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Social Drivers of Aspirations Formation and Failure in Rural Nepal

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April 4, 2016

Abstract

The importance of aspirations for economic decision making has recently gained attention in economics. In this paper we empirically test the theories of aspirations windows, gaps, and failures articulated in Appadurai (2004), Ray (2006), and Genicot and Ray (2015) using a unique dataset from rural Nepal. We ask two questions: (1) What are the social drivers of aspirations formation?, and (2) How do aspirations influence future-oriented behavior? Our analysis suggests that the readily observable characteristics of one's peers are quite important in forming aspirations for income, assets, status and education. The difference between current status and aspirations drives future-oriented economic behavior as predicted by theory: investment in the future increases with aspirations up to a certain point, but if the gap between one's current status and one aspirations becomes too large, investment subsequently declines.

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1 Introduction

Considerable evidence suggests that poor households frequently underinvest even when returns are high. This failure to optimize is often attributed to the presence of binding external constraints: thin or missing markets for inputs, outputs, credit or insurance; inadequate vehicles for savings; asymmetric information; and social sharing norms are examples. But external constraints often provide incomplete or unsatisfying explanations for sub-optimal future-oriented behavior. Internal behavioral constraints may also be important, and have received growing attention in recent years (Duflo, Kremer, and Robinson, 2011; Ashraf, Karlan, and Yin, 2006). In this paper we use unique data from rural Nepal to empirically analyze the determinants of a particular internal constraint, aspirations, and the role it plays in determining future-oriented behavior.

If internal constraints like aspirations inhibit economic behavior in a way that perpetuates poverty, then there is scope to design interventions that target internal constraints as well as external ones. Recent empirical papers on this topic have tested interventions of this kind to analyze the importance of aspirations for future-oriented behavior (Macours and Vakis, 2009; Laajaj, 2014; Beaman et al., 2012; Bernard and Taffesse, 2014). These analyses are insightful, demonstrating how aspirations can be externally influenced to encourage higher levels of investment. However, they do not address two important concepts. First, these studies do not take into account recent theory that articulates a complex relationship between current status, aspirations, and behavior. Second, they largely ignore the deep origins of aspirations, including social drivers of aspiration formation. These social components of aspirations formation will influence how interventions aimed at increasing individual aspirations will affect others.¹

Recent theoretical work has analyzed the complex relationship between aspirations, investment, and poverty (Dalton, Ghosal, and Mani, 2015; Ray, 2006; Genicot and Ray, 2015; Bogliacino and Ortoleva, 2013; Lybbert and Wydick, 2015; Mookherjee, Ray, and Napel, 2010). A key hypothesis arising from this literature is an inverse-U shaped relationship between aspirations and

¹Macours and Vakis (2014) and Beaman et al. (2012) do consider the importance of leaders and role models, but not necessarily on the influence of regular social interactions between other “similar” individuals, which we do in this paper.

investment introduced by Ray (2006) and elaborated upon in Genicot and Ray (2015).² Specifically, the amount an individual invests in the future depends on an individual's aspirations relative to their current status. If aspirations barely exceed current status, then the investment required to meet them is relatively low. As aspirations increase, optimal investment increases. But if aspirations grow too large (relative to current status), the theory suggests that "failure" will occur, and investment is suspended.

If aspirations are an avenue by which policies and programs can influence investment, it is important to understand their origins. Much of the existing literature assumes that aspirations stem from observing neighbors and peers, often taking the "average observation" as one's own aspiration. This shared assumption stems from anthropologist Arjun Appadurai's (2004) concept of an aspirational map. According to Appadurai, "Aspirations are never simply individual... They are always formed in interaction and in the thick of social life." Ray (2006) develops this concept further, "individual desires and standards of behavior are often defined by experience and observation; they don't exist in social isolation." If aspirations are socially determined and affect behavior, there is tremendous scope for any development intervention to have secondary effects by altering aspirations within a community, and these effects potentially be positive or negative.

In this paper we use rich social networks data combined with a unique measure of aspirations across three dimensions (income, assets, and education) to (1) estimate social influences of aspirations formation among rural Nepali women, and (2) evaluate the importance of aspirations in determining future-oriented economic behavior. Through this analysis we provide the first direct empirical test (to our knowledge) of both the aspiration formation and failure theories articulated in Appadurai (2004), Ray (2006), and Genicot and Ray (2015).

We find that social drivers are important for forming aspirations. Specifically, we find that individual's aspirations are influenced by the outcomes of those . We also present evidence supporting the inverse-U relationship between aspirations and future oriented financial behavior

²In Genicot and Ray (2015) the relationship at the individual level is that investment increases with aspirations up to a point, and after that point investment is low and constant. We will offer more detail as to how their model of individual paper results in an inverse-U relationship on aggregate later in this paper.

(saving and borrowing for investment). Our empirical results suggest that the probability of engaging in these behaviors increases with aspirations up to a point, but then fall as predicted by the model.

The paper proceeds as follows. In sections 2 and 3 we discuss the relevant theoretical and empirical literature, and present a theoretical model of aspirations failure (section 2) and formation (section 3) adapted from Genicot and Ray (2015). In section 4 we describe the study setting and data collection process. In section 5 we present our strategy and findings. Section 6 concludes.

2 The Failure of Aspirations

Poor households often fail to make even small investments that are thought to have large returns in the long run, indicating that they face substantial constraints to doing so. Many policies intended to increase investment among the poor focus on easing external constraints. Examples include policies designed to increase savings through informal village banking systems such as ROSCAs (Besley, Coate, and Loury, 1993), decrease transaction costs to access formal banking (Jack and Suri, 2011; Flory, 2012), improve information on the benefits of education investments (Nguyen, 2008), and encourage investment in education using conditional cash transfer programs (Skoufias et al., 2001). However, despite the removal of external constraints through these kinds of programs, low levels of investment often remains the norm.

Recent work has recognized that internal constraints, in addition to external constraints, may prevent investment and other future-oriented behavior. A lack of aspirations and/or hope are examples of internal constraints that have been identified as critical for investment and poverty dynamics. In a seminal contribution in this field, anthropologist Arjun Appadurai (2004) argued that policies designed to strengthen the poor’s capacity to aspire could “contest and alter the conditions of their poverty.” Several recent theoretical papers have explored different avenues through which a lack of aspirations can affect optimal investment behavior and thereby reinforce poverty. Under various assumptions about how aspirations are formed, Dalton, Ghosal, and Mani

(2015), Genicot and Ray (2015), and Bogliacino and Ortoleva (2013) all suggest low aspirations will lead to low levels of investment. In both Dalton, Ghosal, and Mani (2015) and Bogliacino and Ortoleva (2013), a critical “low” aspirations threshold exists above which investment grows with aspirations, and below which aspirations “fail” and optimal investment is low. Genicot and Ray (2015) also suggest that investment will be relatively low for low levels of aspirations, and subsequently grow with aspirations, but their model suggests an alternative critical “high” aspirations threshold at which point aspirations “fail” and investment plummets. In other words, their model predicts an inverse-U shaped relationship between aspirations and investment, a hypothesis first presented in Appadurai (2004) and Ray (2006), and one we seek to test empirically in this paper.

In the next section we employ the model presented in Genicot and Ray (2015) to provide the necessary intuition for our empirical test of the aspirations failure theory. In section 2.2 we review recent empirical literature related to the aspirations failure hypothesis.

2.1 A Model of Aspirations Failure

To motivate our empirical analysis of aspirations failures, we employ the model presented in Genicot and Ray (2015) with minor adaptations. While their model is multi-generational, we suppose that an individual maximizes her own utility over two periods of her life, the present and the future. Starting with a wealth endowment of y_0 , the individual can either consume (c) or invest in the future (k) so that $y_0 = c + k$. She receives a return of ρ on her investment so that she has income in the subsequent period $y_1 = \rho k$.

The agent also has aspirations α , which for now are assumed to be exogenous. In the first period she derives utility only from consumption. In the second period she derives utility from income, and also from exceeding aspirations. This “bonus” utility from exceeding aspirations is written as $w(e)$. In this way, the agent maximizes the following 2-period utility function:

$$u = v_0(c) + \beta[v_1(\rho k) + w(e)] \tag{1}$$

where β is a personal discount factor and $e = \max\{y_1 - a, 0\}$ (following Genicot and Ray (2015)). We assume that v_0 , v_1 , and w are smooth, increasing, and strictly concave.

When deciding how much to invest in the future, the agent compares the benefits and costs of investment. Doing so, she must consider two scenarios: one where her aspirations are met (her aspirations are “satisfied”, in the words of Genicot and Ray) and one where they are not (her aspirations are “frustrated”):

$$B(k) = \begin{cases} \beta[v_1(\rho k) + w(0)] & \text{if } \rho k < a \text{ (frustrated)} \\ \beta[v_1(\rho k) + w(\rho k - a)] & \text{if } \rho k \geq a \text{ (satisfied)} \end{cases} \quad (2)$$

The costs of investment are the same regardless of whether her aspirations are satisfied:

$$C(k) = v_0(y_0) - v_0(y_0 - k) \quad (3)$$

Because $v'_0(k) > 0$ and $v''_0(k) < 0$, it follows that $C'(k) > 0$ and $C''(k) < 0$. We depict the relationship between chosen investment, the benefit of investing, and the cost of investing in figure 1. The individual will choose the level of investment k^* that maximizes the net benefits of investment, $NB(k) = B(k) - C(k)$. As demonstrated in equation 2, there exists a discontinuity in $B(k)$, and therefore in NB , where $k = \frac{a}{\rho}$. This discontinuity yields two local solutions for k^* : the agent solves for k_{low}^* to maximize NB to the left of $\frac{a}{\rho}$, and k_{high}^* to maximize $NB(k)$ to the right of $\frac{a}{\rho}$. She then selects from k_{low}^* and k_{high}^* the level of investment that results in the higher net benefits. Importantly, $\frac{\partial k_{high}^*}{\partial a} > 0$ and $\frac{\partial k_{low}^*}{\partial a} = 0$, i.e., aspirations only affect investment if the individual is trying to meet her aspirations.

When an individual’s aspiration is close to zero, the optimal solution must strictly exceed the aspiration, and aspirations are satisfied. Notice that a change in aspirations shifts the discontinuity in the benefits function to the right in figure 1. Thus, as aspirations increase (holding initial income fixed), so does optimal investment k^* , at least for a while. However, as pointed out by Genicot and Ray (2015), there is a unique threshold value of aspirations below which as-

pirations are satisfied (such that k_{high}^* is the optimal choice), and above which aspirations are frustrated (k_{low}^* is the optimal choice). This threshold, which we call \hat{a} , is depicted in figure 2, which plots optimal investment as a function of aspirations, holding initial income fixed. Notice that threshold \hat{a} is the level of aspirations at which $NB(k_{low}^*) = NB(k_{high}^*)$, i.e. the individual is indifferent between satisfying her aspirations or not. This indifference holds if:

$$\beta[v_1(\rho k_{low}^*) + w(0)] + v_0(y_0 - k_{low}^*) = \beta[v_1(\rho k_{high}^*) + w(\rho k_{high}^* - \hat{a})] + v_0(y_0 - k_{high}^*). \quad (4)$$

From this equation it is clear that the behavioral threshold, \hat{a} , thus depends on the agent's initial endowment, discount factor, the rate of return on investment, and individual characteristics that enter the utility function. Using the implicit function theorem, we find that $\frac{\partial \hat{a}}{\partial \beta} > 0$ and $\frac{\partial \hat{a}}{\partial y_0} > 0$ (the calculations are in the appendix).³ In other words, the behavioral switching point, \hat{a} , increases with both β and y_0 . Thus more patient individuals, or those who are initially better off, are more likely to chose k_{high}^* over k_{low}^* for a given level of aspirations a .

Note that changes in \hat{a} are distinct from changes in a , which we will discuss in section 3. What is important is the relationship between a and \hat{a} : If $a > \hat{a}$, the individual will invest k_{low}^* , and if $a < \hat{a}$ she will invest k_{high}^* (at $a = \hat{a}$ she is indifferent).

2.2 Empirical Evidence of Aspirations Failure

Empirical tests of aspirations failure confirm a relationship between aspirations and investment exists. Macours and Vakis (2014) present evidence from a randomized cash transfer program suggesting that increased aspirations led to increased investment in Nicaragua. Laajaj (2014) describes a particular type of aspirations failure as the inability to think about a future without any prospects, resulting in a lack of investment. Using a randomized control, he shows that a positive shock in the form of agro-input subsidies lengthens poor farmers' planning horizons in Mozambique. Bernard et al. (2011) find evidence of aspirations failure in the fatalism exhibited

³Under most circumstances it is also true that $\frac{\partial \hat{a}}{\partial \rho} > 0$ (see appendix)

by Ethiopian farmers, and that this failure is correlated with non future-oriented economic behavior. In related work, Bernard et al. (2014) demonstrate observable increases in future-oriented behaviors resulting from randomly increased aspirations after watching an inspirational documentary. Beaman et al. (2012) exploit a randomized policy experiment in India that reserved a certain number of village leadership roles for women to demonstrate how educational investment in girls increases when aspirations increase.

While these empirical analyses confirm the existence of a causal relationship between aspirations and investment behavior, each of these studies has ignored the complex nonlinear relationship between aspirations and investment identified in the theoretical literature. If a failure can result from increasing aspirations “too much,” then a delicate balance must be struck. The empirical analysis provided in Section 5 explicitly tests for the hypothesized nonlinear relationship between aspirations and investment that has been explored in the theoretical literature, but to date has not been explored empirically. Before turning to that analysis, we consider how aspirations are formed.

3 The Formation of Aspirations

In seminal work, Ray (2006), suggests that people “draw [their] aspirations from the lives, achievements, and ideals of those who exist in [their] aspirations window.” In other words, an individual’s aspirations are unlikely to be formed in isolation,⁴; they are at least in part formed socially. In particular, Ray posits that it is the “similar” or “attainable” people who exist in the “cognitive neighborhood” of an individual that frame one’s aspirations.

A growing empirical literature focused on subjective well-being suggests that aspirations are indeed influenced by social factors. Several papers examining the importance of relative status to happiness demonstrate a social aspect of aspirations formation. Stutzer (2004) finds that average community income increases individuals’ income aspirations in Switzerland, and

⁴The theoretical model presented by Dalton, Ghosal, and Mani (2015) focuses on the internal drivers of aspirations, but represents an exception in the theoretical literature which more often considers external forces.

that these heightened aspirations decrease happiness. In a similar study, Knight and Gunatilaka (2012) find that in rural China, income aspirations are pushed upward by both actual income and reference income. Both of these papers do not directly capture income aspirations, but proxy for it using the minimum income level on which the respondent deems adequate to get by. While not explicitly dealing with aspirations, Ferrer-i-Carbonell (2005) finds subjective well-being to be decreasing with the income of the reference group in Germany. In Nepal, Fafchamps and Shilpi (2008) find that the probability individuals considered their own household consumption of various goods adequate decreased with the total consumptions of households in their reference group.

The above papers all assume that aspirations are a combination of internal factors (the individual's current status and past experience) and external ones (the status of people in their reference groups). Genicot and Ray (2015) suggest that aspirations formation can be modeled as:

$$\alpha = (1 - \gamma)y_0 + \gamma\Psi(y_0, F) \quad (5)$$

In 5, γ is the weight one places on their position relative to others, F represents the distribution of the outcome within the reference group, and Ψ is a function by which an individual's position in the reference distribution affects their aspirations. Who composes an individual's preference group is an empirical question, and may depend heavily on context. Most of the papers mentioned at the beginning of this section assumed the reference group was determined at least in part geographically. Ferrer-i-Carbonell (2005) uses people of similar age and education level living in the same region. Knight and Gunatilaka (2012) and Fafchamps and Shilpi (2008) both use the village as the reference group. In a second empirical model, Fafchamps and Shilpi (2008) use the district of birth as the reference group for migrants. It is possible that the reference group is also determined along ethnic or religious lines. For instance, in Bangladesh, Munshi and Myaux (2006) find that desired family size, and thus the prevalence of contraception, are socially determined within religious groups but not across them, even in the same community. In this paper we test multiple reference groups: village (small geographical area), district (large

geographical area), caste, and social network as defined by the individual.

The specification in 5 is agnostic with respect to how F and y_0 enter the aspirations formation function Ψ , and Genicot and Ray (2015) put forth three possibilities. Perhaps the social component of an individual's aspirations is simply the maximum level of some outcome in her reference group. Or, it could also be that the social component of her aspirations is the average level she observes in her reference group. This has been the most common assumption in empirical work Fafchamps and Shilpi (2008); Knight and Gunatilaka (2012); Stutzer (2004). If people look upward but not downward when forming their aspirations, as hypothesized by Dusenberry (1949) and demonstrated empirically by Ferrer-i-Carbonell (2005), then a more appropriate approach would be to consider Ψ to be the average status of those with a higher level than the individual.

In our empirical analysis to follow, we will examine the social impact on aspirations for personal income and children's education. Because other peoples' income is very hard to observe, we will use the distribution of assets (an outward manifestation of income) for F to model aspired income. Because many children have not yet obtained their maximum education level, we will use peer education for F to model aspired children's education. To account for different possible structures of Ψ , we estimate models of aspirations formations using overall average and average of those at a higher (and lower) status level.⁵

4 Context & Data

In this paper we seek to empirically analyze the established theories of aspiration failure and formation described in the previous two sections. These theories have previously evaded rigorous empirical analysis for two primary reasons: First, aspirations are not easily observable, difficult to measure, and rarely captured using household survey techniques. Second, to adequately cap-

⁵We do not estimate models using maximum status in the reference group because with our sampling procedure, we are unlikely to capture the actual maximum in each reference group, and thus would incur more error than we do by using averages.

ture the social drivers of aspirations formation, a researcher must have detailed social networks survey data, which, at least historically, has been quite rare. This paper takes advantage of a unique household dataset that includes a detailed module of individual aspirations for the female household head, as well as a separate social networks survey. In the following subsection we describe the local setting and the general household survey. Because the aspirations data and social networks data are both critical and unique to our analysis, we describe both in greater detail in sections 4.2 and 4.3 respectively.

4.1 Data from Rural Nepal

For this study we collected data from over 3,000 rural Nepali women eligible for participation in an asset transfer program across three regions of Nepal from June-September 2014.⁶ Nepal is the poorest country in South Asia and the 13th poorest country in the world. In recent years, Nepal has made significant strides towards poverty alleviation but poverty persists, especially in the countryside; 55 percent of Nepalese earn less than \$1.25 a day, and that number climbs sharply in the rural mountain and hill districts where more than 70 percent of people rely on agriculture for their livelihoods (USAID, 2013).

There are several reasons why a focus on women's aspirations in Nepal is important. The condition of women, and their empowerment relative to men, is a development priority, as evidenced by the third Millennium Development Goal and more recently, the World Bank 2012 World Development Report (World Bank, 2011). Recent studies from Nepal demonstrate that greater female control over income (Malapit et al., 20015) and assets (Allendorf, 2007) result in better maternal and child nutrition in Nepal.

Data collection took place in two phases. First, a team administered an extensive household survey including questions about income, asset ownership and control, education, health and nutrition, food security, caste, women's empowerment, aspirations, and various indicators

⁶In addition to serving as the dataset used in this paper, the data serves as baseline data for an impact evaluation of the asset transfer program.

of future-oriented behavior. In what follows, income is yearly individual income, as reported by the respondent. Asset value is the total value of land and housing belonging to the household.⁷ To capture future-oriented behavior we asked questions about savings, membership in a savings group, and discount rate. At this first interview, enumerators also took photographs of respondents to be compiled as village photo directories. In the second phase of data collection, this photo directory was used to collect social networks data on a subsample of the population, as described below.

Table 1 contains descriptive statistics for the full sample and the subsample for which we have network data. The table is organized into three panels: (A) basic demographic and economic variables, (B) investment behavior, and (C) aspirations.

The mean respondent age is approximately 40 years old. On average these women possessed 2.71 years of formal education, but median years of education is zero. The women chosen for the study are generally poor (although not uniformly so, some are considerably better off than others). Average personal yearly income was around 60,000 NPR (approximately 600 USD)⁸ and respondents estimated their household land and home to be worth 1.4 million NPR, but there is substantial variance. Economic migration to urban areas and foreign countries (typically Gulf states) is very common in Nepal. In our sample, 60 percent of households had an outgoing migrant.

The dependent variables for our two connected strands of empirical analysis are aspirations and investment, or future-oriented behavior. We discuss aspirations data in the following subsection. For investment behavior we use the following variables: whether the respondent is in a savings group, whether they saved last month, how much they saved last month, whether they took a loan for investment purposes, the size of investment loan taken, and amount spent on children's education. Much of the sample does invest: 42 percent of the sample is in a savings group, which exist in nearly every village in rural Nepal, and 54 percent saved at least some money in

⁷While pre-testing the survey, this was determined to be the most important indicator of a household's asset base.

⁸At the time of the study the exchange rate was roughly 100 NPR to 1 USD.

the month leading up to the survey. On average, the amount saved was 1,500 NPR. Less than 10 percent of women took out loans for investment. The average loan size overall was 19,700 NPR, but the average loan size for those who took out a loan was 215,000 NPR. Despite having very little education themselves, women in the sample invest substantially in their children's education. On average, they spent 10,300 NPR per child in the year before the survey.

4.2 Measuring aspirations

As argued by Bernard and Taffesse (2014), recent studies in economics have typically modeled aspirations using ad-hoc indicators, with little consistency across studies. Stutzer (2004) and Knight and Gunatilaka (2012) use the minimum level of income a respondent said would be adequate to proxy for aspirations. Macours and Vakis (2014) use a depression scale and Bernard, Dercon, and Taffesse (2011) use two simple measures of locus of control and self-efficacy based on Rotter (1966). As theory would predict, both the Macours and Vakis (2014) and Bernard, Dercon, and Taffesse (2011) studies find that aspirations are integrally related to an individual's discount rate and planning time horizon. Recognizing this connection, Laajaj (2014) measures aspirations using survey responses to the question, "How much time ahead do you plan your future expenditures?" Similarly, one could arguably use typical time discounting questions such as "Do you prefer receiving x today or y one month from now?"

Each of the proxy preference parameters used in the above studies are distinct from aspirations in the model presented in section 2, so they are unlikely to precisely capture the aspirations we seek to measure. Beaman et al. (2012) consider an arguably more direct approach toward measuring parental aspirations for children by asking about the desired educational attainment of children, desired age of marriage for children, preferred occupation of children at the age of 25, and whether the parent wished for a female child to become a village leader. Building on this more direct approach, Bernard and Taffesse (2014) propose a novel new instrument constructed from directly asking about aspirations across multiple dimensions, where each dimension is given a weight by the respondent so an index can be created.

Our analysis uses two components of the Bernard and Taffesse (2014) index: personal income and education of children.⁹ The format of questions for each dimension is similar. As an example, the questions related to income-based aspirations are: (1) “What is the maximum level of income that a person in your community might expect to earn in a year?” (2) “What is the minimum level of income that a person in your community might expect to earn in a year?” (3) “What is your present level of income?” and (4) “What level of yearly income do you think you might be able to achieve in the future?”. Questions (1) and (2) are intended to make respondents delineate a realistic range before stating their own income and their aspirational income following Manski’s (2004) suggestions for measuring expectations. For education we asked about how many years of schooling respondent’s aspired to for their children.

Our aspirations data come directly from respondents’ answer to question (4) above. On average, respondents aspired for a yearly personal income of approximately 140,000 NPR, or 2.3 times their current income. While few women in our sample have any formal schooling, the average aspired education for their children is 13 years, and 90 percent of women aspired to at least 10 years (Table 1, panel C).

4.3 Constructing the aspirations window

In section 3 above we discussed different possibilities for how the distribution of some outcome, in this case asset value and education, within an individual’s reference group affects their aspirations. Defining this reference group, or “window”, is challenging empirically, particularly if that reference group is not determined by easily observable variables like geography, religion or caste. We estimate a model of aspirations formation using three of these variables: VDC (a village), district, and caste. Because we have data on actual social links between individuals in the sample, we can also estimate a model where the reference group is the social network. This could be a potentially much more refined reference group from which to estimate social drivers

⁹We also collected data on the other two components, assets and status, but do not use them in our analysis here. While we could construct and use the composite index itself, we found it more insightful to consider aspirations across dimensions separately.

of aspirations.

In the past decade, economists have increasingly collected detailed social network data to conduct research on information and technology diffusion (Maertens and Barrett, 2013; Magnan et al., 2015; Conley and Udry, 2010; Cai, De Janvry, and Sadoulet, 2015). To our knowledge, we are the first to do so for the purpose of studying aspirations formation. To collect this data, we adapted the methodology of Magnan et al. (2015) and used photo directories containing all sample individuals within a VDC. While showing respondents the directory and asked respondents to identify people that they knew. For each individual that they knew enumerators asked whether that individual was a close family member, a relative, a neighbor, a friend, an acquaintance, or a familiar face. As previously stated, the data used for this study come from the baseline study for a multi-year RCT. We only collected network data from individuals in treatment VDCs, thus subsample for which we have network data is about half the size ($N = 1619$) as the full sample ($N = 3280$).

Within VDCs, network links were fairly common. Of the nearly 85,000 possible links between individuals in the same VDC, 47 percent were realized. Of these realized links, 8 percent were familiar faces, 57 percent were acquaintances, seven percent were neighbors, 15 percent were relatives, and 1 percent were close family. In an effort to capture strong relationships and better distinguish the social network reference group from the VDC reference group, we considered a link to exist between A and B if A reported that B is close family, a relative, a friend, or a neighbor. There are several ways we can define a link with this data: unidirectional (B is in A's network if A claims B), bidirectional (B is in A's network if A claims B or B claims A), or reciprocal (B is in A's network if A claims B and B claims A). For close family, relatives, and neighbors this distinction should not matter. Friendships, however, can be asymmetrical. In an asymmetrical friendship where A considers B a friend but B does not consider A a friend, we expect that B's status would influence A's aspirations much more than A's status would influence B's aspirations.

Once the reference group has been defined, we still need to consider different ways in which the distribution of outcomes within that group affects aspirations. We consider both the possi-

bility that it is the overall average within the reference group, and also the case where aspirations are influenced by those in the reference group with a higher level of status, but not by those with a lower level (or it is influenced negatively). Table 2 contains descriptive statistics on the size of the potential reference groups and average asset value and education within each. We also present these statistics separately for the subset of reference group members with a higher asset value/education than the individual and the subset with a lower level. The smallest reference group is the social network, which contains approximately 9 individuals. In the VDC there are an average of 52 individuals, in the district there are an average of 600, and in the same caste there are an average of 800. These groups are not distinct, as people's social networks are formed by people in their VDC (and thus district) and their caste. However, as the reference group gets larger, the proportion of network contacts within that group shrinks.

The average asset value in the reference groups is between 1 million NPR and 1.43 million NPR, which is unsurprisingly very similar to the average asset value in the sample. The average above, however, was over twice this amount and the average below was roughly one-quarter this amount. Education levels in our sample are very low. On average, respondents had less than three years of formal education. Because so many women in the sample had no formal education, the average number of people in their reference group with more education (usually *any* formal education) is one-third the number of people with the same or less amount of education. Women in the reference group with less education than the respondent had less than one year on average, whereas women with more education than the respondent had between 5 and 9 years on average. Descriptive statistics for average asset level and average education for those in the reference group above and below the individual are shown in Table 2 (sample averages are similar to those in Table 1).

5 Estimation & Results

5.1 Aspirations failure

In this section we seek to empirically test for the theoretical relationship described by figure 2. Ray (2006) supposes that it is not aspirations, per se, that drives this relationship, but the difference between the aspired to standard of living and current status. This difference has been articulated as an ‘aspirations gap’ (Ray, 2006) and an ‘aspirations ratio’ (Genicot and Ray, 2015). The ‘aspirations gap,’ G , is the percent difference between an individual’s realized level of some outcome and their aspired-to standard of living ($\frac{a - y_0}{a}$), and the aspirations ratio, r , is the current level of the outcome divided by their aspirations ($\frac{y_0}{a}$). Because an individual should aspire to be at least as well off in the future as they are in the present, G and r must both be positive and between zero and one. These are useful concepts for empirical work because they limit the range of possible values and allow for more meaningful comparisons between individuals.¹⁰

Figure 2 can be altered to accommodate the (inverse) aspirations ratio by dividing the values on both the x- and y-axis by y_0 so that the value on the y-axis becomes percent of current level invested. The inverse aspirations ratio moves in the same direction as the aspirations gap, so we would expect to see the same relationship between k and a as we do between k and $\frac{a}{y_0}$, and similarly between k and G . For our empirical analysis we use the aspirations gap because it moves in the same direction as aspirations, facilitating comparison with the theoretical model, and allows us to include women with no income or assets, of which there are many.

To capture k , we consider savings and loans taken for investment as proxies for future-oriented investment behavior. Specifically, we use membership in a savings group, whether or not the individual saved any money in the previous month, and how much money she saved in the previous month, whether the individual took out a loan for investment purposes, and the

¹⁰The aspirations gap, G , can be related to the aspirations ratio, r , by means of a simple algebraic manipulation:

$$G(a, y_0) = \frac{a - y_0}{a} = 1 - \frac{y_0}{a} = 1 - r(a, y_0) \Rightarrow r(a, y_0) = 1 - G(a, y_0). \quad (6)$$

amount currently outstanding on an investment loan.¹¹

At the individual level, theory predicts investment behavior to increase with aspirations up to the point \hat{a} , and then drop sharply to a low level of investment k_{low}^* . However, on aggregate we will not capture a discrete jump because \hat{a} is heterogeneous across individuals, unobserved, and determined by many factors which are also unobserved. In simulation results available from the authors, it can be shown that once aggregated, the relationship will appear to be an inverted-U shape.¹²

We include the aspirations gaps for both income and asset value as explanatory variables of interest and their squared terms, which will allow the hypothesized inverted-U relationship between aspirations gaps and future oriented behavior. Because the aspirations gap is a function of current income, which is likely correlated with future-oriented behavior through non-aspirational channels, we must control for current income and assets in our estimation. The model becomes:¹³

$$k_i = \beta_0 + \beta_1 \cdot G_i^{inc} + \beta_2 \cdot (G_i^{inc})^2 + \beta_3 \cdot G_i^{ast} + \beta_4 \cdot (G_i^{ast})^2 + \beta_5 \cdot Y_{0i}^{inc} + \beta_6 \cdot Y_{0i}^{ast} + \varepsilon_i \quad (7)$$

A similar regression can be run to test for whether education investment is a nonlinear function of education gaps:

$$k_i = \beta_0 + \beta_1 \cdot G_i^{edu} + \beta_2 \cdot (G_i^{edu})^2 + \beta_3 \cdot X_{edu} + \beta_4 \cdot Y_{0i}^{inc} + \beta_5 \cdot Y_{0i}^{ast} + \varepsilon_i \quad (8)$$

Table 3 reports the results of estimating Equations 7 (columns (1)-(5)) and 8 (columns (6)-(7)) above. Each column in the table considers a different proxy for investment k . The first three columns consider savings as an indication of future-oriented behavior. Column (1) uses a depen-

¹¹Note that the amount saved or invested is the the direct empirical analog of figure 1 after dividing by y_0 .

¹²Consider the following thought exercise: there exists some distribution of \hat{a} . At any level of \hat{a} some proportion of individuals exhibit $a < \hat{a}$ and invest k_{high}^* , and the rest exhibit $a > \hat{a}$ and invest k_{low}^* . As a increases, the higher the proportion of the population will invest k_{low}^* , resulting in a downward sloping relationship between a (or $\frac{a}{y_0}$ or G) and k but no precipitous drop. This will be true for both discretely and continuously measured future oriented behavior.

¹³We also control for village and caste fixed effects.

dent variable equal to one if the individual is a member of a savings group, column (2) uses a dependent variable equal to one if the individual reported any savings in the past month, and column (3) considers the amount saved in the previous month as a proxy for y_i . Columns (4)-(5) consider loans taken for investment where column (4) uses a dependent variable equal to one if the individual has taken out a loan for investment purposes, and column (5) the outstanding amount of that loan. Columns (6)-(7) report the results of Equation 8. Column (6) uses a dependent variable equal to 1 if the household has any education-related expenditures in the past year (transportation costs to attend school, school tuition, school uniform, or school supplies), while column (7) considers the total amount of those annual expenditures as the dependent variable.

The results presented in table 3 provide some evidence that the income-based aspirations gap is correlated with future-oriented behavior. Aspiring for income levels that are higher than one's current income increases the likelihood that one saves and invests in the future. There is also some evidence that the relationship between the income-aspirations gap and future-oriented behavior is nonlinear, as evidenced by the negative coefficient for $A_i^{inc^2}$. This follows the theoretical prediction of an inverted-U relationship. Interestingly, the analysis does not provide evidence of a similar correlation between wealth-aspirations and future-oriented behavior. The income-based quadratic results are only statistically significant for the regressions related to savings, but because only 10% of the sample has taken out a loan for investment purposes, and 40% of households do not currently have any credit, it seems possible that many households are credit constrained - something we are unable to control for, but likely to affect the results.

The education results are qualitatively similar. The signs are as expected, but the quadratic results are not statistically significant. We therefore find a statistically significant positive relationship between the education gaps and education investments, but we cannot say that the relationship exhibits the hypothesized inverted-U shape.

The regression strategy outlined in Equation 7 provides a useful first step approach, however, the hypothesized inverted-U relationship may be better captured using semi-parametric techniques. Figures 3 - 8 use margins plots to capture the relationship between the income as-

pirations gap and the various proxies for investment, conditional on current status and other control variables. In each of the reported figures we observe the anticipated inverted-U relationship. A small gap implies a low probability of investing in the future. A medium-sized gap is correlated with a higher probability of investing in the future. But if the gap is too large, the probability of displaying future-oriented behavior declines to approximately the same likelihood as someone with a small income gap.

A similar semi-parametric analysis can be conducted using asset-based aspiration gaps. In results available from the authors, we find no evidence of the inverted-U relationship when asset-based aspiration gaps are used. It seems that income - which is privately known - is more relevant for determining aspirations failure. Alternatively, in the next section, we find that wealth - which is typically more public than income - is more important than income for the social determination of aspirations.

Figures 9 - 10 use margins plots to capture the relationship between the education aspirations gap and the two proxies for educational investment, conditional on current status and other control variables. These figures do appear to be an inverted-U relationship, but the standard errors are large enough that we can only really say that education investments seem to increase with educational aspirations.

As a final robustness check, we consider the discount rate as another potential proxy for future-oriented behavior. In results available from the authors, we estimate Equation 7 with and without the semi-parametric techniques, using various proxies for the discount rate. The findings are similar - with a statistically significant inverted u-shaped relationship. Although convincing, we use these results only as a robustness check, because it isn't clear the discount rate as a proxy for investment fits with the model (recall that β is an alternative parameter in the model.)

5.2 Aspirations formation

In Section 3 we presented a flexible model of aspirations formation (equation 5) that takes into account where an individual is in relation to her reference group. We presented two possibilities for

how the reference group shapes the externally-derived portion of aspirations. For an individual who aspires to the average level in her reference group, the empirical model is:

$$A_i = \alpha + \beta_1 \cdot \text{average}_i + \beta_2 \cdot S_i + X_i' \beta_3 + \varepsilon_i. \quad (9)$$

For someone who aspires to the average of those above her in her reference group but not below, or perhaps has her aspirations stifled by those below her, the model is:

$$A_i = \alpha + \beta_1 \cdot \text{avgabove}_i + \beta_2 \cdot \text{avgbelow}_i + \beta_3 \cdot S_i + X_i' \beta_4 + \varepsilon_i. \quad (10)$$

Because her aspirations are formed both internally (from her current level of asset value, income, or education) and externally (as a function of her level compared to those in her reference group), we include her own status S_i in the equations 9 and 10 (we include current asset value, current income, and education in both the model for aspirational income and aspirational children's education). We also control for age and whether the household has a migrant. We estimate each using the four different reference groups previously described: social network, VDC, district, and caste. Because of long right tails in the distribution of income and asset value, all monetary values are in logs.

Table 4 shows the estimation results for income aspirations as a function of asset value of the reference group. In the specifications where we only allow for average asset value in the reference group to influence income aspirations, we see no significant effect. When the social network or district are the reference group, point estimates indicate that a 1 percent increase in reference group assets results in a 0.08 percent increase in aspirational income. When we make the model more flexible and allow for average asset value for those above to have a different effect than asset value for those below, we find that a 1 percent increase in asset value leads to a 0.17 percent increase in aspirational income when the social network is the reference group. In both cases, average asset value below no significant effect (with point estimates near zero). Whether or not we estimate 9 or 10, when we use VDC or caste as the reference group we find

no significant effects, and point estimates are (strangely) negative. Note that the importance of external factors is dwarfed compared to the importance of internal factors in income aspiration formation: a 1 percent increase in current income is associated with a 0.7 percent increase in aspirational income, and a 1 percent increase in current asset value is associated with between a 0.08 and 0.25 percent increase in aspirational income.¹⁴

While it is not necessarily surprising that caste does not seem to be an appropriate reference group, it is surprising that VDC is not given that both the social network (a smaller group than the VDC) and district (a larger group than VDC) are. One possible reason for this apparent inconsistency is that the social network and the district are relevant reference groups for different reasons: the social network is people the individual knows and interacts with, whereas the district is mostly people that the individual does not know nor interact with, but is a very representative sample of similar people. The VDC consists mostly (approximately 80 percent) of people that are not in the individuals' social network, but is also a reference group that is too small to be representative.

Table 5 shows the estimation results for aspirational children's education as a function of education in the reference group. Here, we find that average education has a positive effect on aspirational children's education when the reference group is the social network, VDC, or caste. The effect is particularly strong for the latter: a one year increase in education level among women in the same caste leads to a 0.86 year increase in aspired years of children's schooling. When we separately consider women with more education (of which there are relatively few) and women with less or the same amount (of which there are relatively many), we find that an additional year of education for those above either has a positive effect of 0.25-0.3 years, whereas an additional year of schooling for below has either no effect or (strangely) a negative effect between 0.2 and 0.6 years. Here we see that the education of one's peers have as much if not more of an impact as one's own education on the amount of education she aspires for her children.

¹⁴We do not claim that the estimates for current assets, income, or education are causal. They are included mainly as control variables to mitigate potential bias from the reflection problem in estimating the effects of asset value and education in the reference group.

Comparing the results for aspirational income and aspirational child's education we see several striking differences. First of all, the appropriate reference groups are not necessarily the same. Using VDC and caste as reference groups does not reveal any social aspect of income aspiration formation, but reveals strong social effects on educational aspirations. Social network and district appear to be relevant reference groups for both types of aspirations. Second, and perhaps most importantly, the social aspect of educational aspiration is much larger relative to the internal component than it is for income aspirations. This may be because a woman's education has little to do with what she thinks is possible for her children. Thus, programs and policies targeting education might be particularly well suited to leverage social spillovers to achieve impact on education investment.

6 Concluding Remarks

This paper analyzes the complex relationship between aspirations and future-oriented behavior. We provide the first known direct empirical test of the widely cited model first introduced by Appadurai (2004) and Ray (2006) and formalized in Genicot and Ray (2015). Our empirical results reveal a convincing and robust inverted U-shape relationship between aspirations and investment, as predicted by theory. This confirms current thinking that behavioral constraints can indeed reinforce poverty, and interventions designed to alter aspirations may increase investment behavior, as other empirical work has shown.

Unlike other empirical work in this area, however, our work also provides a cautionary tale. The observed inverted-U relationship suggests that if aspirations increase too much, they may result in failure and frustration. In a lecture on the importance of hope and aspirations, Esther Duflo (2012) concludes that "goals should not be too lofty or hard to reach." Our results provide empirical evidence in support of this claim.

We also provide evidence that aspirations are in part socially formed. This confirms the importance of the hypothesized aspirations "window." If a program expands the "window" of a

poor individual through increased exposure (whether direct or indirect) to individuals of higher “status,” then it is possible that aspirations will increase as a result. Recent empirical papers confirm this logic. Macours and Vakis (2014) provide evidence from Nicaragua that a cash transfer program can increase aspirations, and that these effects are amplified when a community leader also receives a transfer. Beaman et al. (2012) presents evidence that exposure to female role models increases the career aspirations and educational attainment of adolescent girls in India. This increase is likely not a result of direct social interaction (the role models considered are female public leaders), but is more likely a result of social observation. Similarly, Bernard et al. (2014) provide evidence that a television documentary of “people from similar communities” can positively influence aspirations, suggesting that it is perhaps the example that is relevant, not the actual social interactions.¹⁵ A better understanding of the social mechanisms through which aspirations form can help us design better policies and interventions to leverage social influences.

One important implication of the social drivers of aspirations is that a program influencing aspirations is likely to have spillover effects, especially programs designed to increase social capital. For example, it is quite common for programs targeting poor women to work through women’s groups. If the program successfully increases the aspirations of only one woman within the group, then it is also more likely to subsequently increase the aspirations of additional women in the group, because aspirations are in part socially driven. Impact evaluations of programs designed with aspirations in mind must therefore also carefully seek ways to measure spillover effects. Without doing so, programs are likely to underestimate the true impact.

¹⁵Although Jensen and Oster (2009) do not explicitly measure aspirations, they also demonstrate a change in behavior, including increased educational investment, resulting from greater exposure through access to television.

7 Appendix: Comparative statics of \hat{a}

By definition $k_{low}^* < \frac{\hat{a}}{\rho} < k_{high}^*$. The utility function v is strictly increasing and concave, which implies that $v_1(\rho k_{low}^*) < v_1(\rho k_{high}^*)$, while $v'_1(\rho k_{low}^*) > v'_1(\rho k_{high}^*)$. Similarly, $v_0(\rho y_0 - k_{high}^*) < v_0(y_0 - k_{low}^*)$, while $v'_0(y_0 - k_{high}^*) > v'_0(y_0 - k_{low}^*)$.

The behavioral switching point, \hat{a} is defined by the indifference condition of equation (4).

We set this indifference equation equal to zero below:

$$I = \beta[v_1(\rho k_{low}^*) + w(0)] + v_0(y_0 - k_{low}^*) - \beta[v_1(\rho k_{high}^*) + w(\rho k_{high}^* - \hat{a})] - v_0(y_0 - k_{high}^*) = 0. \quad (11)$$

The implicit function theorem allows us write:

$$\frac{d\hat{a}}{d\beta} = \frac{\frac{\partial I}{\partial \beta}}{\frac{\partial I}{\partial \hat{a}}} = \frac{-[v_1(\rho k_{low}^*) + w(0) - v_1(\rho k_{high}^*) - w(\rho k_{high}^* - \hat{a})]}{\beta w'(\rho k_{high}^* - \hat{a})} > 0, \quad (12)$$

and

$$\frac{d\hat{a}}{dy_0} = \frac{\frac{\partial I}{\partial y_0}}{\frac{\partial I}{\partial \hat{a}}} = \frac{-[v'_0(y_0 - k_{low}^*) - v'_0(y_0 - k_{high}^*)]}{\beta w'(\rho k_{high}^* - \hat{a})} > 0. \quad (13)$$

This implies that the behavioral switching point, \hat{a} , increases with β and y_0 . Note that we can also solve for $\frac{d\hat{a}}{d\rho}$ using the implicit function theorem:

$$\frac{d\hat{a}}{d\rho} = \frac{\frac{\partial I}{\partial \rho}}{\frac{\partial I}{\partial \hat{a}}} = \frac{-[\beta k_{low}^* v'_1(\rho k_{low}^*) - \beta k_{high}^* v'_1(\rho k_{high}^*) - \beta k_{high}^* w'(\rho k_{high}^* - \hat{a})]}{\beta w'(\rho k_{high}^* - \hat{a})}. \quad (14)$$

However, we cannot unambiguously determine the sign of $\frac{d\hat{a}}{d\rho}$. For most functional forms of v (e.g., all of type $v = x^\alpha$ and $v = \ln(x)$), $k_{high}^* v'_1(\rho k_{high}^*) \geq k_{low}^* v'_1(\rho k_{low}^*)$, and therefore $\frac{d\hat{a}}{d\rho} > 0$. Note that the above conditions hold for any values of k_{high}^* and k_{low}^* , which will also change in response to changes in β , y_0 , and ρ .

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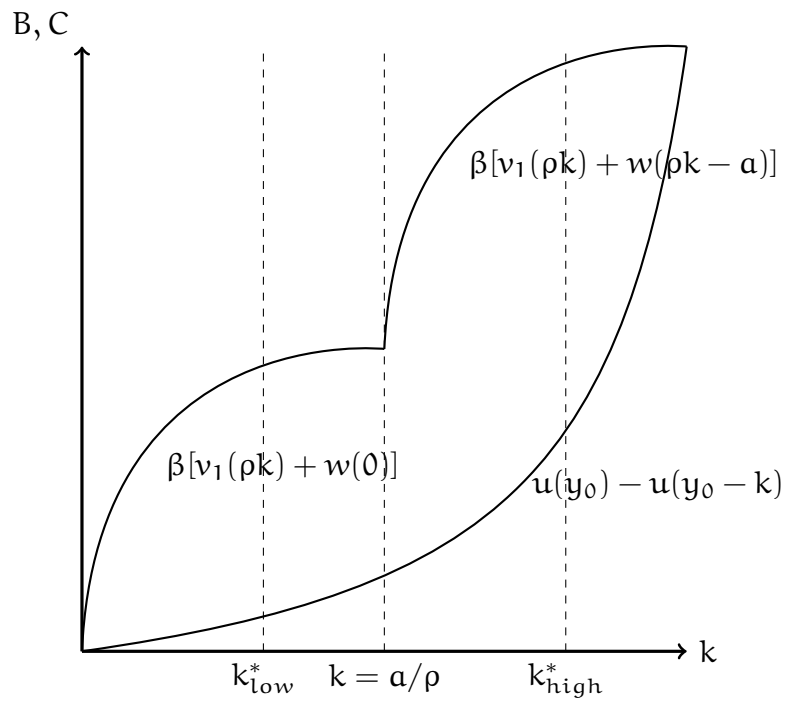
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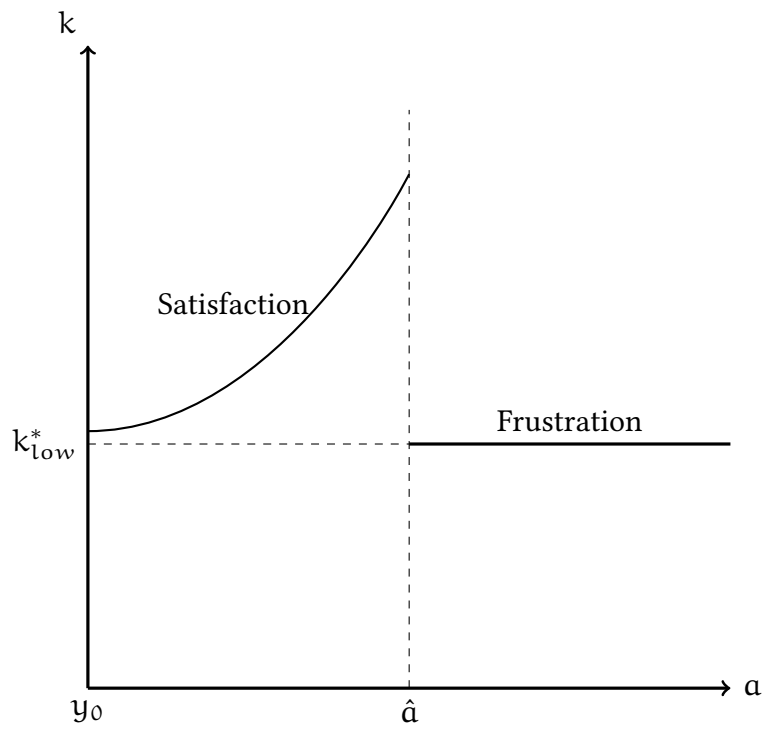
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Figure 1: First Order Conditions



Source: (Adapted from Genicot and Ray (2015).)

Figure 2: Discontinuous Effort



Source: (Adapted from Genicot and Ray (2015).)

Figure 3: Savings group participation

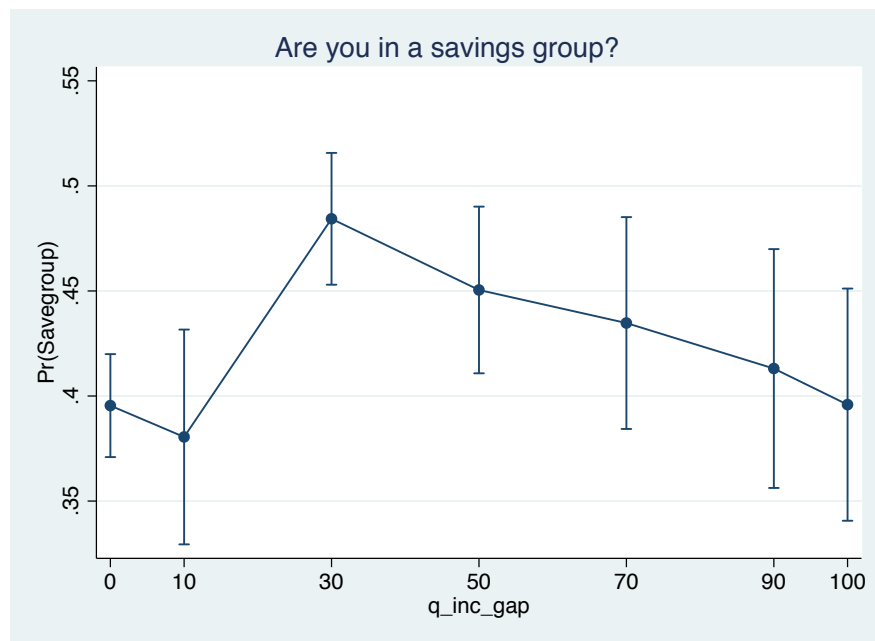


Figure 4: Any savings in the previous month

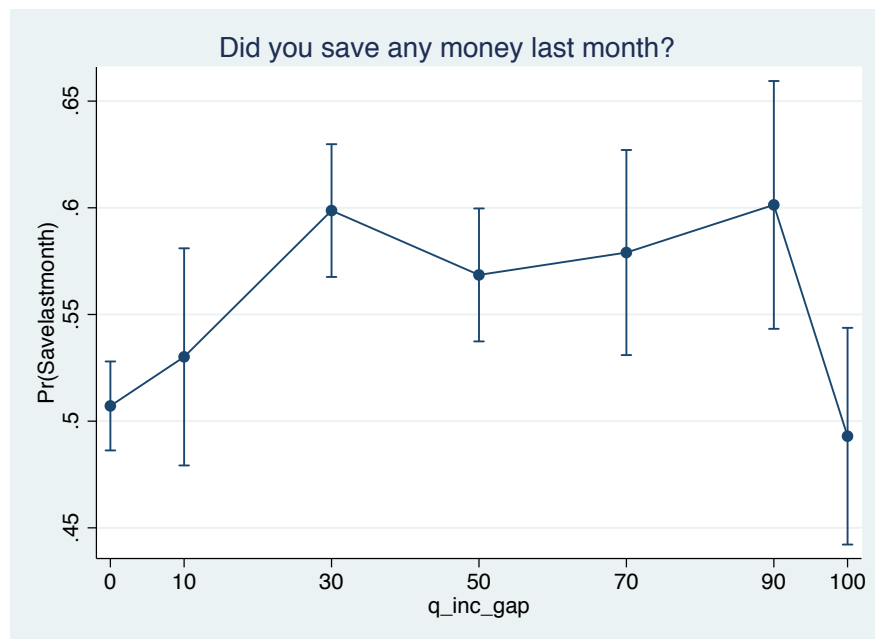


Figure 5: Amount (ln) saved

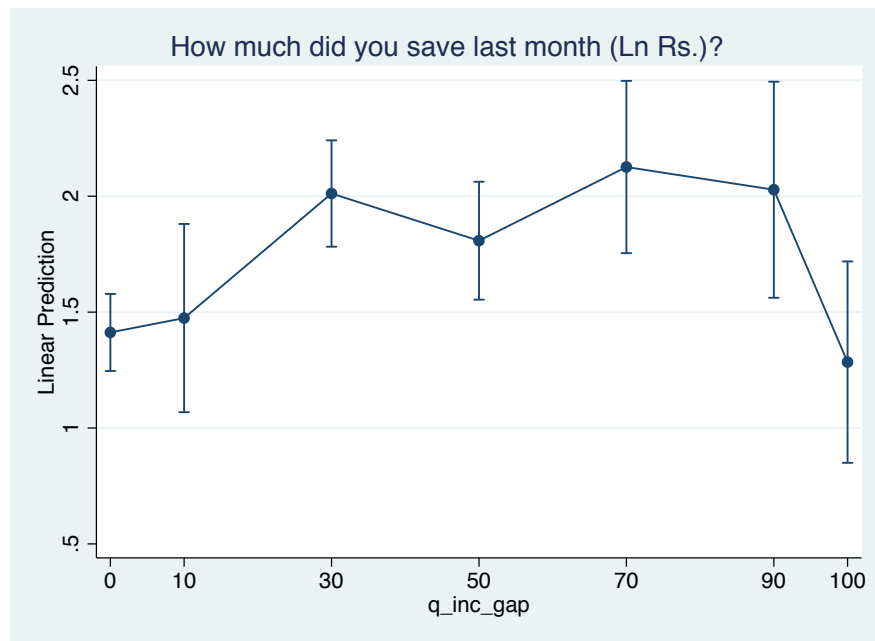


Figure 6: Amount (ln) saved as a percentage of income



Figure 7: Took out a loan for investing in productive activity

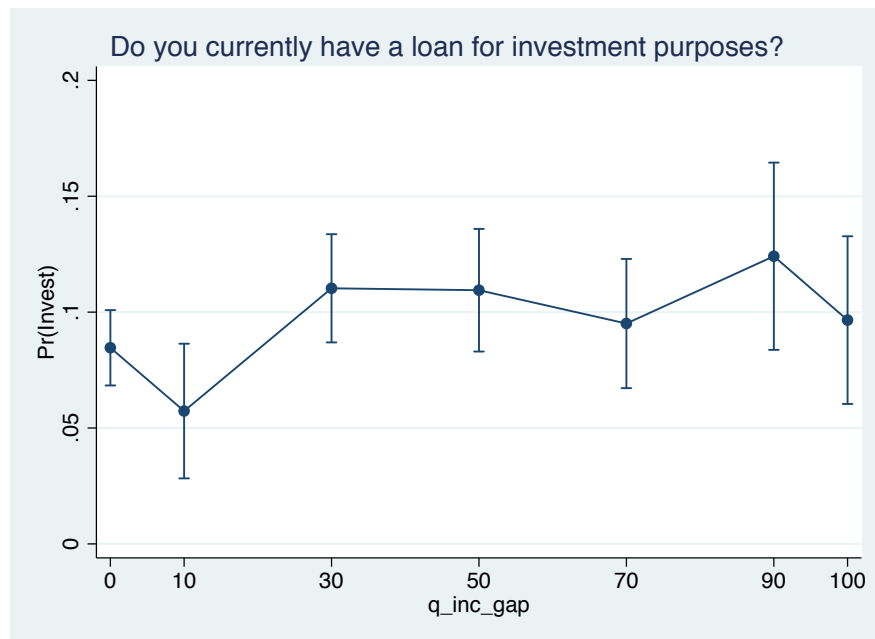


Figure 8: Current amount (ln) of loan for investment purposes

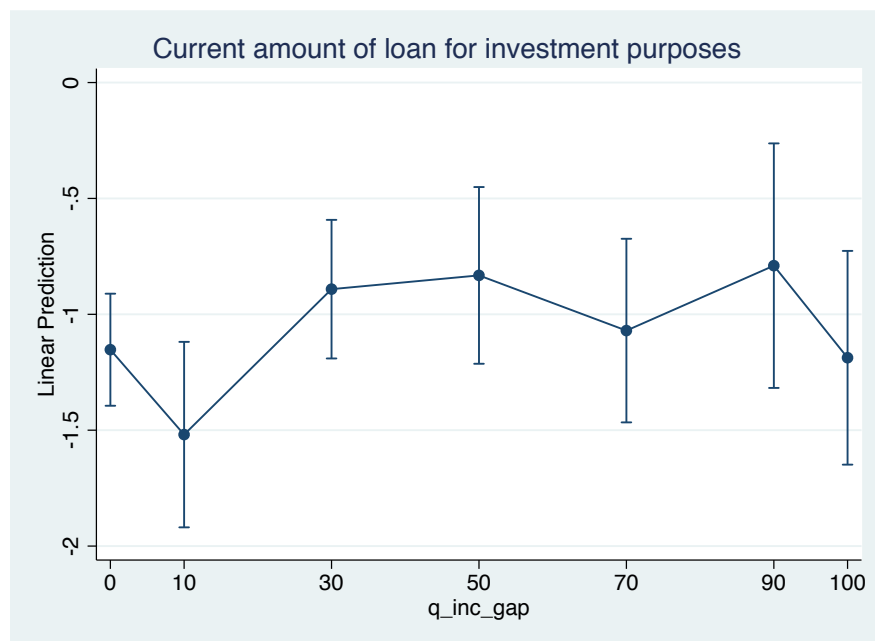


Figure 9: Any investment in education in past year

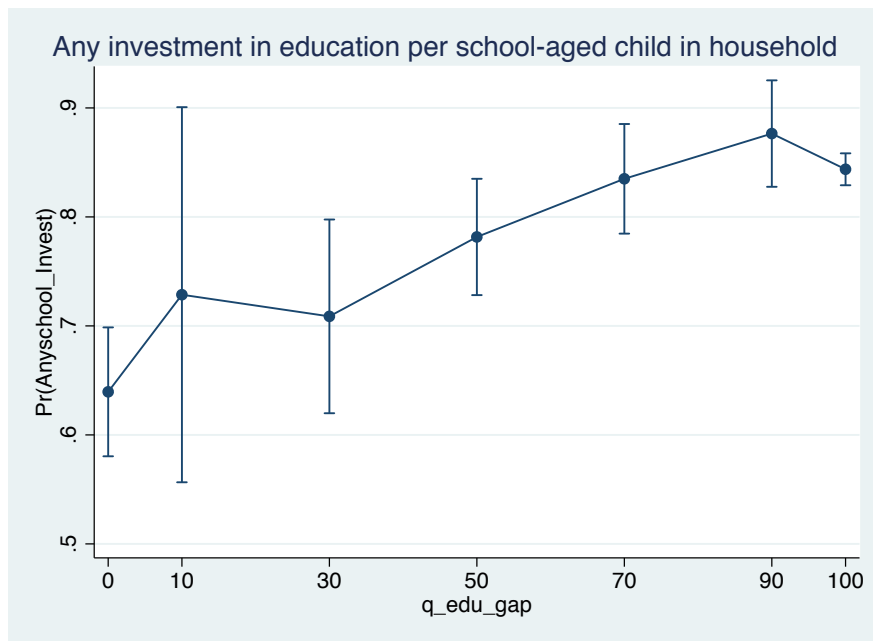


Figure 10: Amount (ln) invested in education in past year

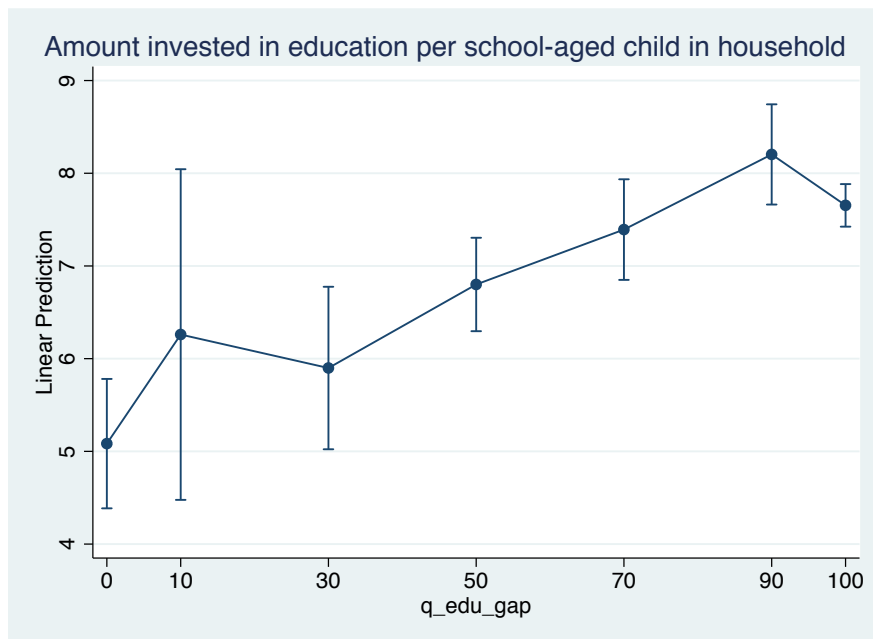


Table 1: Sample descriptive statistics

Variable	Full sample (N=3280)	Network sample (N=1619)
Panel A: Basic characteristics		
Age	40.55 (13.92)	40.65 (14.11)
Years of education	2.76 (4.36)	2.70 (4.34)
Current personal income (NPR/year)	59,689 (189,398)	59,815 (220,585)
Current value of household land and home (NPR)	1,410,821 (6,079,916)	1,071,810 (4,533,576)
Household has a migrant	0.61 (0.49)	0.62 (0.49)
Panel B: Investment variables		
Membership in a savings group	0.42 (0.49)	0.44 (0.50)
Saved money last month	0.54 (0.50)	0.57 (0.49)
Amount saved last month (NPR)	1,536 (30,781)	1,121 (20,340)
Took a loan for investment	0.09 (0.29)	0.09 (0.29)
Outstanding investment loans (NPR)	19,710 (131,806)	22,912 (160,603)
Panel C: Aspirations		
Aspired years of education for children	13.60 (4.72)	13.49 (4.76)
Aspired personal income (NPR/year)	140,907 (1,034,659)	145,068 (1,356,649)

Standard deviations in parentheses. 100 NPR equals approximately 1 USD.

Table 2: Descriptive statistics on potential aspirations window variables (assets)

Variable	Links	Same VDC	Same district	Same caste
Individuals in window	8.67 (6.60)	52.42 (6.44)	599.14 (229.15)	806.94 (564.25)
Individuals with higher asset value	4.04 (4.21)	25.01 (14.57)	296.95 (209.54)	401.61 (389.35)
Average asset value above (NPR)	2,523,446 (6,129,180)	3,610,785 (6,941,917)	4,247,077 (7,916,118)	4,183,501 (7,077,795)
Individuals with lower asset value	4.63 (4.82)	27.41 (14.81)	302.19 (207.44)	405.32 (396.64)
Average asset value below (NPR)	271,034 (442,748)	230,284 (335,337)	203,657 (253,676)	198,267 (239,744)
Individuals with more education	2.42 (2.98)	13.99 (7.74)	179.55 (126.23)	228.91 (188.22)
Average education above	7.36 (4.39)	9.06 (2.61)	5.64 (4.41)	5.54 (4.43)
Individuals with less or same education	6.24 (4.90)	38.43 (10.09)	419.59 (163.82)	578.03 (425.52)
Average education below	0.61 (1.42)	0.51 (0.96)	0.47 (0.84)	0.50 (0.98)

Standard deviations in parentheses. 100 NPR equals approximately 1 USD. N = 1619.

Table 3: Relationship between aspirations gaps and investment

	Savings Group	Saved Last Month	(Ln) Amt Saved	Loan for Investment	(Ln) Amt Invest-Loan	Any School Investment	(Ln) Amt School-Invest
main							
Income aspirations gap	0.79** (0.36)	0.67** (0.28)	1.62** (0.76)	0.40 (0.48)	0.87 (1.08)		
Income gap squared	-0.82** (0.38)	-0.63** (0.29)	-1.49* (0.78)	-0.33 (0.49)	-0.78 (1.11)		
Asset aspirations gap	0.14 (0.28)	0.25 (0.29)	0.22 (0.75)	-0.49 (0.37)	-1.35 (0.89)		
Asset gap squared	-0.067 (0.32)	-0.33 (0.34)	-0.27 (0.86)	0.76* (0.43)	1.90* (1.07)		
Education gap						1.32*** (0.49)	4.54*** (1.47)
Education gap squared						-0.58 (0.50)	-1.91 (1.39)
Current monthly income (ln)	0.031*** (0.0073)	0.027*** (0.0075)	0.091*** (0.020)	0.0061 (0.013)	0.015 (0.026)	0.036*** (0.0065)	0.11*** (0.019)
Asset value (ln)	0.025*** (0.0073)	0.025*** (0.0083)	0.089*** (0.020)	0.037*** (0.011)	0.060*** (0.017)	0.021*** (0.0074)	0.095*** (0.023)
Years of Education	0.010 (0.0075)	0.00089 (0.0075)	0.030 (0.020)	0.0016 (0.0097)	0.0046 (0.023)	0.014 (0.015)	0.11** (0.044)
Constant	-1.47*** (0.18)	-0.31* (0.17)	0.10 (0.53)	-1.46*** (0.25)	-1.76*** (0.51)	0.23 (0.28)	5.11*** (1.22)
Observations	3280	3280	3280	3121	3280	2727	2727
R ²			0.192		0.043		0.113
Pseudo R ²	0.110	0.130		0.067		0.107	
Cluster robust standard errors in parentheses							

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

Additional controls include age, household has a migrant, village and caste fixed effects.

Table 4: The Formation of Aspirations for Income

Aspired income (log NPR)	Links (Avg.)	Links (+/-)	VDC (Avg.)	VDC (+/-)	District (Avg.)	District (+/-)	Caste (Avg.)	Caste (+/-)
Average	0.080 (0.091)		-0.057 (0.106)		0.130 (0.299)		0.080 (0.091)	
Avg. above (log NPR)		0.170 (0.080)***		-0.095 (0.201)		0.230 (0.071)***		-0.047 (0.163)
Avg. below (log NPR)		0.010 (0.032)		0.081 (0.099)		0.021 (0.208)		-0.102 (0.122)
Current income (log NPR)	0.693 (0.017)***	0.695 (0.023)***	0.691 (0.017)***	0.691 (0.027)***	0.694 (0.014)***	0.695 (0.029)***	0.693 (0.017)***	0.692 (0.017)***
Current asset value (log NPR)	0.144 (0.022)***	0.119 (0.023)***	0.152 (0.018)***	0.084 (0.089)	0.149 (0.018)***	0.109 (0.180)	0.144 (0.022)***	0.249 (0.137)*
R-squared	0.532	0.533	0.531	0.532	0.531	0.532	0.532	0.532
N	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610

Results of separate OLS regressions for each potential window (links, ward, etc.). Clustered (window) standard errors in parentheses;

*** p < 0.01, ** p < 0.05, *** p < 0.1. Control variables used but not shown: age, education, household has migrant.

Table 5: The Formation of Aspirations for Education

Asp. child's education (years)	Links (Avg.)	Links (+/-)	VDC (Avg.)	VDC (+/-)	District (Avg.)	District (+/-)	Caste (Avg.)	Caste (+/-)
Average (years education)	0.195 (0.060)***		0.462 (0.201)***		-0.124 (0.580)		0.195 (0.060)***	
Avg. above (years education)		0.119 (0.042)***		0.254 (0.069)***		0.257 (0.048)***		0.295 (0.078)***
Avg. below (years education)		0.032 (0.067)		-0.208 (0.189)		-0.561 (0.266)**		-0.286 (0.126)***
Own years of education	0.215 (0.044)***	0.177 (0.033)***	0.210 (0.041)***	0.175 (0.056)***	0.257 (0.039)***	0.120 (0.061)**	0.215 (0.044)***	0.034 (0.048)
R-squared	0.095	0.098	0.099	0.096	0.088	0.102	0.120	0.109
N	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610

Results of separate OLS regressions for each potential window (links, ward, etc.). Clustered (window) standard errors in parentheses;

*** $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$. Control variables used but not shown: age, income, asset value, household has migrant.