Social Drivers of Aspirations Formation and Failure in Rural Nepal

Sarah Janzen, Nicholas Magnan, Sudhindra Sharma, William Thompson

Montana State University
University of Georgia
Nepā School for Social Sciences and Humanities

University of Minnesota
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Motivation

Why do the poor households underinvest in the future?

1. A variety of *external* constraints are often blamed.
   - Thin or missing markets for inputs and outputs
   - Uncertain production and prices
   - Lack of access to financial markets (savings, credit, insurance)

2. Growing body of work suggests *internal* constraints matter.
   - High discount rates and/or inconsistent time preferences
   - Short planning horizons
   - Low aspirations, or lack of hope

Empirical evidence that internal constraints matter

- Laajaj (2014) shows that an agricultural input subsidy and training program lengthened poor farmers planning horizons and increased investment in Mozambique.

- Macours and Vakis (2009) present evidence that cash transfers in Nicaragua improved recipients' outlook on the future and their investment in human capital.

- Beaman et al. (2012) exploit a policy experiment in India to demonstrate how providing positive female role models, in the form of elected officials, resulted in increased girls' education.

- Bernard et al. (2014) used videos depicting others' success to increase aspirations and investment in Ethiopia.

Defining aspirations

Aspirations

1. Something that you hope to achieve (Cambridge English Dictionary)
2. A hope or ambition of achieving something (Oxford English Dictionary)
3. A strong desire to achieve something high or great, or the object of such desire (Mirriam-Webster Dictionary)

Expectations

1. The feeling or belief that something will or should happen (Cambridge English Dictionary)
2. A strong belief that something will happen or be the case in the future (Oxford English Dictionary)
3. A belief that something will happen or is likely to happen (Mirriam-Webster Dictionary)

Aspirations and investment in the future

- The poor have little reason to think things can get better, and thus do not aspire for a better situation.
  - They themselves have known only poverty.
  - Most of the people the know or interact with are also poor.

- Alternatively, for the poor high aspirations may seem impossible and lead to more frustration than action.

- Economists have recently started to study how aspirations are formed and how they affect behavior, but to date this work is mostly conceptual or theoretical (Appadurai 2004, Bogliacino and Ortoleva (2013), Dalton et al. (2015), Genicot and Ray (2015), Lybbert and Wydick, 2015; Mookherjee et al. (2010) and Ray (2006)).

Research questions

Using data from rural Nepal, we empirically test theoretical models of how aspirations are formed and how they affect future-oriented behavior (Appadurai (2004), Ray (2006), Genicot and Ray (2015)).

Specifically, we ask:

1. How do aspirations influence investment?
2. What are the social drivers of aspirations formation?

Results preview

1. Aspirations do affect investment, and in the way theory predicts:

   If one's aspirations are too small *or* too large relative to their current status, they are less likely to invest in the future.

2. The status of ones peers are important in forming aspirations.

Implications

1. Development programs that raise peoples' aspirations may incite them to invest in the future, facilitating their exit from poverty.

2. However, if peoples' aspirations are raised too much it could actually discourage investment.

3. Programs that help some people could have spillover effects by changing the aspirations of others.

Some definitions: Aspirations gaps and failures

An *aspirations gap* is the difference between one's current status along some dimension and what they aspire to achieve (or for their children to achieve).

Ray (2006) hypothesizes that aspirations gaps lead to an *aspirations failure* in one of two ways:

1. A small gap, or the inability to conceive of a better future, is too easily bridged or so small as to not warrant any effort.

2. A large gap is viewed as unbridgeable and results in frustration rather than persistent action.

Model of aspirations failure

To motivate our empirical analysis of aspirations failures, we employ the model presented in Genicot and Ray (2015).

The agent has a wealth endowment of y_0.
She 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 her income in the subsequent period is $y_1 = \rho k$.

Model of aspirations failure

She also has exogenous aspirations a.

In the first period she derives utility only from consumption. In the second period she derives utility from both (1) income, and (2) from exceeding aspirations.

Utility from exceeding aspirations is written as $w(e)$. In this way, the agent maximizes:

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

where β is a personal discount factor and $e = max\{y_1 - a, 0\}$.
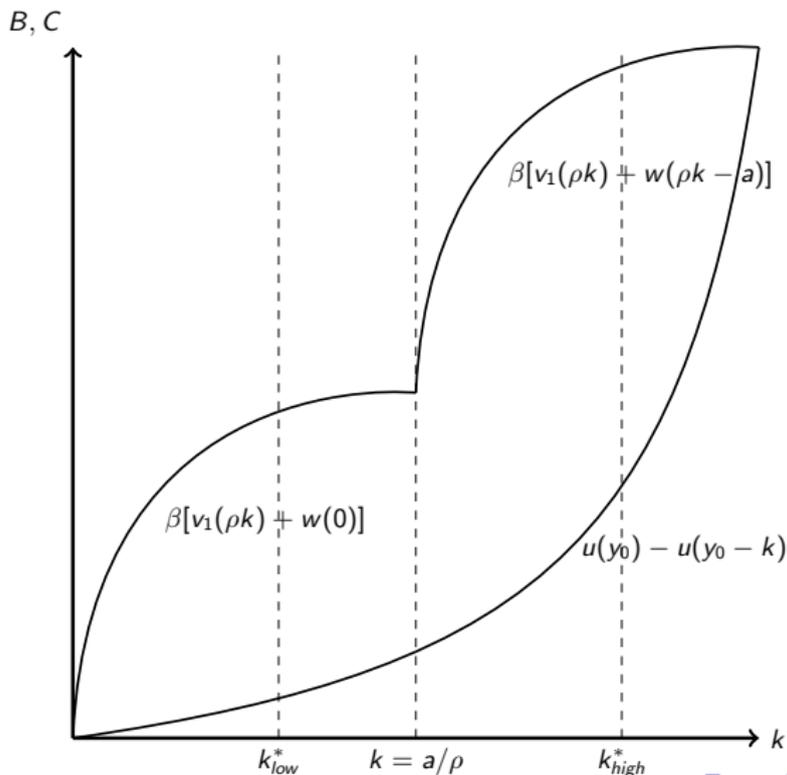
Model of aspirations failure

When deciding how much to invest in the future, the agent compares the benefits and costs of investment.

$$B(k) = \begin{cases} \beta[v_1(\rho k) + w(0)] & \text{if } \rho k < a \text{ (frustrated)} \\ \beta[v_1(\rho k) + w(\rho k - a)] & \text{if } \rho k \geq a \text{ (satisfied)} \end{cases}$$
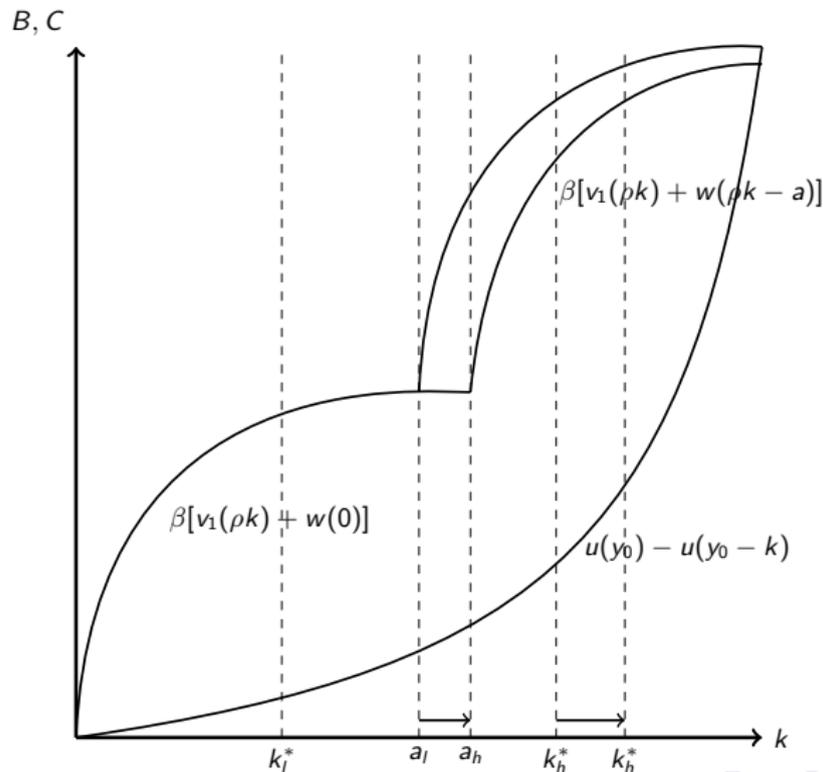
The costs of investment (less immediate consumption) are the same regardless of whether her aspirations are satisfied:
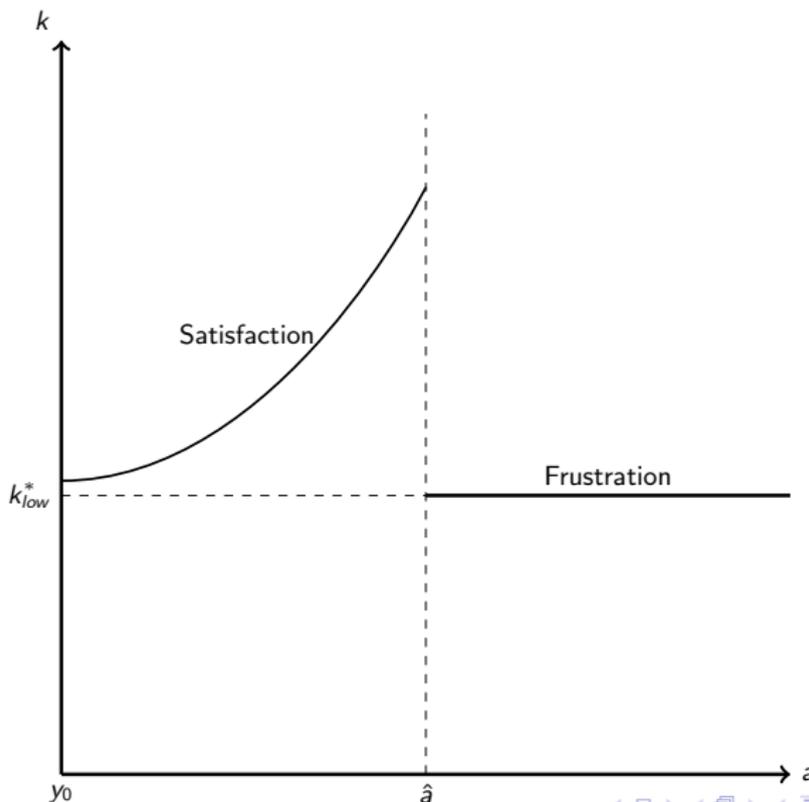
$$C(k) = v_0(y_0) - v_0(y_0 - k)$$

Aspirations failure: Model first order conditions

## Aspirations failure: Model first order conditions

B, C

$\beta[v_1(\rho k) + w(\rho k - a)]$

$\beta[v_1(\rho k) + w(0)]$

$u(y_0) - u(y_0 - k)$

k_l^* a_l a_h k_h^* k_h^* k

Aspirations failure: Model implications

Aspirations failure: Model implication on aggregate

If â is the same for everyone we could empirically estimate the discontinuous function mapping the aspirations gap to investment.

But â is individualistic; depends on y_0, β, and ρ (details in paper).

If â comes from a random distribution, aggregate relationship between aspirations and investment is an inverted-U.
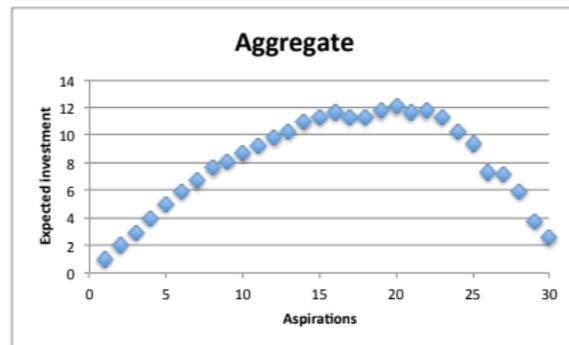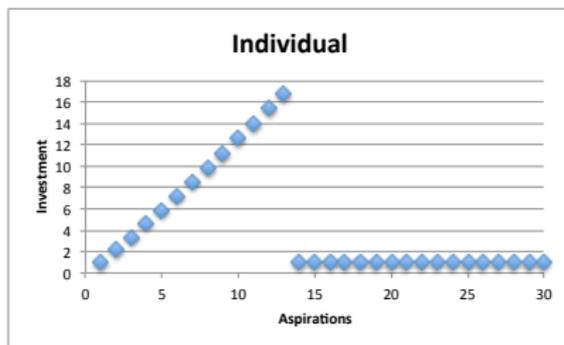
Aspirations formation

People "draw [their] aspirations from the lives, achievements, and ideals of those who exist in [their] aspirations window." - Ray (2006)

The aspirations window consists of "similar" and "attainable" individuals that an individual observes or compares herself to.

- "Similarity" might be spatial (neighbors), cultural (same caste, religion), familial, or occupational.
- "Attainable" indicates bounds; a wildly successful similar person may not be part of the aspirations window.
- The aspirations window should not include individuals with lower status because aspirations are inherently upward looking (as opposed to expectations).

Evidence of socially formed aspirations

The literature on subjective well-being provides evidence that
aspirations are socially influenced:

- Stutzer (2004) finds that community income increases
  individuals income aspirations in Switzerland, and that these
  socially heightened aspirations decrease happiness.
- Knight and Gunatilaka (2012) find that in rural China, income
  aspirations are elevated by actual and reference income.
- Ferrer-i-Carbonell (2005) finds subjective well-being to
  decrease with the income of the reference group in Germany.
- Fafchamps and Shilpi (2008) find that in Nepal, the
  probability that theindividuals consider their consumption
  adequate decreases with consumption of the reference group.

Model of aspirations formation

Following Genicot and Ray (2015), we model aspirations as a weighted average of one's own status for some outcome and relative status among reference group:

$$a = (1 - \gamma)y_0 + \gamma\Psi(y_0, F).$$

In the above:

- Ψ is a function that shapes the aspirations window.
- γ is the weight on relative status.
- F represents the distribution of the outcome within the reference group.

Data: Status, aspirations, and future-oriented behavior

Survey of 3300 women in 60 VDCs for an evaluation (RCT) of Heifer International livestock transfer program (June 2014)

1. Current status: Personal income, asset value (home and land), education level.

2. Aspirations for income and children's education (following Bernard and Taffesse, 2014)
   - What is the maximum/minimum level of k a person in your community might expect to achieve?
   - What is your personal present level of k (S_i^k)?
   - What level of k do you personally think you might be able to achieve in the future (A_i^k)?

3. Future-oriented behavior: savings, loans for investment, education spending.

4. Other controls: age, whether household has a migrant,

Data: networks

Survey with 1700 of the same women (October 2014)

- Respondents identified contacts from composite photo
- Nature of links (family, friend, familiar face)

Rautahat-VDC 2 (Judibela)-Ward 9(Treatment), 3(Spillover), 8(Spillover)

Data: Aspirations

Descriptive statistics: Demographics and current status

Variable	Full sample (N=3280)	Network sample (N=1619)
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)

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

Data: Aspirations

Descriptive statistics: Aspirations

Variable	Full sample (N=3280)	Network sample (N=1619)
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.

Data: Education and educational aspirations

Parent education and mom's aspirational education for kids

Data: Education and educational aspirations
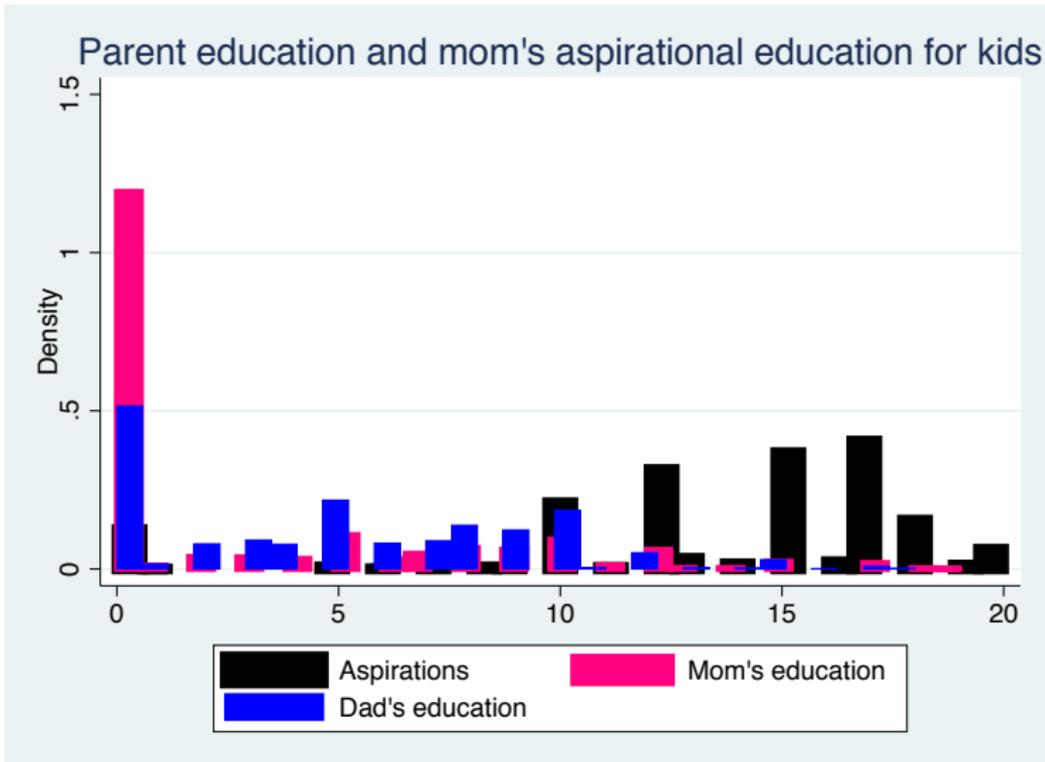
Mom's aspirational education for daughters and sons
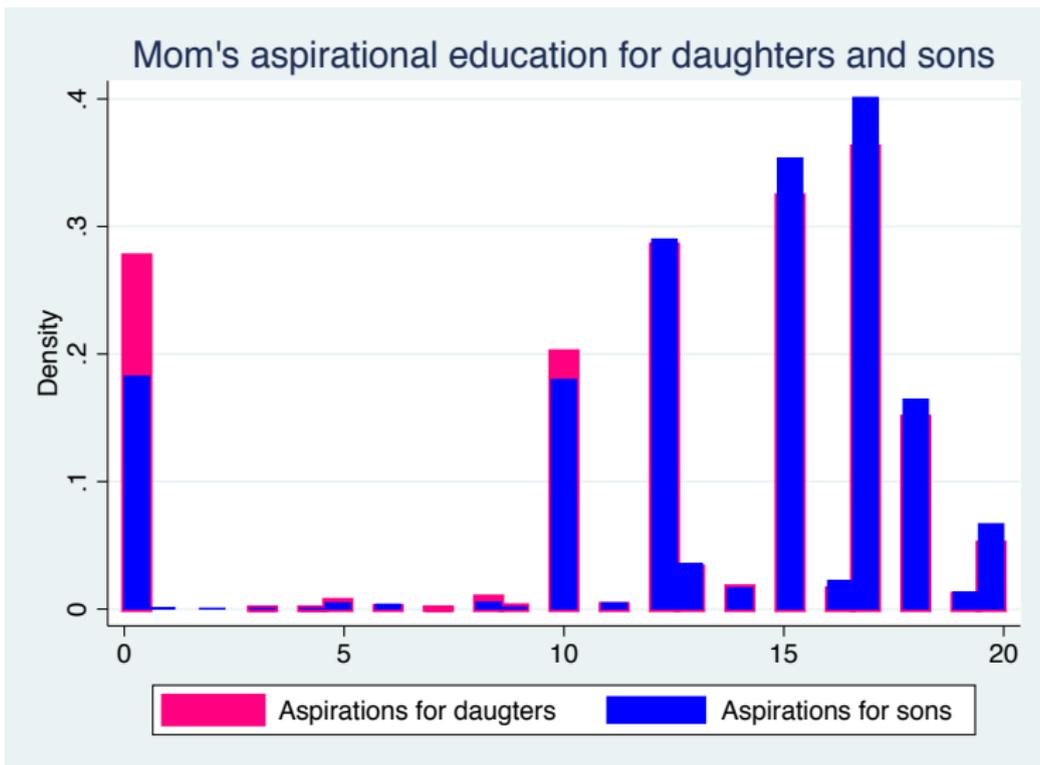
Data: Future-oriented behavior

Descriptive statistics: Future-oriented behavior

Variable	Full sample (N=3280)	Network sample (N=1619)
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)
Outstnanding investment loans (NPR)	19,710 (131,806)	22,912 (160,603)
Any expenditure on education	0.82 (0.37)	0.83 (0.37)
Edu. spending per child (NPR)	10,324 (26,608)	10,444 (33,000)

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

Aspirations failure: Empirical strategy

Ray (2006) defines the *aspirations gap* as the normalized difference between an individual's realized standard of living and their aspired-to standard of living:

$$Gap_i = max\{\frac{Aspired_i - Current_i}{Aspired_i}, 0\}$$

We use this definition for the income. For education we use:

$$EduGap_i = max\{AspChildEdu_i - OwnEdu_i, 0\}$$

due to the high percent of women with no education (64%).

Aspirations failure: Empirical strategy

How does the aspirations gap affect future-oriented behavior? Is the relationship an inverted-U?

1. Estimate saving and borrowing as a quadratic function of the income aspirations gap:

$$y_i = \beta_0 + \beta_1 \cdot IncGap_i + \beta_2 \cdot IncGap_i^2 + \beta_3 \cdot Inc_i + \beta_4 \cdot ZeroInc + X'\beta + \varepsilon_i$$

2. Estimate education spending as a quadratic function of the education aspirations gap:

$$y_i = \beta_0 + \beta_1 \cdot EduGap_i + \beta_2 \cdot EduGap_i^2 + \beta_5 \cdot OwnEdu_i + \varepsilon_i$$

3. Semi-parametric estimates of how aspirations gap affect behavior, conditional on current status and controls
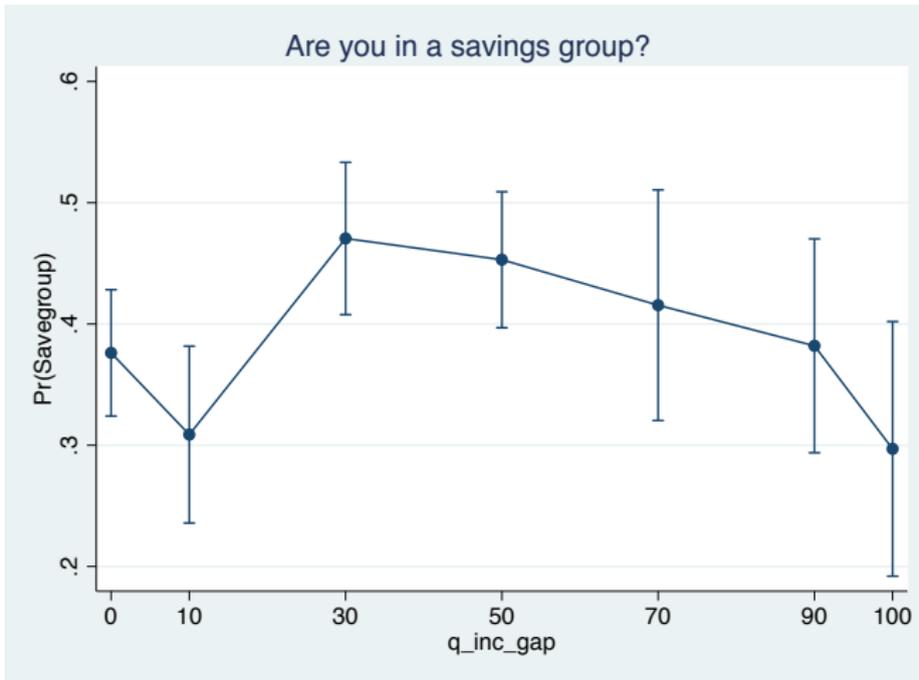
Aspirations failure (income gap)

Saving and borrowing as a function of income and asset aspirations gaps

| Dep var:	Savings Group	Saved Last Month	(Ln) Amt Saved	Loan for Investment	(Ln) Amt Invest-Loan
Income aspirations gap	1.02***	0.63**	1.66*	0.62	1.36
	(0.36)	(0.31)	(0.95)	(0.51)	(1.13)
Income gap squared	-1.07***	-0.59*	-1.37	-0.53	-1.17
	(0.38)	(0.33)	(1.02)	(0.53)	(1.17)
Current monthly income (ln)	0.0044	-0.0058	0.060	-0.0097	-0.015
	(0.026)	(0.026)	(0.075)	(0.032)	(0.074)
Zero income	-0.053	-0.33	-0.34	-0.089	-0.14
	(0.26)	(0.27)	(0.77)	(0.31)	(0.74)
Constant	-0.27	0.19	1.10	-1.25***	-0.95
	(0.29)	(0.32)	(0.89)	(0.36)	(0.83)
Observations	3280	3280	3280	3280	3280
R^2	0.018	0.02	0.054	0.006	0.004

Cluster robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
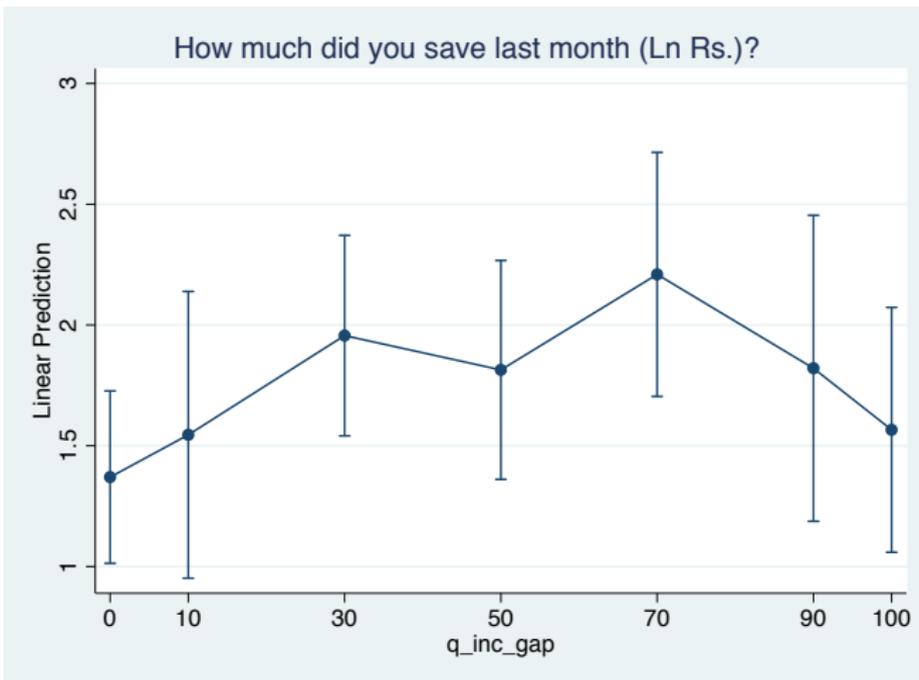Additional controls include age, education, if household has a migrant, village and caste fixed effects.
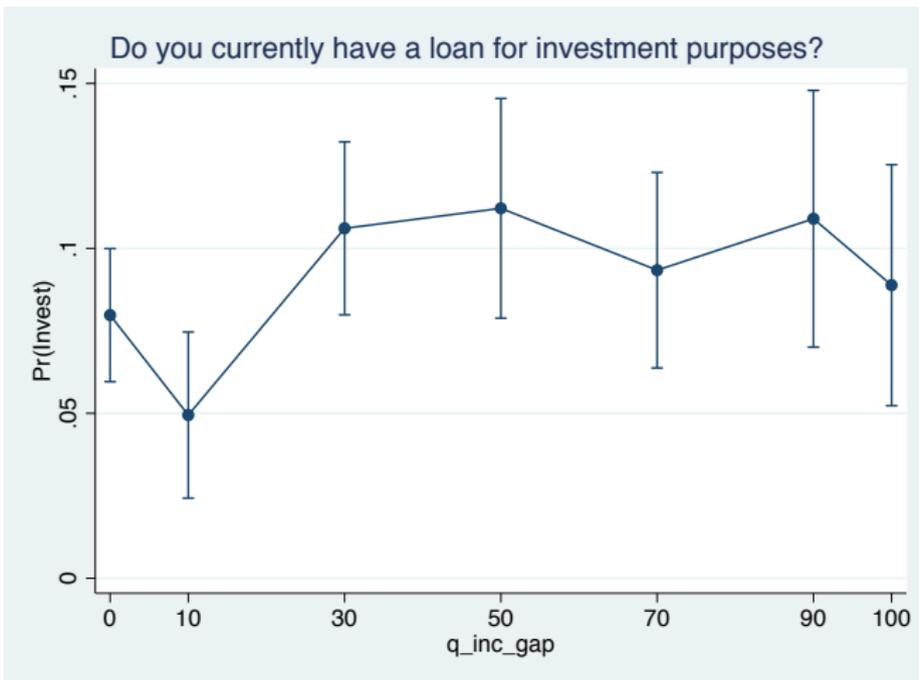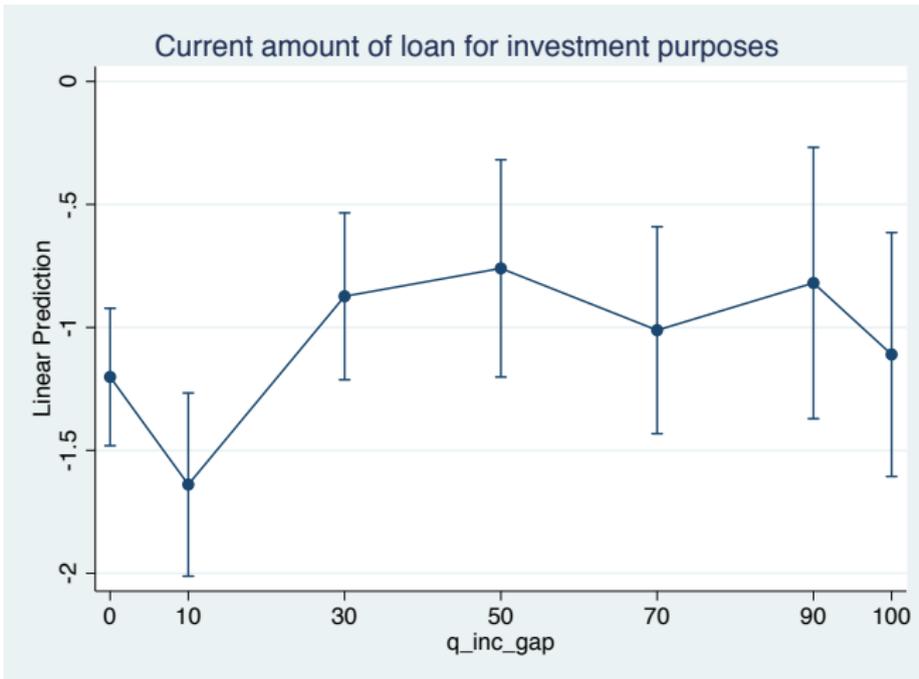
Aspirations failure

Aspirations failure

Aspirations failure

Aspirations failure

Do you currently have a loan for investment purposes?
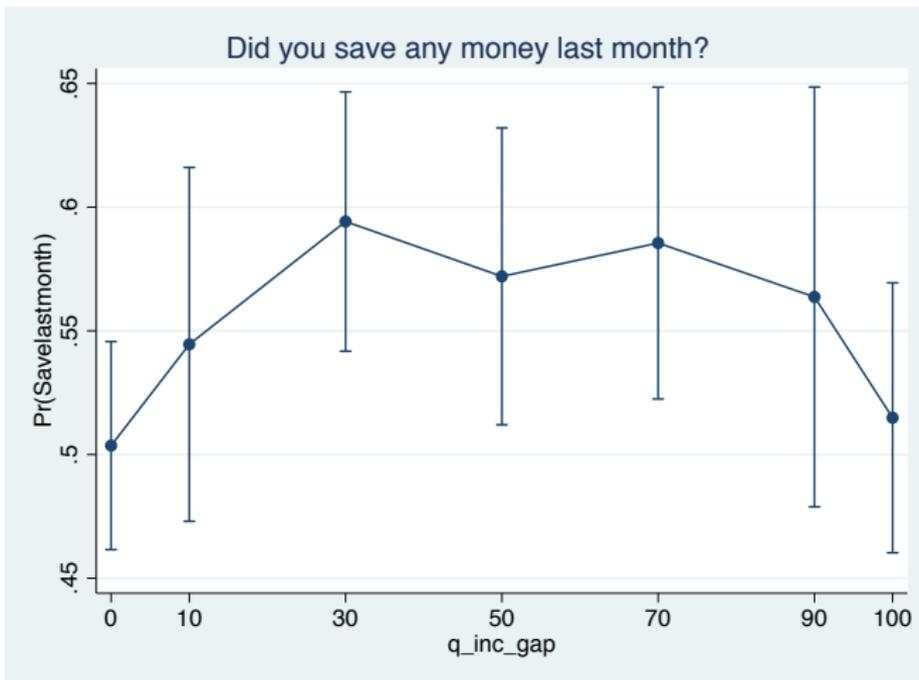
Aspirations failure

Aspirations failure (education)

### Education spending as a function of education aspirations gap

|	Any School Investment	(Ln) Amt School-Invest
Education gap	0.085***	0.19***
	(0.016)	(0.054)
Education gap squared	-0.0021**	-0.0017
	(0.00089)	(0.0025)
Years of Education	0.021	0.15***
	(0.013)	(0.029)
Constant	0.60**	5.37***
	(0.25)	(0.64)
Observations	2726	2726
R^2	0.062	0.081

Cluster robust standard errors in parentheses;
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Additional controls include age, income, asset value,
household has a migrant, village and caste fixed effects.

Aspirations failure

Aspirations failure

Education spending per school-aged child in household (Ln Rs.)
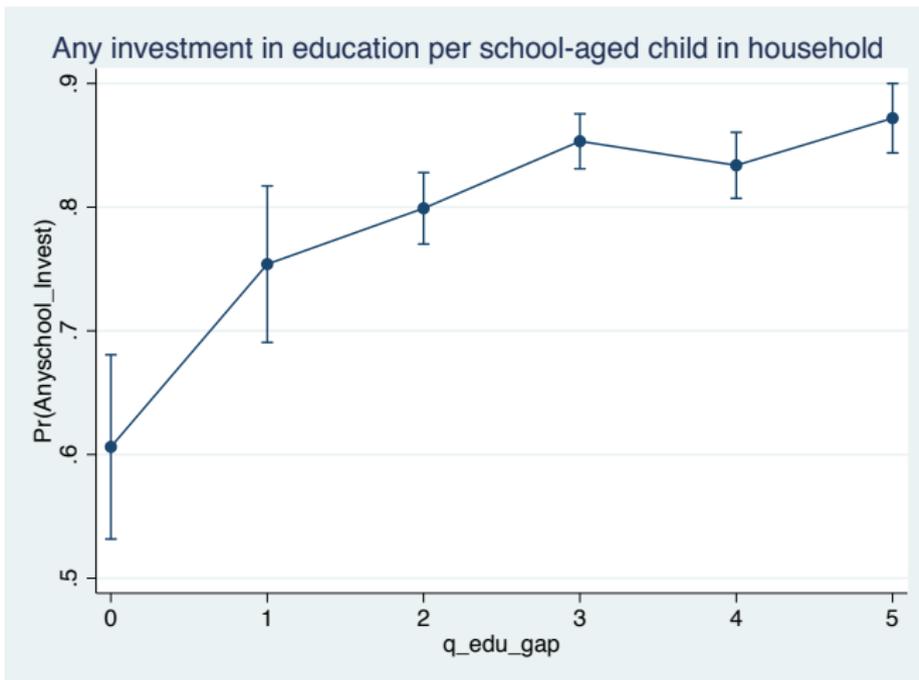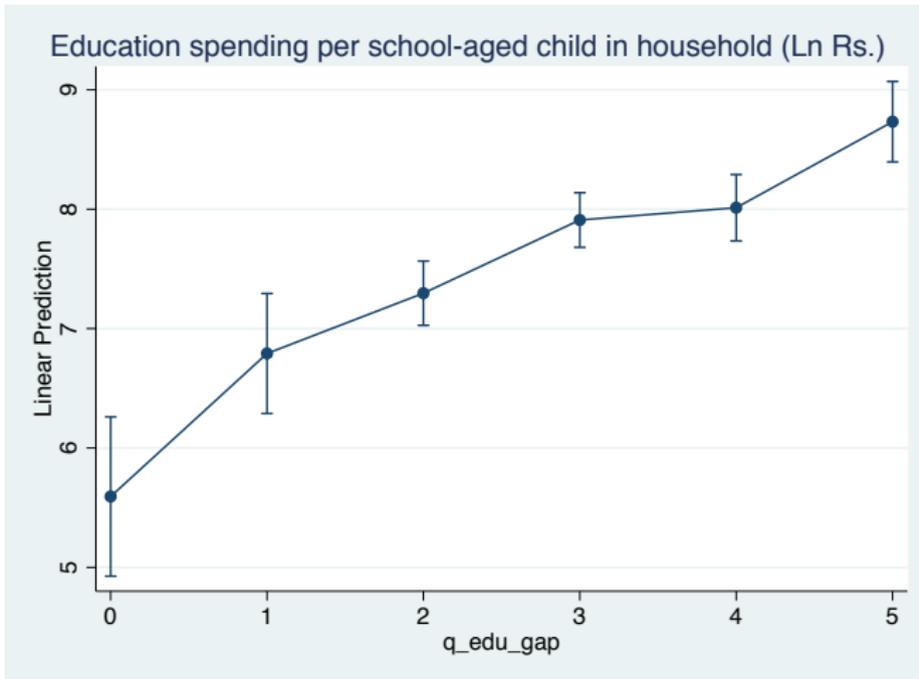
Aspirations Formation: Empirical Strategy

Hypothesis: An individual's aspirations are a function of their own status y_0 and the status of those around them F:

$$a = (1 - \gamma)y_0 + \gamma\Psi(y_0, F)$$

The "social" component of aspirations formation is γ; the "personal" component is $1 - \gamma$.

We test different potential windows in order to estimate social drivers of aspirations formation.

Aspirations Formation: Empirical strategy

What is the reference group from which the aspirations window is formed?

1. Geographic: All the people within one's district or village?
2. Members of one's own caste or ethnic group?
3. Members of each individual's social network?
   - Immediate family, other relatives, neighbors and friends

Defining the aspirations window

If aspirations are upward, the status of those above should matter, but not the status of those above.

1 For income aspirations, we use average asset value of others (more visible) rather than income:

$$AspInc_i = \beta_0 + \beta_1 \cdot AstAbove_i + \beta_2 \cdot AstBelow_i + \beta_3 \cdot Inc_i + \beta_4 \cdot Ast_i + \varepsilon_i$$

2 For education aspirations, we use number of more and less educated others:

$$AspChildEdu_i = \beta_0 + \beta_1 \cdot EduAbove_i + \beta_2 \cdot EduBelow_i + \beta_3 \cdot OwnEdu_i + \varepsilon_i$$

Income aspirations formation

Social drivers of aspirations income aspirations formation

Aspired income (log Rs.)	Ward	VDC	District	Caste	Links	Ex links
Avg. above (log Rs.)	0.103	-0.087	-0.087	0.057	0.161	0.130
	(0.108)	(0.115)	(0.115)	(0.073)	(0.068)***	(0.060)***
Avg. below (log Rs.)	0.019	0.025	0.025	0.029	0.001	-0.003
	(0.146)	(0.148)	(0.148)	(0.147)	(0.036)	(0.034)
Income (log Rs.)	0.689	0.687	0.687	0.688	0.689	0.688
	(0.018)***	(0.018)***	(0.018)***	(0.018)***	(0.018)***	(0.018)***
Asset value (log Rs.)	0.122	0.138	0.138	0.117	0.127	0.132
	(0.138)	(0.139)	(0.139)	(0.139)	(0.039)***	(0.037)***
R-squared	0.532	0.532	0.532	0.532	0.533	0.533
N	1,610	1,610	1,610	1,610	1,610	1,610

Clustered (window) standard errors in parentheses;***$p < 0.01$, ** $p < 0.05$, *** $p < 0.1$.
Control variables used: age, education, household has migrant.

Education aspirations formation

Social drivers of aspirations for child's education

Aspired child's education	Ward	VDC	District	Caste	Links	Ex links
Num. above	0.080	0.139	0.139	0.080	0.145	0.152
	(0.027)***	(0.026)***	(0.026)***	(0.023)***	(0.043)***	(0.048)***
Num. below	-0.041	0.025	0.025	-0.037	-0.060	-0.082
	(0.018)***	(0.017)	(0.017)	(0.010)***	(0.026)***	(0.029)***
Own Education(years)	0.280	0.325	0.325	0.244	0.238	0.236
	(0.032)***	(0.034)***	(0.034)***	(0.030)***	(0.030)***	(0.030)***

Clustered (window) standard errors in parentheses;***$p < 0.01$, ** $p < 0.05$, *** $p < 0.1$.
Control variables used: age, income, asset value, household has migrant.

Summary of aspirations formation results

1. Income and education aspiration formation have both a personal and social component:
   - For income aspirations: Assets of those better off in your social network
   - For education aspirations: Relative educational attainment along all social dimensions (more work needed here)

2. The aspirations window is formed of those above; the status of those below has either no (or negative) effect on aspirations.

Recap of aspirations failure results

1. Saving behavior generally exhibits a inverted-U relationship with respect to income aspirations gap, borrowing exhibits an upward trend.

2. Education spending generally exhibits and upward trend with respect to the education aspirations gap (with a hint of an inverted-U).

Conclusions

1. A lack of aspirations can be an internal,or behavioral, constraint to exiting poverty.

2. The relationship between aspirations and investment behavior is complex; programs that increase aspirations "too much" may result in failure and frustration.

3. Interventions designed to alter aspirations (but not too much) can increase investment behavior.

4. Aspirations are socially formed; programs are likely to have spillover effects by increasing others' aspirations.
   - Could be especially true for programs that increase social connectivity (through groups formation, etc.)