alt. Income aspirations gap[b]	0.39	0.37	488			
Alt. squared income aspirations gap[b]	0.28	0.37	488			
Current monthly income	403,951	3,399,548	490			
Years of education (respondent)	4.60	3.43	503	4.32	2.65	1,059
Age (respondent)	46.07	14.10	465	51.64	14.83	1,625
Household has migrant	0.47	0.50	482	0.45	0.50	1,637
Respondent controls spending	0.57	0.50	482	0.62	0.49	1,637

Notes: [a] IHS refers to the inverse hyperbolic sine, a function that is "log-like" but is able to handle zeros (Burbidge, Magee, and Robb (1988). [b] The alternative income aspirations refers to income aspirations measured in terms of "needs" rather than "wants".

of the Mon people who have their own unique history of political oppression and marginalization. Considering this history, this context represents a near ideal setting to test for the existence of psychological constraints in the presence of economic inequality.

The data for this empirical analysis were collected in two waves. The first wave is the Mon State Rural Household Survey (MSRHS). This survey was implemented between May and June 2015 and collected information on agricultural production and household livelihoods. The MSRHS consists of 1,637 households within 143 enumeration areas and is representative of rural Mon State (Hein et al. 2016). The second wave is the Hope Survey. This survey was implemented in March of 2016 and collected information on aspirations and other psychological characteristics. This survey consists of a random subset of 48 enumeration areas from the first wave and includes of 503 households (Bloem et al. 2018).[6] Table 1 shows descriptive statistics of the key variables used in this paper.

3.1.1 Measuring Aspirations and the Aspirations Gap

Before describing the specific details of the measurement of aspirations, it is helpful to carefully define "aspirations" as a concept. Aspirations have three distinctive features (Bernard and Taffesse

[6]Both of these surveys were implemented through the Feed the Future Innovation Lab for Food Security Policy with collaboration from Michigan State University and the International Food Policy Research Institute (IFPRI) with funding from the United States Agency for International Development (USAID). Local implementation assistance was provided by the Centre for Economic and Social Development, a think-tank and research organization based in Yangon, Myanmar.

2014). They are (i) *future oriented* in the sense that they cannot be immediately achieved, (ii) *motivators* in that they are goals that require present-day effort or sacrifices to achieve, and (iii) *specific* but contribute to a multi-dimensional life outcome. Additionally, aspirations are distinct from expectations. An expectation, even subjectively measured, is defined as an outcome an individual considers to be relatively likely. An individual living in poverty may not expect to escape poverty due to the observed experiences of most others within their social network, nevertheless this person may aspire to escape poverty. It is the relationship between this aspiration, more specifically the gap between this aspiration and current level of livelihood, and real estate investment choices that I investigate in this paper.

In the present study, income aspirations—and the associated income aspiration gap—are measured using a method closely related to that described by Bernard and Taffesse (2014). That is, respondents are asked the following questions:

(1) What level of income do you currently earn each month?
(2) What level of income would you like to achieve in your life?

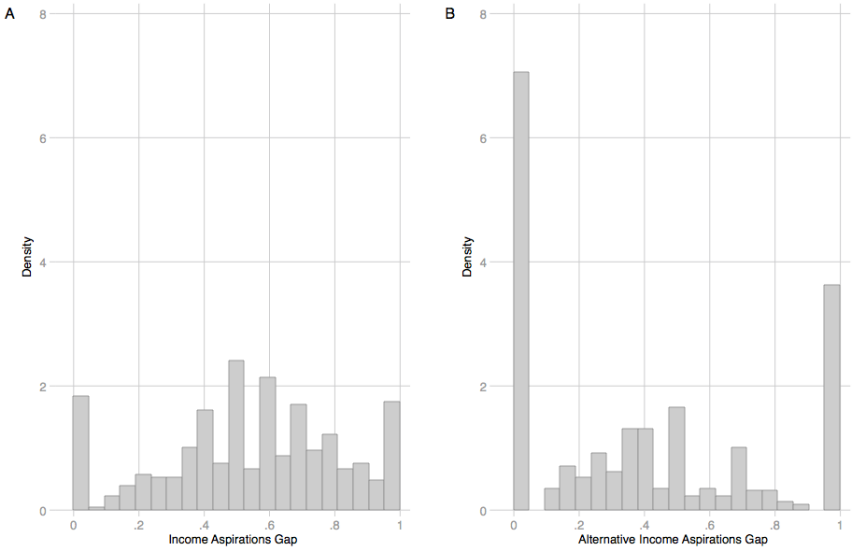
While preparing to implement the Hope Survey, concerns emerged that the local population may be reluctant to report information about "wants" for fear of looking "wealth-hungry." The population of Mon State is almost entirely Buddhist and appearing "power-hungry" or "wealth-hungry" can be seen as particularly un-Buddhist. Several rounds of pre-testing suggested that asking a question about "needs" may attenuate some of this concern. Additionally, some raise the point that answering any finite number to a question asking about the level of income one would like to achieve in life is bizarre. If more income is always better than less income, then why would the answer to this question be anything other than infinity? Due to these concerns, the Hope Survey included the following question to elicit an alternative measure of income aspiration:

(3) What level of income do you need to feel financially secure?

Comparing the empirical results between these two measures of income aspirations provide structure for discussion about the legitimate measurement of aspirations. In particular, this discussion follows up on the work of Bernard and Taffesse (2014) who first formalized the measurement of aspirations through their fieldwork in Ethiopia.

Following Janzen et al. (2017) the aspirations gap is constructed by calculating the difference between answers to either question (2) or (3) and question (1). The ratio of this difference and the

Figure 1: Histogram of Primary and Alternative Income Aspirations Gap Measures



Notes: Panel A plots a histogram for the values of the primary income aspirations gap measure. Panel B plots a histogram for the values of the alternative income aspirations gap measure.

value of an individual's aspiration, again the response to either questions (2) or (3), completes the construction of the aspirations gap. Formally the aspirations gap is defined as follows—with $q = 2$ or 3 corresponding to responses to questions (2) or (3):

$$Income\ aspirations\ gap_q = \frac{aspiration_q - current}{aspiration_q} \tag{4}$$

This method for constructing the income aspirations gap bounds the values to be between zero and one. This is a useful feature in that it allows for more meaningful comparisons of the aspirations gap across individuals. The aspirations gap will be equal to one if a respondent reports zero current income and has a non-zero aspiration for income.[7] Figure 1 plots histograms that show the distribution of the values for both the primary and alternative income aspirations gap measures.

[7]Janzen et al. (2017) convert all zero values of aspirations and current income to one in order to distinguish between individuals with no current income and high income aspirations, and individuals with no current income and low income aspirations. In the Hope Survey, although many respondents have relatively little current income, none of the respondents report zero income. Thus, the concern about a mechanical relationship between current income and the income aspirations gap is absent from this study.

3.1.2 Measuring Household Expenditures

In rural Myanmar, and specifically in the context of Mon State, purchases of land or household construction materials are a common investment mechanism. Describing the data used in this paper, Hein et al. (2016) note the following:

> "Almost half of households in the sample had a member in Thailand, where wages are almost three times as high as in Mon State. Offering ample opportunities for unskilled laborers, migration is a common choice for working-age household members of both genders. Remittances sent by family members abroad generate almost a quarter of all income in our sample, at all levels of the income distribution. The earnings of migrants contribute significantly to consumption and asset accumulation, in particular land purchases and house construction."

The survey's measures of household expenditures account for spending in various dimensions over the previous five years. This aims to capture overall trends in household investment, rather than short-term fluctuations. In the following empirical analysis I use two measures of household spending: One accounting for spending in land acquisition or household construction materials, and the other accounting for spending on ceremonies or banquets. Importantly, while the former is likely understood as an investment by households in Mon State, the latter is likely not considered an investment. Therefore, comparing results between these two measures of household expenditures allows for a falsification test of the theory of the relationship between aspirations and investment expenditures, rather than any expenditures.

Theses measures of household expenditures are expressed by two distinct representations throughout this empirical analysis. The first representation is by the inverse hyperbolic sine (IHS) transformation (Burbidge et al. 1988; MacKinnon and Magee 1990; Pence 2006; Bellemare and Wichman 2019). The IHS transformation is similar to the natural log transformation, but is mathematically capable of handling zeros. This allows for the measures of household expenditures, which are non-Gaussian with a long right tail on their distributions, to be expressed in a more manageable way. The second representation is as a binary indicator of any expenditure. As reported in Table 1, about a quarter to a third of all respondents report having no expenditures in the two measures of household expenditures. In the following empirical analysis, specifications using the IHS of expenditures approximate effects on the intensive margin and specifications using the binary measure of any expenditures approximate effects on the extensive margin.

Although these measures of household expenditures are useful, they do come with several limitations. The first is that the survey asks about both expenditures of household construction materials and land together in one question. Therefore, although it would be interesting to disaggregate this measure of investment spending, the data do not allow for this sort of disaggregation. This presents an interesting avenue for future research. The second limitation is these measures of expenditures are inherently backward-looking and aspirations are inherently forward-looking. If past expenditures are positively correlated with future expenditures this is an inconsequential detail. If, on the other hand, households have a reason to suddenly stop investing in real estate (e.g., because their home is already as good as it can get), then this assumption may not necessarily hold. I argue, however, that it is quite unlikely that households in rural Mon State, Myanmar will reach this position anytime in the near future. This is supported by two observations. First, these households are relatively poor and thus are likely far from the point of satiating all real estate improvement preferences. Second, given the nearly annual exposure to extreme weather, investments in household construction is likely quite common and necessary for years into the future.

3.2 Estimation Strategies

In this subsection, I describe the details for each of the estimation strategies used to examine the relationship between the income aspirations gap and real estate investment choices. It is important to note that each of these estimation strategies rely on critical but distinct identification assumptions. Although each of these strategies by themselves may lead to limited empirical findings, taken together these strategies provided a rigorous investigation of the inverted U-shaped relationship.

3.2.1 OLS and Semi-Parametric Regressions

The baseline estimation strategy largely follows that used by Janzen et al. (2017). In general, this baseline strategy estimates two equations. One that imposes a quadratic functional form on the aspirations gap variable, and another that allows the aspirations gap variable to enter non-parametrically. The first method estimates the following equation:

$$y_{ie} = \alpha_0 + \alpha_1 g_{ie} + \alpha_2 g_{ie}^2 + \alpha_3 s_{ie} + X_{ie}'\Gamma + \theta_e + \epsilon_{ie} \tag{5}$$

In this equation y_{ie} is the outcome variable of interest and represents household expenditures in land or construction materials. The g_{ie} variable represents the income aspirations gap and g_{ie}^2

represents the squared income aspirations gap. The variable, s_{ie}, controls for the current level of income.[8] The vector X_{ie} represents a set of control variables. These control variables include the respondent's years of education, age, gender, a dummy variable indicating if the household has a migrant, and a dummy variable indicating if the respondent makes decisions about spending. Finally, θ_e are enumeration area fixed effects and ϵ_{ie} is the error term. Formally—as discussed by Lind and Mehlum (2010)—the presence of an inverted U-shape relationship exists if, given an interval of values of $g \in [g_l, g_h]$, $\alpha_1 + 2\alpha_2 g_l > 0$ and $\alpha_1 + 2\alpha_2 g_h < 0$.

The second method estimates the following equation using semi-parametric techniques:

$$y_{ie} = \beta_0 + f(g_{ie}) + \beta_1 s_{ie} + X'_{ie}\Xi + \rho_e + \nu_{ie} \tag{6}$$

This estimation equation is essentially similar to equation (5) except that the g_{ie} variable enters into the equation non-parametrically. This allows for a more flexible relationship between g_{ie} and y_{ie}. Again s_{ie} indicates the current level of income, X_{ie} is the same vector of control variables, θ_e is enumeration area fixed effects, and ϵ_{ie} is the error term.

I estimate this semi-parametric regression using two distinct strategies. In the first strategy, I implement Robinson's (1988) double residual semi-parametric estimator. This strategy first partials out the non-parametric part of the regression by removing conditional expectations of the parametric part of the regression. Next a local polynomial smoothing function characterizes the residualized non-parametric relationship between g_{ie} and y_{ie}. As discussed by Verardi and Debarsy (2012) this strategy for semi-parametric regression estimation leads to smaller biases than Yatchew's (1988) differencing estimator. In the second strategy, I implement a binned scatterplot of the relationship between g_{ie} and y_{ie} conditional on s_{ie}, the vector X_{ie}, and enumeration area fixed effects ρ_e. This approach is closely related to Robinson's (1988) double residual semi-parametric estimator but ultimately requires fewer assumptions and presents a more intuitive strategy for visualizing the nonparametric relationship between income aspirations and investment choices.

3.2.2 Unobservable Selection and Coefficient Stability

The relationship between the aspirations gap and investment choices may be endogenous due to multiple sources of unobserved heterogeneity. Most generally, issues relating to omitted variable

[8] Janzen et al. (2017) make the point that it is necessary to control for current level of income for two reasons: (i) since the current status is likely correlated with investments in the future through non-aspirational channels and (ii) since the turning point in which a larger aspiration gap decreases investment in the future is likely increasing in current income level.

bias and measurement error may result in problems for credible identification from equations (5) and (6). For example, if those who hold more extreme risk preferences (e.g., extreme risk loving or extreme risk averse) invest relatively little in the future and if these preferences are correlated with aspirations, then it may be the case that the observed correlations estimated in equations (5) and (6) are spurious. Additionally, measurement error is a concern particularly for the results in equation (5). Although it is commonly understood that classical measurement error leads to attenuated coefficient estimates, Griliches and Ringstad (1970) show that in a regression specification imposing quadratic structure the attenuation bias will be larger on the coefficient of the quadratic term. This suggests that the estimated turning point will suffer from "expansion bias," implying the turning point is biased away from zero.

To examine the robustness of the core results to potential unobserved heterogeneity I use the method developed by Oster (2017) and Altonji et al. (2005) for assessing unobservable selection bias and coefficient stability. This method generates bounds on the effect by estimating a "short" regression without controls and a "long" regression with controls and recording the change in the coefficient estimate and the change in the R^2 between these regressions. Specifically, the estimator is formally defined as follows:

$$\hat{\tilde{\pi}} = \pi^* - (\pi - \pi^*) \times \frac{R_{Max} - R^*}{R^* - R} \tag{7}$$

In equation (7), π^* and R^* are the coefficient estimate and R^2 from the "long" regression and π and R are the coefficient estimate and R^2 from a "short" regression without controls. The value of R_{Max} is an unknown parameter and represents the assumed maximum possible R^2 of the specification. The best strategy is to place plausible bounds on the value of R_{Max}. It is clear that the lower bound on R_{Max} is simply R^* and the highest possible upper bound is 1. In the present setting using household survey data to measure financial investments, it is well-known that such variables are measured with considerable error (McKenzie 2012). In this case assuming an upper bound on R_{Max} of 1 is likely to be overly conservative. Therefore, following Gonzalez and Miguel (2015), when presenting the coefficient stability results, I show the sensitivity of these results to different assumptions about the plausible bounds on R_{Max}.

4 Results: Aspirations Failure and Frustration

The results follow three iterations. First, I estimate these equations with a measure of the household's expenditure in land or household materials as the dependent variable and the primary income aspirations (i.e., in terms of "wants"). These results serve as the core findings of the paper. Second, I re-estimate these equations, but instead use the alternative income aspirations measure (i.e., in terms of "needs"). These results serve as a robustness test on the core findings. Finally, I again re-estimate these equations, using the primary income aspirations measure, but instead use a measure of the household's expenditure on ceremonies and banquets. These results serve as a falsification test on the core findings.

4.1 OLS and Semi-Parametric Estimation Results

In this sub-section, I present and discuss the results from estimating equations (5) and (6). Table 2 presents results from estimating equation (5) on the relationship between the income aspirations gap and the household's expenditure in land or household construction materials. The dependent variable in columns (1), (3), and (5) in Table 2 are the IHS of the household expenditure value. The dependent variable in columns (2), (4), and (6) in Table 2 are binary indicators of any household expenditure. As previously discussed, these two definitions of the dependent variable allow for tests of the inverted U-shaped relationship with investments on both the intensive and extensive margins.

In columns (1) and (2) in Table 2 the sign on the income aspirations gap is positive and the sign on the squared income aspirations gap is negative, and both coefficient estimates are statistically significant. This is consistent with theoretical predictions. U-test results reinforce the finding of a strong inverted U-shaped relationship between the income aspirations gap and expenditures in land or household construction materials.[9] At both the intensive and extensive margins, the null hypothesis of no inverted U-shaped relationship is rejected at the 1 percent level.

These core results use a measure of income aspirations elicited using conventional techniques (Bernard and Taffesse 2014). Using this technique, aspirations are measured by asking respondents about the income level they would like to achieve in their life. That is, these measures of income aspirations correspond to "wants." As previously noted, discussions while preparing for data col-

[9]This U-test empirically tests for a non-monotonic relationship by rejecting the null hypothesis of a monotonic relationship at a given level of statistical significance if both H_0^L and H_0^H are rejected at a given level of statistical significance. Where H_0^L tests if $\alpha_1 + 2\alpha_2 g_l \leq 0$ vs. $\alpha_1 + 2\alpha_2 g_l > 0$ and H_0^H tests if $\alpha_1 + 2\alpha_2 g_h \geq 0$ vs. $\alpha_1 + 2\alpha_2 g_h < 0$. See Lind and Mehlum (2010) and Sasabuchi (1980) for additional details.

Table 2: OLS Estimates of the Relationship between the Aspirations Gap and Expenditures

	(1) IHS Investment	(2) Binary Investment	(3) IHS Investment	(4) Binary Investment	(5) IHS Banquets	(6) Binary Banquets
Income	13.657***	0.997***			-5.476	-0.345
aspirations gap	(2.511)	(0.182)			(3.534)	(0.257)
Squared income	-11.087***	-0.850***			3.940	0.189
aspirations gap	(2.403)	(0.166)			(3.335)	(0.229)
Alt. income			9.339***	0.635***		
aspirations gap			(3.253)	(0.216)		
Squared alt. income			-9.809***	-0.702***		
aspirations gap			(3.022)	(0.202)		
Observations	445	445	445	445	445	445
R-squared	0.371	0.379	0.362	0.373	0.355	0.356
EA fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls?	Yes	Yes	Yes	Yes	Yes	Yes
U-test results:						
Turning point	0.616	0.587	0.476	0.452	0.695	0.914
Fieller 95% C.I.	[0.497; 0.814]	[0.477; 0.738]	[0.322; 0.582]	[0.299; 0.547]	$[-\infty; \infty]$	$[-\infty; \infty]$
Sasabuchi p-value	0.003	0.001	0.003	0.003	0.255	0.446
Slope at Min	13.657	0.997	9.339	0.635	-5.476	-0.345
Slope at Max	-8.516	-0.702	-10.278	-0.769	2.404	0.033

Notes: Columns (1), (3), and (5) report the dependent variable is the inverse hyperbolic sine (IHS) of household expenditures. Columns (2), (4), and (6) report the dependent variable as a binary indicator of whether or not the household had any expenditures of a given type. As expressed in each column, expenditures are either on land and household construction materials or on banquets and ceremonies. Additional controls include current monthly income, years of education, age, gender, a dummy variable indicating if the individual controls spending, and a dummy variable indicating of the household has a migrant. Missing observations are coded as zeros, and a dummy variable included in the regression indicates these missing observations. Standard errors clustered at the enumeration area level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

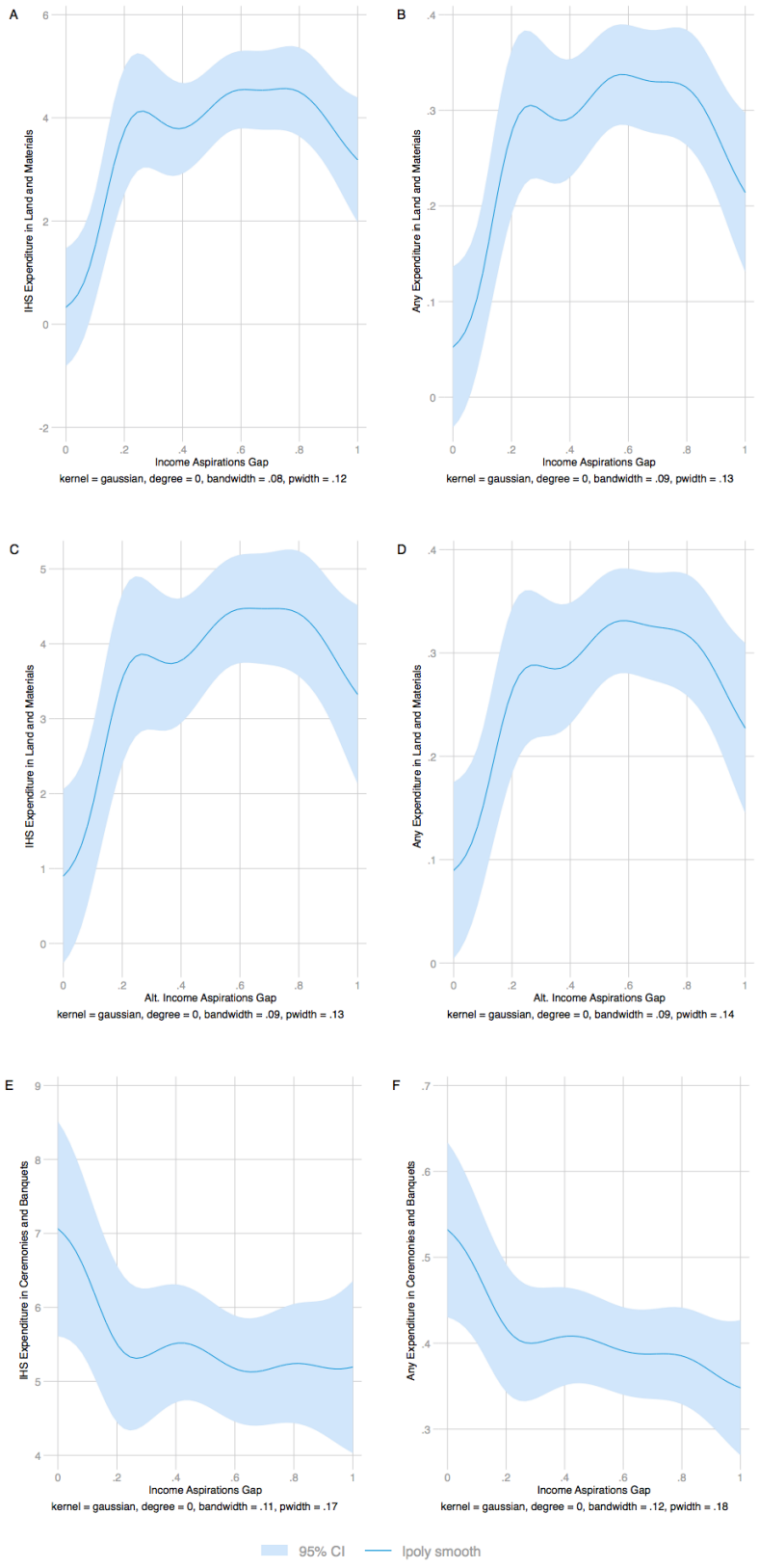
lection led to a concern that this method for eliciting aspirations may not be appropriate in the context of rural Mon State, Myanmar. In particular, several enumerators raised the concern that some respondents may be uncomfortable with this question as to avoid coming off as "wealth-hungry," a rather un-Buddhist character trait. Therefore, the data collection team agreed upon an alternative method for eliciting a measure of income aspirations. This method asked respondents about the income level they would need to feel financially secure. That is, this measure of income aspirations correspond to "needs," rather than "wants."

Columns (3) and (4) in Table 2 report results from estimating equation (5) on the relationship between the alternative measure of income aspirations and the household's expenditure in land or household construction materials. Similar to columns (1) and (2), the sign on the alternative income aspirations gap is positive and the sign on the squared income aspirations gap is negative, and both coefficient estimates are statistically significant. The similarity between columns (1) and (3) and columns (2) and (4) suggest that results are not sensitive to the use of either the primary or alternative measure of the aspirations gap. That is, despite valid concern about the method used to measure aspirations, empirical results are largely invariant between income aspirations measured in terms of "wants" or "needs."

Lastly, columns (5) and (6) in Table 2 report results from estimating equation (5) on the relationship between the primary measure of the income aspirations gap and the household's expenditure in banquets and ceremonies. These results act as a falsification test on the core results. It could be the case that the inverted U-shaped relationship persists not only between the aspirations gap and investments, but also with any household expenditure. That is, rather than testing a theory about aspirations and future-oriented behavior this empirical relationship shows up for any expenditure. The results in columns (5) and (6) do not support this alternative explanation. In both columns, the sign on the income aspirations gap is negative and the sign on the squared income aspirations gap is positive. This is the opposite of existing theoretical predictions. Additionally, these coefficient estimates are not statistically significant.

The results so far come from estimating equation (5) which imposes a specific functional form on the relationship between income aspirations and investment choices. An alternative method for estimating this relationship is to allow the income aspirations gap to enter into the estimation equation non-parametrically. As explained in the Section 3.2, equation (6) allows for this by estimating a semi-parametric regression. Figure 2 shows the non-parametric fit of the relationship between income aspirations and expenditure in land or household construction materials using Robinson's

Figure 2: Nonparametric Fit of the Relationship between the Aspirations Gap and Expenditures



Notes: Semiparametric specification including control variables and enumeration area fixed effects.

(1988) double residual estimator. Panel A shows the non-parametric fit when the dependent variable is the inverse hyperbolic sine (IHS) of expenditures in land or household construction materials. Panel B shows this same non-parametric fit when the dependent variable is a binary indicator of any expenditures in land or household construction materials. In both of these cases, equation (6) includes all control variables and enumeration area fixed effects. Both panels A and B in Figure 2 illustrate an inverted U-shaped relationship even when such a functional form is not directly imposed.

Panel C in Figure 2 shows the non-parametric fit when the dependent variable is the inverse hyperbolic sine (IHS) of expenditures and panel D shows this same non-parametric fit when the dependent variable is a binary indicator of any expenditure in land or household construction material. Similar with panels A and B, the results illustrate an inverted U-shaped relationship between the alternative aspirations gap measure and financial investments when such a functional form is not directly imposed. These results support the validity of the results presented in Table 2. In particular, these results suggest the presence of an inverted U-shaped relationship between income aspirations and financial investments in rural Mon State, Myanmar.

Finally, panels E and F illustrate the non-parametric relationship between the primary aspirations gap measure and expenditures in ceremonies and banquets. These results again serve as a falsification test on the core results. Similar to the conclusions drawn from Table 2, the relationship between the aspirations gap and expenditures in ceremonies and banquets does not follow an inverted U-shape. In fact, these figures suggest a negative relationship between the income aspirations gap and expenditures in ceremonies and banquets. This supports the core results in the sense that there is something different about expenditures in land and household construction materials that generates an inverted U-shaped relationship with the aspirations gap.

Figure 3, in the appendix, shows binned scatterplots of the relationship between the income aspirations gap and expenditures. These figures provide an alternative, and perhaps more intuitive, method for visualizing the relationship between the income aspirations gap and investment choices. Similar to Figure 2, Panels A and B show the relationship between the primary measure of the income aspirations gap and the IHS of expenditures and any expenditures in land and household materials, respectively. Panels C and D are similar except that the use of the alternative measure of the income aspirations gap. Finally, panels E and F allow for a falsification test by plotting the relationship between the income aspirations gap and household expenditures in ceremonies and banquets.

So far the estimation specifications detailed in equations (5) and (6) and the results reported in Table 2 and Figures 2 and 3 essentially mirror those estimated by Janzen et al. (2017) and Ross (2017). This should lend credence to the results from both previous studies. That is, the finding of an inverted U-shaped relationship between the income aspirations gap and future-oriented behavior persists across multiple contexts. That being said, it could likely be the case that the relevant factor of unobserved heterogeneity is present in each context. This motivates a more rigorous investigation of the relationship between the income aspirations gap and investment choices. This is the focus of the next subsection.

4.2 Coefficient Stability Results

As previously discussed, these core results could be biased due to various forms of unobserved heterogeneity (e.g., omitted variable bias, measurement error, etc.). The potential for this bias motivates the use of a more careful method using OLS regression analysis to define a plausible range for the estimated relationship between the income aspirations gap and real estate investments.

For structure, I follow the approach developed by Altonji et al. (2005) and Oster (2015) for assessing the importance of omitted variable bias. As previously noted in Section 3.2.2, the inherent difficulty with this approach is to establish a plausible range of valid values for R_{Max}, or the assumed maximum R^2 in the "long" regression specification. In Table 4, I present four different methods for setting R_{Max}. Column (3) uses the method suggested by Oster (2017), which sets R_{Max} equal to $1.3 \times R^*$. Where R^* is the R^2 from the "long" regression. In this context, this is the least conservative approach. Column (4) uses the method used by Bellows and Miguel (2009), which sets R_{Max} equal to $R^* + (R^* - R)$. Where R is the R^2 from the "short" regression without controls. Column (5) uses the method used by Gonzalez and Miguel (2015), which sets R_{Max} equal to $2.2 \times R^*$. Finally, column (6) is the most conservative approach and simply sets R_{Max} equal to 1, which implicitly assumes there is no measurement error in the outcome variable.

Each panel in Table 3 represents a different core regression specification. Panel A shows results using the IHS transformation of household expenditures in land and household construction materials and the primary measure of the income aspirations gap. Panel B also uses the primary measure of the income aspirations gap, but uses the binary indicator of any expenditures in land and household construction materials. Panel D shows results using the IHS transformation of the household expenditures in land and household construction materials and the alternate measure of the income aspirations gap. Finally, panel D uses the alternative measure of the income aspi-

Table 3: Coefficient Stability and Effect Bounds

	(1) Short regression	(2) Long regression	(3) $R_{Max} = 1.3R^*$	(4) $R_{Max} = R^* + (R^* - R)$	(5) $R_{Max} = 2.2R^*$	(6) $R_{Max} = 1$
Panel A: IHS Investments						
Income	7.756**	13.657***	[13.66; 15.85]	[13.66; 21.80]	[13.66; 24.03]	[13.66; 30.11]
aspirations gap	(3.095)	(2.511)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
Squared income	-6.449**	-11.087***	[-12.88; -11.09]	[-17.96; -11.09]	[-19.95; -11.09]	[-25.62; -11.09]
aspirations gap	(3.175)	(2.403)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
R^2	0.01	0.37				
R_{Max}			0.48	0.73	0.81	1.00
Panel B: Binary Investments						
Income	0.589**	0.997***	[0.997; 1.15]	[0.997; 1.57]	[0.997; 1.743]	[0.997; 2.092]
aspirations gap	(0.233)	(0.182)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
Squared income	-0.517*	-0.850***	[-0.978; -0.850]	[-1.350; -0.850]	[-1.509; -0.850]	[-1.842; -0.850]
aspirations gap	(0.229)	(0.166)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
R^2	0.01	0.38				
R_{Max}			0.49	0.75	0.84	1.00
Panel C: IHS Investments with Alt. Aspirations Gap						
Alt. Income	5.082	9.339***	[9.34; 11.04]	[9.34; 15.79]	[9.34; 17.75]	[9.34; 24.16]
aspirations gap	(3.305)	(3.253)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
Squared alt. income	-5.951*	-9.809***	[-11.35; -9.81]	[-15.65; -9.81]	[-17.44; -9.81]	[-23.30; -9.81]
aspirations gap	(3.137)	(3.022)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
R^2	0.01	0.36				
R_{Max}			0.47	0.71	0.79	1.00
Panel D: Binary Investments with Alt. Aspirations Gap						
Alt. Income	0.297	0.635***	[0.635; 0.765]	[0.635; 1.125]	[0.635; 1.292]	[0.635; 1.718]
aspirations gap	(0.224)	(0.216)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
Squared alt. income	-0.392	-0.702***	[-0.821; -0.702]	[-1.152; -0.702]	[-1.305; -0.702]	[-1.700; -0.702]
aspirations gap	(0.213)	(0.202)	$\delta < 0$	$\delta < 0$	$\delta < 0$	$\delta < 0$
R^2	0.01	0.37				
R_{Max}			0.48	0.72	0.81	1.00
Observations	445	445				
EA fixed effects?	No	Yes				
Additional controls?	No	Yes				

Notes: Columns (1) and (2) show regression coefficients from the "short" and "long" regressions, respectively. Columns (3) through (6) show bounds on the effect and the δ parameter representing the proportional selection coefficient using the methods described by Altonji et al. (2005) and Oster (2017). Moving from left to right, each column uses a progressively more conservative approach for setting the value of R_{Max}. Additional controls include current monthly income, years of education, age, a dummy variable indicating if the individual controls spending, and a dummy variable indicating of the household has a migrant. Standard errors clustered at the enumeration area level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

rations gap, but uses the binary indicator of any expenditures in land and household construction materials.

The first detail to note from the results presented in Table 3 is that the bounds on the income aspirations gap coefficients—for both the primary and alternative measures—are positive for each of the different methods for setting R_{Max}. Additionally, the bounds on the squared income aspirations gap coefficients—for both the primary and alternative measures—are negative for each of the different methods for setting R_{Max}. When only considering the sign of the income aspirations gap and squared income aspirations gap coefficients, these findings suggest that the inverted U-shaped relationship is unlikely to be driven by unobservable confounding factors. More specifically, in each specification the coefficient always moves away from zero when including additional controls variables in the regression. As noted by Oster (2017), this observation suggests that results are qualitatively robust to the inclusion of omitted variables. This detail is formalized through the calculation of the δ parameter, the proportional selection coefficient, which is negative in all cases. A negative proportional selection coefficient indicates that adding additional control variables or fixed effects to the regression only moves the coefficient estimate away from zero. This implies that these results are highly robust to potential unobserved heterogeneity.

5 Heterogeneity in the Inverted U-Shaped Relationship

Comparative static analysis on the model detailed by Janzen et al. (2017) suggests that individuals who are more patient, initially better off, and have a higher rate of return on investment are likely to have a higher turning point in their aspirations gap. To test these ideas, and to explore other dimensions of heterogeneity, I examine the relationship between the aspirations gap and investment choices between various sub-groups of the sample. I first directly test the theoretical prediction that individuals who are initially better off, in terms of income, have a higher turning point in their aspirations gap. Next I examine heterogeneity defined by age and gender of respondents. Finally, I investigate heterogeneity driven by personal attitudes and beliefs. Specifically, I estimate an augmented version of the baseline estimation strategy, which is similar in spirit to the methodology used by Bandiera and Rasul (2006).

$$y_{ie} = \sigma_0 + [\sigma_1 g_{ie} \times A_{ie}] + [\sigma_2 g_{ie}^2 \times A_{ie}] + [\sigma_3 g_{ie} \times B_{ie}] + [\sigma_4 g_{ie}^2 \times B_{ie}] + \sigma_5 s_{ie} + X_{ie}'\Delta + \phi_e + \psi_{ie} \quad (8)$$

In equation (8) A and B indicate sub-groups of the sample. These sub-groups are defined by

income level, age, gender, belief in the role of destiny in life, and belief in current level of success. Low income is defined as having a natural log of monthly income less than 10. This cutoff roughly translates to a monthly income of less than 20,000 kyat or 13 US dollars per month. I define the cut-off between young and old at 45 years old. Finally, belief in destiny and success are both measured on a zero through ten ordinal scale indicating how much an individual agrees with a given statement.[10] I define individuals as agreeing with these statements if they report a score greater than five on the zero through ten scale, and disagreeing otherwise. Specifically, belief in destiny is measured by asking how much the respondent agrees with the statement: "What one achieves is primarily determined by destiny or luck." Similarly the belief in one's own success is measured with the statement: "Right now, I see myself as being successful."

Table 4 reports results from equation (8). Each regression in this table shows results when the dependent variable is the IHS of expenditures in land and household construction materials. Results are qualitatively similar when using a binary variable indicating any expenditure in land and household construction materials.[11] Column (1) presents results examining heterogeneity by current monthly income level. The inverted U-shaped relationship persists for only those in the low income group. As predicted the comparative static analysis by Janzen et al. (2017), the estimated turning point is higher for those with more income. Specifically, the turning point for those with relatively low income is estimated to be at 0.541, at about the midpoint of the aspirations gap measure. This estimate is statistically significant according to the Sasabuchi p-value. The turning point for those with relatively high income is estimated to be at 0.832 and I fail to reject the null hypothesis of no inverted U-shaped relationship for those with relatively high income. Supporting the comparative static analysis by Janzen et al. (2017), this suggests that those with a relatively high level of income are less likely to experience aspirations frustration.

Columns (2) and (3) report heterogeneous effects by age and gender, respectively. The results in column (2) suggest that younger individuals have a slightly stronger inverted U-shaped relationship relative to older individuals. The results in column (3) show that there is a slight difference in the inverted U-shaped relationship between males and females. These differences by age and gender, however, are relatively small and are not significant in any practical sense.

Finally, columns (4) and (5) explore heterogeneity defined by attitudes and beliefs. Column (4) shows results by belief in the role of destiny. I find that the inverted U-shaped relationship is

[10] See Bloem et al. 2018 for a discussion of these questions.
[11] These results are reported in Table 6 in the appendix.

Table 4: Heterogeneity

Dependent variable: Inverse hyperbolic sine (IHS) of investments					
	(1)	(2)	(3)	(4)	(5)
	Income	Age	gender	Destiny	Successful
	A = Lower	A = Younger	A = Male	A = Agree	A = Agree
	B = Higher	B = Older	B = Female	B = Disagree	B = Disagree
A × income	14.69**	16.29***	14.47**	15.08***	11.76***
aspirations gap	(5.693)	(3.643)	(5.981)	(2.746)	(4.341)
A × squared income	-13.58**	-13.26**	-12.68***	-12.68***	-8.712*
aspirations gap	(6.018)	(3.349)	(5.317)	(2.884)	(4.825)
B × income	10.28***	11.83***	13.36***	9.655***	14.36***
aspirations gap	(3.087)	(2.771)	(2.873)	(3.441)	(2.626)
B × squared income	-6.175	-9.829***	-10.13***	-6.542*	-12.04***
aspirations gap	(3.867)	(3.106)	(3.254)	(3.641)	(2.883)
Observations	445	445	445	445	445
R-squared	0.377	0.374	0.373	0.374	0.372
EA fixed effects?	Yes	Yes	Yes	Yes	Yes
Additional controls?	Yes	Yes	Yes	Yes	Yes
U-test results for A:					
Turning point	0.541	0.621	0.546	0.595	0.675
Fieller 95% C.I.	[0.451; 1.239]	[0.497; 0.840]	[0.325; 0.808]	[0.491; 0.790]	$[-\infty;\infty]$
Sasabuchi p-value	0.032	0.006	0.014	0.003	0.159
Slope at Min	14.69	16.30	14.47	15.08	11.76
Slope at Max	-12.47	-9.957	-12.05	-10.27	-5.666
U-test results for B:					
Turning point	0.832	0.602	0.659	0.738	0.597
Fieller 95% C.I.	$[-\infty;\infty]$	[0.465; 1.025]	[0.515; 1.178]	$[-\infty;\infty]$	[0.467; 0.857]
Sasabuchi p-value	0.360	0.037	0.050	0.234	0.008
Slope at Min	10.28	11.829	13.36	9.655	14.36
Slope at Max	-1.809	-7.829	-6.902	-3.429	-9.711

Notes: The dependent variable in all columns is the IHS of investment spending on land and household construction. Column (1) defines low income as having a natural log of income less than 10, and high income otherwise. This is a natural break in the income distribution in this sample. Column (2) defines low age as being less than 40 years old, and high age otherwise. Columns (3) through (5) define low as scoring less than 5 on a zero through ten ordinal scale measuring agency, pathways, and locus of control, respectively. Additional controls include current monthly income, years of education, age, gender, a dummy variable indicating if the individual controls spending, and a dummy variable indicating of the household has a migrant. Standard errors clustered at the enumeration area level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

stronger for individuals who agree that the role of destiny is primarily responsible for determining what one achieves in life. Individuals who disagree with this statement have a higher turning point in their aspirations gap. Formal U-test results indicate a failure to reject the null hypothesis, at conventional levels of statistical significance, of no inverted U-shaped relationship among those who disagree that what one achieves is primarily determined by destiny or luck. Column (5) reports on heterogeneity driven by a belief that one is currently successful. I find that the those who disagree that they are currently successful have the strongest U-shaped relationship. Those who do agree they are currently successful have a slightly higher estimated turning point in their aspirations gap and formal U-test results fail to reject the null of no inverted U-shaped relationship at conventional levels of statistical significance.

One interpretation of these findings is that experiencing aspiration frustration is associated with a belief that outcomes are determined by forces outside of one's control and that one is currently unsuccessful. This is consistent with a model developed by Lybbert and Wydick (2018) who point out that aspirations, by themselves, may not be sufficient for encouraging future-oriented behavior.[12] Along with aspirations that are beyond one's current standard of living an individual must believe that they are able to achieve a given aspiration. Without this belief in oneself, increased aspirations may fail to influence any change in behavior.

Taken together these results are informative for several reasons. First, the finding that the existence of the inverted U-shaped relationship varies based on one's beliefs about the role of their own actions in predicting future outcomes motivates important follow up work on this topic. Although their may well be evidence of an inverted U-shaped relationship between aspirations and investments in rural Myanmar, this relationship is strongest for those who believe that their own effort and actions play a relatively important role in influencing future outcomes. Second, in all cases there is a positive and statistically significant marginal effect of the aspirations gap and investment. When the formal tests of the inverted U-shape relationship fail to reject the null hypothesis of no inverted U-shaped relationship they do so because strictly speaking the turning point may be outside of the domain of the aspirations gap variable. This suggests that a larger gap between one's current level of livelihood and one's aspired level of livelihood is associated with more investments in all sub-groups of the sample defined above, however, it is not always the case that their is a point in which a larger aspirations gap systematically reduces investment.

[12]It is also consistent with emerging empirical results showing that policies that uniquely leverage aspirations are ineffective in changing behavior (Rizzica 2020).

Finally, and on a more technical note, the finding that the inverted U-shaped relationship between aspirations and future-oriented behavior is subjected to important heterogeneity indicates that estimates of this relationship that are not carefully identified may be spurious due to omitted variable bias. This further supports the primary objective of this paper in aiming to provide more rigorous evidence of the inverted U-shaped relationship between the aspirations gap and investments. Future research should take care to consider important sources of endogeneity and heterogeneity in extending this result to alternative contexts.

6 Aspirations Formation and the "Aspirations Window"

The influential work of Ray (2006) posits that aspirations are determined by social observation of relevant others within an individuals "aspiration window." A potentially helpful way to think about this is that individuals engage in a matching exercise where they observe the behavior of others who are similar to themselves along a number of different dimensions. This could include individuals who live within close proximity, individuals of a similar age and/or gender, or individuals who live in households with a similar income level. In this sub-section, I investigate the role of an individual's peers—defined in various ways—in determining an individual's aspirations gap.

To study the influence of peers on an individual's aspirations gap, I define a "peer-effects," or sometimes called a leave-one-out average, variable. This variable is defined by calculating the average aspiration gap within a given peer group p excluding person i. Peer groups are defined in five different ways: (i) peers within an individual's enumeration area, (ii) peers of the same gender within an individual's enumeration area, (iii) peers of the same age category—cutoff at 45 years old, (iv) peers of the same household income category within an individual's enumeration area, and (v) peers of the same gender-age-income category within an individual's enumeration area. Formally, this variable is defined as follows:

$$\overline{g}_{iep} = \frac{(\sum_i^N g_{iep}) - g_{iep}}{N-1} \tag{9}$$

In equation (9), g_{iep} is individual i's aspiration gap measure and N is the number of individuals within a given enumeration area e specific peer group p. Specifically, I investigate the formation of aspirations using the following regression specification:

$$g_{ie} = \delta_0 + \delta_1 \overline{g}_{iep} + \delta_2 s_{ie} + X'_{ie}\Omega + \tau_v + \mu_{ie} \tag{10}$$

In equation (10), the outcome variable g_{ie} is either the primary or alternative aspirations gap measure. The main variable of interest is δ_1, the coefficient on the individual's peer group average aspiration gap. As in (5) and (6) the variable s_{ie} controls for the current level of income and X_{ie} is a vector of other controls. Finally, τ_e is an village level fixed effects and μ_{ie} is an error term. Note that since the peer group is at least partially defined within an individual's enumeration area I am not able to include enumeration area fixed effects in the regression. Instead, I include village level fixed effects which represent a slightly larger geographical area than enumeration areas.

Before discussing the results from estimating equation (10), several limitations to this estimation approach must should be clarified. First, peer group membership could be endogenous. In the present context peer groups are defined by existing characteristics of randomly sampled individuals within an enumeration area. This detail potentially alleviates some concern with endogenous peer group formation, compared to peer groups defined by self-reported friendship links (Janzen et al. 2017), however it does not eliminate all concern. A specific source of endogeneity relevant in the present context could stem from individuals moving to live close to others based on their aspirations. Therefore, the estimated correlations could represent (i) the effect of an individual's own aspirations on the formation of peer groups, (ii) the effect of an individual's peer group on their own aspirations, or (iii) both. Therefore, these estimated correlations should not be interpreted as causal effects.

Second, the well-known identification problems of peer-effect regression estimates (Manski 1993) as well as the issue of "exclusion bias" (Guryan et al. 2009; Caeyers and Fafchamps 2016) present an analytical challenge. The "reflection problem" (Manski 1993) represents the challenge, when estimating peer-effects, of disentangling whether an individual is influenced by their peers or if the behavior and beliefs of both the individual and their peers are influenced by similar factors (i.e., common shocks, past experiences, personal characteristics, or social circumstances). The issue of "exclusion bias" (Guryan et al. 2009; Caeyers and Fafchamps 2016) represents a mechanical negative correlation, and corresponding bias, in the estimation of peer effects. This is driven by the fact that an individual cannot be their own peer and therefore peer effects, based on leave-one-out means, possess a mechanical negative correlation within estimated correlations.

I aim to mitigate these issues by estimating equation (10) first without any control variables or fixed effects, next with only control variables, and finally with both control variables and fixed effects. Examining the stability—or fragility—of results across each of these specifications allows for suggestive insight into the robustness of these results to issues of endogeneity—due to reverse

Table 5: Aspirations Formation

	(1)	(2)	(3)	(4)	(5)	(6)
	Aspirations Gap			Alt. Aspirations Gap		
Panel A: Peers within EA						
Peer aspirations gap	0.364***	0.333**	0.0545			
	(0.131)	(0.127)	(0.176)			
Alt. peer aspirations gap				-0.362	-0.462*	-0.952***
				(0.279)	(0.250)	(0.285)
Observations	445	445	445	445	445	445
R-squared	0.022	0.042	0.096	0.014	0.047	0.152
Panel B: Peers within Gender-EA						
Peer aspirations gap	0.171	0.184	0.0162			
	(0.113)	(0.115)	(0.126)			
Alt. peer aspirations gap				-0.463***	-0.525***	-0.713***
				(0.131)	(0.123)	(0.123)
Observations	445	445	445	445	445	445
R-squared	0.009	0.037	0.099	0.057	0.094	0.195
Panel C: Peers within Age-EA						
Peer aspirations gap	0.209*	0.167	0.0246			
	(0.109)	(0.105)	(0.115)			
Alt. peer aspirations gap				-0.425***	-0.520***	-0.688***
				(0.142)	(0.130)	(0.122)
Observations	445	445	445	445	445	445
R-squared	0.015	0.041	0.101	0.047	0.091	0.186
Panel D: Peers within Income-EA						
Peer aspirations gap	0.475***	0.503***	0.421***			
	(0.0707)	(0.0649)	(0.0778)			
Alt. peer aspirations gap				0.163	0.121	0.0363
				(0.154)	(0.151)	(0.156)
Observations	445	445	445	445	445	445
R-squared	0.098	0.132	0.165	0.007	0.031	0.089
Panel E: Peers within Gender-Age-Income-EA						
Peer aspirations gap	0.0641	0.195**	0.132*			
	(0.0458)	(0.0742)	(0.0745)			
Alt. peer aspirations gap				-0.229***	-0.336***	-0.398***
				(0.0513)	(0.0706)	(0.0613)
Observations	445	445	445	445	445	445
R-squared	0.005	0.045	0.104	0.061	0.099	0.177
Village fixed effects?	No	No	Yes	No	No	Yes
Additional controls?	No	Yes	Yes	No	Yes	Yes

Notes: Additional controls include current monthly income, years of education, age, gender, a dummy variable indicating if the individual controls spending, and a dummy variable indicating of the household has a migrant. Not all observations have peers as defined above. These observations are coded as zeros, and a dummy variable included in the regression indicates these missing observations. Standard errors clustered at the enumeration area level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

causality or the "reflection problem" Manski (1993)—and "exclusion bias" (Guryan et al. 2009; Caeyers and Fafchamps 2016).

Table 5 reports the results from estimating equation (10). The first three columns show the correlation between an individual's own aspiration gap and their peer's average aspiration gap, using the primary measure of aspirations (i.e., in terms of "wants"). The last three columns show the corresponding correlation using the alternative measure of aspirations (i.e., in terms of "needs"). Each of the five panels use a different peer group, as defined above.

In the first three columns, each of the estimated correlations between an individual's own aspirations gap and their peer's average aspirations gap is positive. This suggests that, in general, individual aspiration gaps in terms of "wants" tend to increase as the average aspirations gap of their peers increases. The strongest correlations are within the income-enumeration area peer group, reported in Panel D. One interpretation of these results is that individuals define their aspirations window more based on current levels of income (e.g., above or below average), than based on age or gender. With that being said, a positive and statistically significant correlation still persists within the gender-age-income-enumeration area peer group, reported in Panel E. These results largely support the work of Ray (2006) and Genicot and Ray (2017) who suggest that aspirations are socially determined by peers within an individual's "aspirations window." It may perhaps be the case that when an individual sees one of their peers aspiring for more income, they themselves aspire for more income.

In the last three columns, when using the alternative aspirations gap, the statistically significant estimated correlations are negative. The exception is within income-enumeration area peer groups, where the correlation is not statistically different from zero. The strongest correlations are within the gender-enumeration area and age-enumeration area peer groups, reported in Panels B and C respectively. These results suggest that, in general, individual aspiration gaps in terms of "needs" tend to decrease as the average aspirations gap of their peers increases. One interpretation of these results is that the alternative measure of aspirations in terms of "needs" measures a concept that is quite distinct compared to the concept discussed by Ray (2006) and Genicot and Ray (2017). That is, rather than strictly measuring aspirations, the alternative measure captures a concept of deprivation or an individual's ability to meet their basic needs. In this sense, it may seem natural for an individual's own perception of their ability to meet their basic needs to be negatively correlated with the average ability of their peers to meet their own needs.

These results can help inform the design of policies and programs that aim to leverage aspi-

rations, thereby driving potential spillover effects (see, e.g., Carter 2016). For example, consider a program aiming to incentivize the adoption of a new productivity-improving technology. If this program could improve the livelihoods of those within a given individual's peer group, then it seems likely that the aspirations of that individual may increase and incentive the adoption of the given technology. This sort of aspirations-based multiplier effect is not just conceptually relevant, but is identified by several existing empirical studies (Beaman et al. 2012; Macours and Vakis 2014; Bernard et al. 2014). Specifically, in the context of rural Myanmar, the relevant peer group for the standard measure of income aspirations seems to be peers of close geographically proximity and within a similar income level.

7 Conclusion

Although the topic of inequality is classic in the economics literature, emerging work focuses on the potential psychological causes and consequences of poverty traps and widening within-country economic inequality (Ray 2006; Besley 2016; Genicot and Ray 2017; Lybbert and Wydick 2018). In particular, theory developed by Genicot and Ray (2017) suggests that swift economic growth in a poor country can have competing consequences. On the one hand, rapid economic growth can encourage investment. On the other hand, this same rapid economic growth can lead to frustration and despair. If these dynamics persist, then this is one potential mechanism through which within-country inequality may persist and develop.

The study context of rural Mon State, Myanmar presents a well-suited environment to test the theory of Genicot and Ray (2017). Nationally, Myanmar is home to both high rates of economic growth and relatively large rates of poverty. Mon State in particular, is a region with a history of marginalization. Therefore, the dynamics of psychological constraints within this population may play an particularly important role in economic development and poverty alleviation. Indeed, I find evidence of the existence of an inverted U-shaped relationship between the income aspirations gap and real estate investments. This finding suggests several core insights.

First, simply focusing on relieving external constraints (e.g., providing access to credit, insurance, etc.) may prove ineffective, since those with a relatively small aspirations gap do not invest as much as those with a slightly larger aspirations gap. This insight may help explain persistent puzzles in development economics of individuals or households refraining from making profitable investments (Ashraf et al. 2006; Duflo et al. 2011; Suri 2011; and Bryan et al. 2014). Second,

and consistent with the findings of Galiani et al. (2018) and Rizzica (2020), simply focusing on psychological constraints may also not be sufficient in encouraging investment, since those with a relatively large aspirations gap do not invest as much as those with a relatively small aspirations gap. Aspirations, by themselves, may not be sufficient in inspiring investment in the future. This is an important finding for policy-makers that aim to improve aspirations within a population for the purpose of improving economic outcomes (see, e.g., Beaman et al. 2012; and Bernard et al. 2014). Third, the strength of the inverted U-shaped relationship may be influenced by a number of important factors. Those who are already economically better off, who believe they themselves can generally influence future outcomes, and who believe that they are currently successfully achieving their goals may have a higher turning point in their aspirations gap. This final insight is consistent with a model aspirations and future-oriented behavior that is dependent on personal agency and external constraints (Lybbert and Wydick 2018).

This paper also presents results that are important for future studies aiming to quantitatively measure aspirations. Although the methods of Bernard and Taffesse (2014) are popular, there is concern that this approach may not accurately measure aspirations. I compare results using two alternative measures of income aspirations. The first uses the conventional approach of Bernard and Taffesse (2014) that measures aspirations in terms of "wants." The second uses an approach similar to that used by Knight and Gunatilaka (2012) that measures aspirations in terms of "needs." I find that the core empirical finding of this paper—that is, of an inverted U-shaped relationship between income aspirations and real estate investments—is invariant across these two measures. In contrast, however, these two measures of aspirations correlate in opposite directions with potential peer group averages. Therefore, although aspirations for "wants" and "needs" may be related, they ultimately capture distinct concepts. Future work could focus on further validating existing techniques for quantitatively measuring aspirations.

Similar to any other empirical analysis, the results presented in this paper are not without their limitations. In this paper I aim support the credibility of the estimated inverted U-shaped relationship using different estimation techniques. Importantly, each of these results support the theoretical predictions of Genicot and Ray (2017). Future work could focus on further improving the estimation of the inverted U-shaped relationship by using plausibly exogenous shocks to aspirations. Finally, given that the present study only focuses on one region in one country, future work could add to the external validity of these results.

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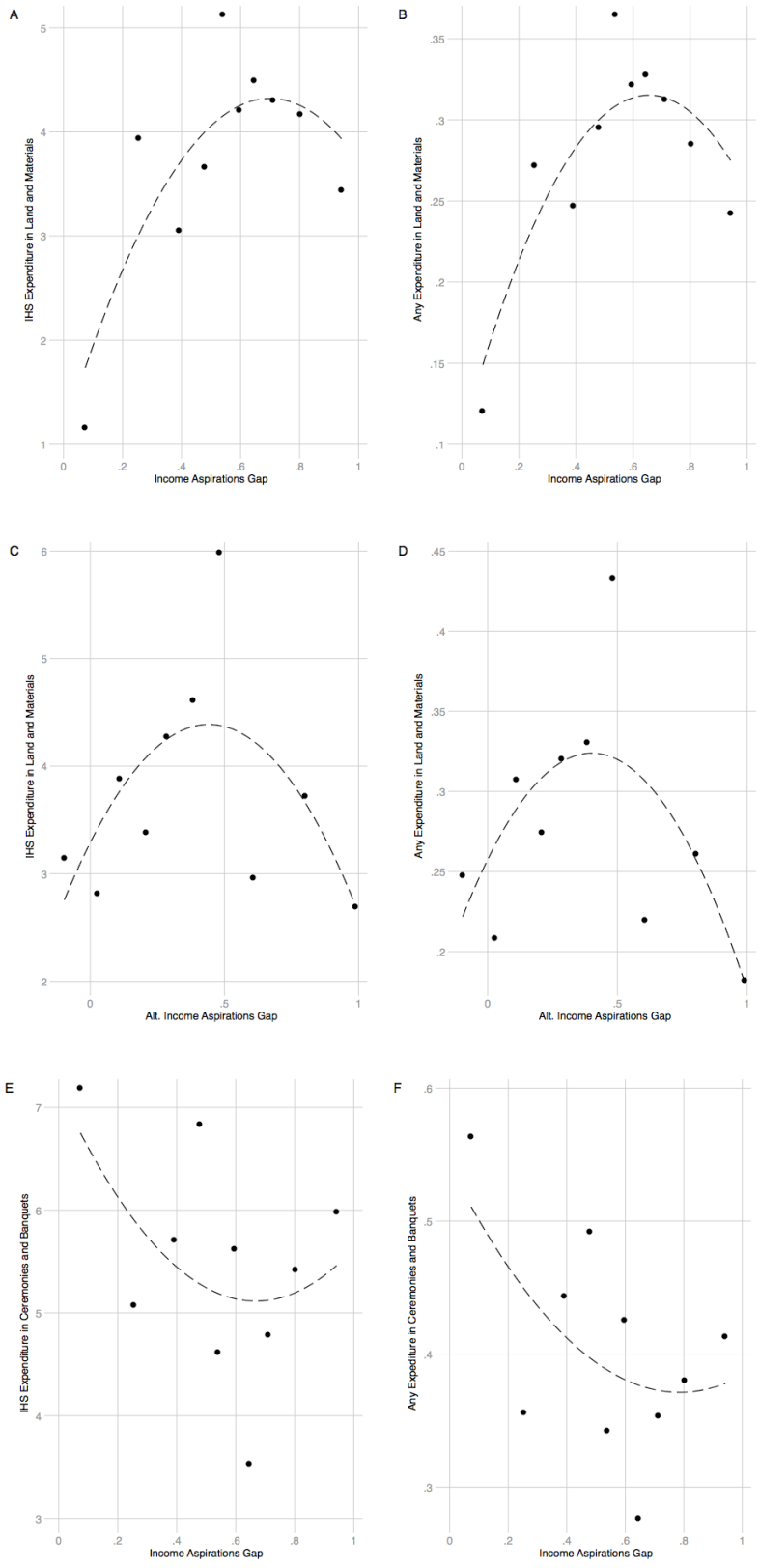
Appendix A: Additional Tables and Figures

Included in the appendix are additional tables and figures supporting the results reported in the main manuscript. Figure 3 shows a non-parametric estimates of the relationship between aspirations and expenditures using binned scatterplots. Table 6 shows heterogeneity results when using a binary indicator of any investment.

Figure 3: Binned Scatterplots of the Relationship between the Aspirations Gap and Expenditures



Notes: Binned scatterplots are conditional on all control variables and enumeration area fixed effects as specified in equation (6).

Table 6: Heterogeneity with Binary Indicator of Any Investments

Dependent variable: Binary indicator of any investments					
	(1)	(2)	(3)	(4)	(5)
	Income	Age	gender	Destiny	Successful
	A = Lower	A = Younger	A = Male	A = Agree	A = Agree
	B = Higher	B = Older	B = Female	B = Disagree	B = Disagree
A × income	1.012**	1.256***	1.177***	1.101***	0.777**
aspirations gap	(0.391)	(0.269)	(0.422)	(0.202)	(0.292)
A × squared income	-0.980**	-1.074***	-1.102***	-0.968***	-0.588*
aspirations gap	(0.410)	(0.246)	(0.381)	(0.200)	(0.321)
B × income	0.731***	0.803***	0.916***	0.707***	1.076***
aspirations gap	(0.241)	(0.178)	(0.204)	(0.250)	(0.194)
B × squared income	-0.461	-0.685***	-0.734***	-0.513*	-0.950***
aspirations gap	(0.287)	(0.190)	(0.221)	(0.274)	(0.199)
Observations	445	445	445	445	445
R-squared	0.387	0.385	0.381	0.383	0.381
EA fixed effects?	Yes	Yes	Yes	Yes	Yes
Additional controls?	Yes	Yes	Yes	Yes	Yes
U-test results for A:					
Turning point	0.516	0.584	0.534	0.569	0.660
Fieller 95% C.I.	[0.417; 0.872]	[0.481; 0.734]	[0.365; 0.725]	[0.473; 0.724]	$[-\infty; \infty]$
Sasabuchi p-value	0.020	0.001	0.006	0.001	0.146
Slope at Min	1.012	1.256	1.177	1.101	0.777
Slope at Max	-0.949	-0.893	-1.028	-0.835	-0.399
U-test results for B:					
Turning point	0.793	0.586	0.624	0.688	0.566
Fieller 95% C.I.	$[-\infty; \infty]$	[0.445; 0.898]	[0.493; 0.997]	$[-\infty, \infty]$	[0.453; 0.748]
Sasabuchi p-value	0.318	0.013	0.025	0.184	0.001
Slope at Min	0.731	0.803	0.916	0.707	1.076
Slope at Max	-0.171	-0.567	-0.552	-0.320	-0.825

Notes: The dependent variable in all columns is a binary indicator of any expenditure on land and household construction. Column (1) defines low income as having a natural log of income less than 10, and high income otherwise. This is a natural break in the income distribution in this sample. Column (2) defines low age as being less than 40 years old, and high age otherwise. Columns (3) through (5) define low as scoring less than 5 on a zero through ten ordinal scale measuring agency, pathways, and locus of control, respectively. Additional controls include current monthly income, years of education, age, a dummy variable indicating if the individual controls spending, and a dummy variable indicating of the household has a migrant. Standard errors clustered at the enumeration area level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix B: Additional Discussion on the Valid Measurement of Aspirations

Recall the concerns previously discussed about the validity of the measurement of aspirations. The conventional method for measuring aspirations, as discussed by Bernard and Taffesse (2014), suggests asking variations of the following question: "What level of some dimension would you *like to achieve in your life*?" Although this has become a popular method for measuring aspirations (see, for example, Dalton et al. 2018; Healy et al. 2017; Kosec and Mo 2017), concern persists about the legitimacy of measures of aspirations elicited via this approach. Namely, why would anyone answer a finite number to this question?

Due to this concern, and other concerns relating to specific characteristics of the study context, the present study also asked the following question designed to elicit an alternative measure of income aspirations: "What level of income do you *need to feel financially secure*?" In this section, I discuss the use of these two measures of income aspirations with two goals in mind. The first goal is to add to the credibility of the core results previously discussed in this paper. The second goal is to provide a much-needed discussion about the validity of previous and future studies investigating aspirations measured with the approach discussed by Bernard and Taffesse (2014).

A first concern is that answers to the question about what a respondent "wants to achieve" may be arbitrary and, therefore, empirically useless. To test against this concern, I compare empirical results when using the question framed in terms of "wants" and when using the question framed in terms of "needs." As previously discussed—and presented in Table 2 and Figure 2—the finding of an inverted U-shaped relationship persists across both of these two measures of income aspirations. The consistency of these results across measurement approaches lends credibility to the conventional approach used to measures aspirations (Bernard and Taffesse 2014). The question eliciting aspirations in terms of "needs" is much more concrete and less abstract than the question framed in terms of "wants." It seems considerably more likely that respondents are able to provide a reasonable answer to the question framed in terms of "needs." It turns out, however, that the core empirical results of this paper are quantitatively invariant to the use of these two elicitation approaches. Therefore, despite valid skepticism, it seems that respondents—at least in Mon State, Myanmar—answer questions eliciting aspirations in terms of "wants" or "needs" similarly and in line with theoretical predictions.

A second concern is determining whether measures of aspirations are in fact aspirations and not expectations. This concern is all the more relevant given the framing of the alternative aspirations measure in terms of "needs." After all, who is to say that respondents do not expect to be financially

secure?

Before testing against this concern, it is important to note that this distinction has implications beyond academic curiosity. A policy or program that raises one's aspirations will be entirely distinct from one that raises one's expectations. Expectations implicitly carry some understanding of probability. We expect outcomes that are highly likely to occur in the future. Aspirations, on the other hand, do not necessarily consider probability. It is entirely possible that an individual expects to remain poor for the foreseeable future, but nevertheless aspires to escape poverty (Lybbert and Wydick 2018).

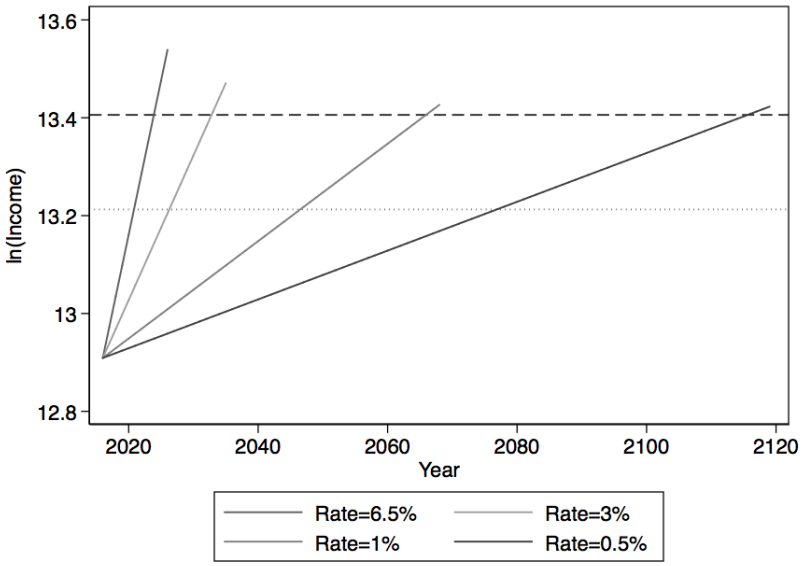
Moreover, expectations about the future seem to have a monotonic relationship with future-oriented behavior (Delavande et al. 2011). For example, studying farmers in Uganda, Hill (2009) finds that expectations about future coffee prices are positively associated with the share of labor allocated to coffee production. Gine et al. (2015) find evidence suggesting that expectations about the monsoon in India influence farmer's input choices during planting season. While studying share-cropping contracts in Madagascar, Bellemare (2012) finds that expected gains or losses influence choice of contract type. Finally, McKenzie et al. (2007) present evidence that subjective expectations about future income after migrating abroad positively influence the likelihood of applying to work abroad. These findings contrast with both theoretical predictions (Ray 2006) and the empirical findings of the present study on the inverted U-shaped relationship between aspirations and future-oriented behavior.

To test for and make a distinction between aspirations and expectations, I exploit the idea that expectations—even when they are subjectively measured—relate to an outcome that is likely to occur with a relatively high probability and that aspirations do not hold this feature. If aspirations for income are large enough—relative to current income level—so that they are unrealistic without some meaningful change to one's life circumstances, then it is safe to conclude that the measures of aspirations are distinct from expectations.

Figure 4 illustrates this test. The dashed line (with roughly a natural log of income of 13.4) represents average aspirations measured in terms of "wants." The dotted line (with roughly a natural log of income of 13.2) represents average aspirations measured in terms of "needs." Rays extend outward from an origin representing the average current income level at the time the data were collected in 2016. Each ray represents a different rate of income growth.

The steepest ray assumes an extreme upper bound on the rate of income growth. At the time data were being collected, the IMF reported Myanmar as experiencing the fastest growth in the

Figure 4: Income Aspirations, Current Income, and Rates of Income Growth



Notes: In this figure, each line assumes a different rate of income growth and starts at the mean level of the natural log of current income. The dashed line represents the natural log of the primary income aspirations measure and the dotted line represents the natural log of the alternative income aspirations measure. The x-axis represents years and the y-axis represents the natural log of income.

world—with a real GDP growth rate of 6.5 percent. Taking this rate of income growth seriously requires assumptions that are quite unlikely to hold in reality. Namely, that there is no income inequality in Myanmar and that everyone benefits equally from increased GDP output. Nevertheless if income grows at a rate of 6.5 percent then residents of Mon State will achieve the level of income they "want to achieve" by 2024 and the level of income they "need to feel financially secure" by 2021. The next steepest ray assumes a rate of income growth of 3 percent. Under this scenario, the level of income "wanted" is achieved by 2033 and the level of income "needed" is achieved by 2026. Given the average age of respondents is roughly 46 years old, it may be likely that individuals will actually achieve these levels of income in their lifetime, under the previous two rates of income growth. Assuming rates of income growth of 6.5 and 3 percent, however, may be quite unrealistic.

The next two rays assume rates of income growth of 1 and 0.5 percent, respectively. Under these scenarios, respondents will only achieve the "wanted" and "needed" levels of aspirations when they are quite old or beyond a reasonable life expectancy. Assuming a 1 percent rate of income growth, individuals will not achieve the level of "wanted" income until 2066 and the level of "needed" income until 2047. Assuming a 0.5 percent rate of income growth, individuals will not achieve these levels of income until 2117 and 2077, respectively. Therefore, under these two rates of income

growth, it is rather unreasonable to consider the levels of aspirations measured in this study to be valid expectations. Furthermore, although these rates may be more realistic, they may still be overly optimistic and unrealistic in the context of Mon State, Myanmar.

All of this supports the conclusion that the measures of aspirations measured in this study are (a) legitimate, based on robustness of results across two different measurement approaches, and (b) distinct from expectations. Therefore, what has become the conventional method for measuring aspirations seems to elicit valid measurements—at least in the context of this study.