Poverty, Aspirations, and the Economics of Hope: A Framework for Study with Preliminary Results from the Oaxaca Hope Project

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Abstract: We create a framework for understanding the role of hope and aspirations in economic development and give preliminary experimental results from a field project in Oaxaca, Mexico carried out in this framework. We review the literature on hope from philosophy, theology, psychology, and its relationship to emerging work on aspirations in development economics. We create an economic model of hope based on recent psychology literature that understands hope as a function of aspirations, agency, and pathways. Our model illustrates the role hope can play in the realization of positive effects from development interventions and how these effects emerge from interactions with the three constituent elements of hope. By clarifying definitions and relationships among these concepts and by leveraging relevant work from other disciplines, we aim to create a framework within which economists can engage in rigorous empirical and experimental work that seeks to better understand the role of hope in economic development. In our early experimental results suggest that a hope intervention among 601 microfinance borrowers raised aspirations approximately a quarter of a standard deviation, significantly raised a hope index among the treated subjects, and had positive but statistically insignificant results on enterprise performance.

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1. Introduction

In recent years, development economics has ventured increasingly into domains that were previously reserved for psychology and other fields. Theoretical, empirical, and experimental work in behavioral development economics is flourishing and has begun to significantly influence how development economists understand and diagnose poverty, prescribe and evaluate interventions, and measure development outcomes (Bertrand et al., 2004; Mullainathan, 2009; Timmer, 2012). Early contributions to this literature borrowed analytical lenses from other fields to shed new light on familiar economic concepts such as risk and time preferences (see Cardenas and Carpenter, 2008). But more recent strains of this new literature have explored phenomena such as the nature of self-control problems and their relationship to poverty (Banerjee and Mullainathan, 2010), hyperbolic discounting and savings behavior among the poor (Basu, 2011; Kaboski et al., 2014), the influence of limited attention and nudges in financial decision-making (Dupas and Robinson, 2011; Karlan et al., 2014; Jäntti et al., 2014), and how circumstances of poverty amplify cognitive biases and limitations (Yoshikawa et al., 2012; Mani et al., 2013).

What is consistently demonstrated throughout this literature is that psychological phenomena affecting economic decisions can exert significant impacts on welfare outcomes and poverty dynamics. One of the newest and most promising strains of this research departs even further from conventional economic concepts in understanding movements out of poverty. Banerjee et al. (2011), for example, study the impact of a simple set of asset transfers worth approximately $100 to the ultra-poor in an impoverished region north of Kolkata. They find that random invitation to participate in this program, which involved the receipt of a cow or some goats or chickens, resulted in a 21% increase in earned income, a 15% increase in consumption, an hour more per day devoted to productive work, and remarkable improvements in psychological health. Effects from the transfer on economic behavior and emotional well-being substantially exceeded what the researchers could have expected from the economic value of the transfer alone. Indeed, the transfer appeared to create positive psychological changes in subjects that fostered a more proactive approach to their economic challenges. This and other recent work – such as Beaman et al. (2012), Bernard et al. (2013), and Glewwe et al. (2015) – nudges development economists into a domain traditionally entrusted to poets, philosophers and theologians: Hope.

While hope (usually articulated contextually as *confidence* or *expectations*) has played a central role in understanding multiple equilibria in macroeconomics (e.g. Diamond, 1982; Murphy et al., 1988), it is less often invoked in microeconomics. And although development practitioners routinely reference the importance of hope in work among the poor, microeconomists have only recently engaged hope as a subject of research.

As cognitively, emotionally and socially sophisticated creatures, human beings devote tremendous energy to economic decision-making in order to influence future states. In this process, the potential power of hope to influence actions, effort, and outcomes is obvious to most people. Decision and action become operative concepts contingent on a belief that some type of action will positively influence future outcomes. The absence of this belief can be viewed as a state of "hopelessness," a state that afflicts many in extreme poverty and is often characterized by feelings of futility, fatalism, and paralysis. Understanding the economic and psychological constraints that foment hopelessness and the nature of what constitute hope-producing interventions, and under what conditions, is the subject of this paper.

Our purpose here is to build a bridge between economics and previous reflection and research on the nature of hope from other fields, especially psychology. We structure this inquiry into the economics of hope in five parts: First, we round out this introduction by establishing some hope-related definitions and providing a brief overview of the history of thought related to the concept of hope. Second, we provide a more detailed overview of hope research from psychology and medicine. Third, we review the theoretical literature in economics and then discuss the relevant and emerging empirical and experimental literature in development economics. Both these theoretical and empirical strands focus primarily (or entirely) on aspirations rather than on hope more generally. Fourth, we introduce a simple economic model of hope using a reference-dependent utility framework that incorporates three essential elements of hope from the new psychology literature—which we call aspirations, agency and avenues—to show how hope and aspirations shape economic development outcomes and the impact of different types of interventions. We use this simple model to illustrate how important empirical results in development economics can be more clearly understood in a hope framework. Fifth, we present preliminary (one month follow-up) results from a randomized controlled trial, the Oaxaca Hope Project, in which we carry out interventions in the three components of hope, results that show our intervention significantly raised aspirations and had a positive but yet statistically insignificant impact on small business

outcomes. We conclude by discussing where economics might make useful contributions to the long and rich history of inquiry into the nature of hope and to analyze its relationship to poverty and economic development.

Some Clarifying Definitions

In unpacking a concept as potentially opaque as hope, it is helpful to establish clear working definitions. A primary task lies in parsing the varied connotations of *hope*, for the word in English usage contains several shades of definition, each potentially important in their application to economics. In particular, we differentiate its meaning over the dimensions of *optimism* and *agency*.

Consider the meaning of the word "hope" in the following two sentences: (A) "Joe hopes that it may rain tomorrow" and (B) "Joe hopes to install irrigation this spring." While the first use of the term is devoid of agency, the second implies a usage of the word in which optimism and human agency share a relationship, although both forms of usage imply uncertainty.[1] The diagram in Figure 1 parses the meaning of hope across the dimensions of agency and optimism. Consider the simple relationship $Y = \pi_1 e + \pi_2 \varepsilon$, where $e \in [0, \infty)$ is effort, $\varepsilon \sim N(0, \sigma^2)$ represents the influence of factors outside the control of the agent, and π_1 and π_2 are positive coefficients representing the relative importance of e and ε in determining an outcome Y.

As seen in the figure, one type of hopelessness is characterized by a low level of agency and pessimism about a future state. We call this Hopelessness 1, characterized by *i*) low agency (low π_1) and *ii*) strongly negative $\pi_2 E(\varepsilon)$, which can be caused by pessimistic expectations about uncontrollable factors, the disproportionate influence of uncontrollable factors on outcomes, or both. This is a particularly desperate form of hopelessness as it is accompanied by helplessness. Hopelessness 2 adds agency, but perhaps where high agency is only able to counteract the influence of strongly negative factors outside one's control. Expectations of Y are low due to very low $\pi_2 E(\varepsilon)$, but $\pi_1$is still relatively high. Hopelessness 2 is thus hopelessness without helplessness. Consider the difference between the following statements: A) "Being victims of the famine, their situation was hopeless; there was nothing they could do" (Hopelessness 1), versus B) "Through their perennial toil in the fields, they managed to make ends meet, but there was little hope of escaping their cycle of drudgery" (Hopelessness 2).

[1] This latter form of hope is that which Aristotle often interrelated with the type of happiness referred to as *eudaimonia* (happiness as human flourishing), which he contrasted with *hedonia* (happiness as pleasure).

We refer to the condition of low agency but with optimism over a future outcome – i.e., low α_1, but high $\alpha_2 E(\varepsilon)$ – as Hope 1, or *wishful hope*. Here an individual is optimistic, but outcomes are determined by influences outside one's control, such as the benevolence of a patron, an inheritance, the rise of a beneficent political leader, or the will of God. What we call Hope 2 is *aspirational hope*, a hope characterized by high π_1 that is not dominated by the influence of outside factors. Similar to our first example, a key difference lies between the differential uses of the word hope in the phrases "Hope *that*…" and "Hope *to*..." For example, the statement (A) "Fatima hopes *that* the village leader will respond to her situation" communicates wishful hope, whereas (B) "Fatima hopes *to* gain several new customers this month for her small poultry business" reflects aspirational hope. While the new psychology and economics literature has placed increasing emphasis on Hope 2, much of the medical literature has investigated the key role of Hope 1, for example, in patients with advanced cancer maintaining hope even when the factors influencing survival reside largely outside of their agency (M.-J. Del Vecchio Good et al. 1990).

Distinguishing between these types of hope is useful, but individuals often experience hope as a combination of Hope 1 and Hope 2. Both types of hope, for example, are manifest in the case of a famine victim, or someone who is trapped, lost, or stranded, where a person may have to take painful but proactive steps to survive (internal agency) while awaiting relief or rescue (external to agency). Consider similarly the plight of someone suffering from a potentially terminal disease, in which there is some probability that a breakthrough in treating the disease may occur in the future. Survival thus depends on two events: (i) that the breakthrough occurs by time *t*; and (ii) that the patient is able to survive until time *t*. Hope for the patient thus consists of Hope 1 (hope *that* the breakthrough will occur) and Hope 2 (hoping *to* remain as healthy as is possible until the breakthrough arrives), which implies some degree of agency that may involve costs. (We might call this type of hope "Hope 1.5.") In contrast, a person beset by hopelessness has concluded that the joint probability of these events is sufficiently dwarfed by the agency costs of survival, ensuring the unfortunate outcome.

These types of hope may be specific to a particular event or outcome, or together may produce a kind of over-arching sense of hope that "in the end, things will turn out alright." For many individuals, perhaps disproportionally in the developing world, faith in God may foster a generalized hope of this kind. Over-arching hope constitutes a key component of resilience in the face of negative shocks (Ong et al., 2006), and it is strongly associated with general mental

wellness (Gallagher and Lopez, 2009). Finally, an over-arching hope rich in both Hope 1 and Hope 2 may be important ingredients to "grit," the non-cognitive skill found to affect successful human development outcomes in recent work by Heckman and co-authors (J.J. Heckman and T. Kautz 2012, J.J. Heckman et al. 2012, J.J. Heckman et al. 2006).

A Brief History of Hope

Much that has been recorded about hope over recorded human history has often portrayed the heroics of human striving against a backdrop of opposition, suffering, and despair (for an excellent review see J.A. Eliott (2005)). These accounts often explore the inherent tension in desperate circumstances between hope and hopelessness. The balance between the two reflects a broader understanding of the human experience, often viewed through the lens of the common spiritual beliefs shared within a culture. For example, Greek mythology widely considered human existence to be driven inexorably by fate, and the balance between hope and hopelessness favored the latter: the Greeks regarded hope as foolish, even evil, because any sense of human agency was fundamentally an illusion (J. Moltmann 1968).[2] Even what we refer to as Hope 1, wishful hope, was indeed a precarious hope, resting firmly in the capricious hands of the gods.

In contrast to the foolishness of hope permeating Greek philosophy, the subsequently emergent Judeo-Christian worldview allowed greater scope for both hope and human agency. The Hebrew and Christian scriptures and tradition articulate a world in which the choices of human beings matter in shaping a future state, where human action in tandem with the guidance, will, and grace of God forms the basis for hope, both temporal and eternal. Hope in Islam contrasts somewhat with Judeo-Christianity in that it tends to place a greater weight on the sovereign will of God as the ultimate determinant of future outcomes, but nonetheless prizes hope and action in the form of obedience and submission to God. Hope in some Eastern religions, such as Hinduism, is viewed in terms of leaving a cycle of reincarnation, a process in which human agency is essential. These and other world religions provide theologies of hope

[2] The ancient Greeks explained the presence of evil and trial in the world with the story of Pandora's Box. In this story, Zeus seeks to torment mankind by giving Pandora a box filled with all the evils of this world – knowing that curiosity would ultimately prompt her to open the box. When she does, all of the evils in the box escape and begin tormenting the world – all the evils except hope, which remains trapped inside. While some modern interpretations have taken this to mean that hope remains to help mankind confront and conquer evil and trial, this interpretation likely imposes too much of our contemporary worldview on this ancient myth. The interpretation that is more consistent with the philosophy of fate of ancient Greece is that hope – without any ability to change one's destiny – really was considered to be the ultimate and most enduring evil (J.A. Eliott 2005, M. Miceli and C. Castelfranchi 2010).

that differ in many important ways, but they share a contrast with the Ancient Greeks in the general conception of hope as good.

During the Reformation and the Enlightenment, dominant strands of philosophy and theology emerged in which began to emphasize Hope 2, aspirational hope. We see this in a sixteen century quote from church reformer Martin Luther:

> "Everything that is done in the world is done by hope. No husbandman would sow one grain of corn, if he hoped not it would grow up and become seed; no bachelor would marry a wife, if he hoped not to have children; no merchant or tradesman would set himself to work, if he did not hope to reap benefit thereby. How much more, then, does hope urge us on to everlasting life and salvation?" (M. Luther 1848)

The Enlightenment of the 18th Century and rapid technological progress of the 19th and 20th centuries ushered in an age where reason and science fostered secular perspectives about hope. Eighteenth century philosopher Immanuel Kant (I. Kant et al. 1998) listed "What may I hope?" as the third fundamental question in which human reason is unavoidably interested. John Stuart Mill, for example, wrote that "A hopeful disposition gives a spur to the faculties and keeps all the working energies in good working order" (in (B.M.G. Reardon 1966, p.303). More recently mid-twentieth century Marxist philosopher Ernst Bloch's two volume treatise on hope espoused the critical role hope plays in modern society (E. Bloch 1986). While these were typically secular explorations of the topic, they often continued to acknowledge a spiritual dimension to hope. As French philosopher Gabriel Marcel stated, "Hope is for the soul what breathing is for the living organism. Where hope is missing, the soul dries up and withers" (G. Marcel 1951).

Although we see in both secular and religious views of hope a movement in the definition of hope from Hope 1 to Hope 2, it would be inaccurate to state that the hope articulated in modern Judeo-Christianity and in some other world religions today is purely, or even primarily, Hope 2. Religion as faith in God (almost by definition) implies a strong element of Hope 1, where faith and hope reside outside of an individual's human agency. Across the world—especially the developing world—it is virtually impossible to encounter hope embedded in religious belief that is purely Hope 2. Within Judeo-Christianity, there exists a broad spectrum of hope that ranges from Reform Judaism, mainline Protestantism, and the "prosperity gospel" found in developing world Pentecostalism (all High Hope 2) to Animism, developing-world Catholicism, and Islam (High Hope 1). Secular forms of hope, whether

acknowledged or not, also rely on factors that lie outside the scope of an individual's own human agency, in the form of faith in science, human progress, social movements, and so forth and thus contain significant elements of Hope 1 as well as Hope 2.

2. The Psychology of Hope

A rich and growing literature in psychology over the last sixty years has addressed key questions related to hope, including (a) Is hope something we feel or something we think? (b) How is being hopeful different than being optimistic or patient? (c) Is uncertainty, imagination or spirituality a prerequisite to experiencing hope? (d) Can we break down hope into components or causal factors?

Psychology began to explore the concept of hope systematically in the 1950s. Not coincidentally, this research followed on the heels of horrific suffering in World War II. Austrian neurologist and psychiatrist Victor Frankl experienced this suffering first-hand in Nazi concentration camps and wrote about the sanctity of the human mind and the potential to find meaning and hope even in unimaginable circumstances (V.E. Frankl 1985). In his 1959 presidential address to the American Psychiatry Association, Karl Menninger described his exposure to a Nazi prison camp a few days after it was liberated. What he remembered most vividly from the visit was how the prisoners were "kept alive by hope" (K. Menninger 1959). In the address, he posed a question that set the stage for a concerted scientific study of hope:

> "Are we not now duty bound to speak up as scientists, not about a new rocket or a new fuel or a new bomb or a new gas, but about this ancient but rediscovered truth, the validity of *hope* in human development…?" (K. Menninger 1959).

As these questions suggest, the concept of hope can be challenging to characterize formally or precisely because it is such a rich and pervasive human experience. In response largely to Menninger's complaint that "when it comes to hope, our shelves are bare" (K. Menninger 1959), a branch of psychology took up this challenge as part of what would ultimately become defined as the subfield of positive psychology (M.E. Seligman and M. Csikszentmihalyi 2000), the application of psychology theory and methods to healthy cognition and human flourishing. This was a significant departure from the established norm in psychology, as the discipline had previously concerned itself primarily with the causes and cure of mental illness. Research in positive psychology, which maintains that people are often drawn by the future more than they are driven by the past, has generated many insights into the

psychology of hope. We briefly review a few strands in this literature and describe empirical work in this area.

Positive Psychology and the Emergence of Hope

Unsatisfied with the psychology field's general orientation around the investigation of psychological disorders, the field of positive psychology began to develop around the study of human virtues, psychological attributes such as happiness, encourage, love, forgiveness, and hope (J.J. Froh 2004). Branches of this literature explored how human beings were able to interact positively with their environment. Rotter (1954) explored and developed the concept of an individual's "locus of control," the extent to which persons believe they control the factors that shape their lives (H.M. Lefcourt 1982, J.B. Rotter 1966, 1954). An individual's locus of control is conceptualized as being either internal or external or some combination of these extremes. For example, a student with an internal locus of control will perceive her performance on an exam to be largely a function of her own preparation, effort and abilities; with an external locus of control, she will instead perceive her performance as a reflection of the teacher, the exam, or distractions from other students.

The companion concept of "self-efficacy" captures an individual's belief about his ability to complete specific tasks and achieve particular goals (A. Bandura 1977).[3] Research into the psychology of motivation and the lack thereof, including individual desire to seek and set goals, reflected this self-efficacy specifically and the locus of control more generally (H. Cantril 1964, E. Stotland 1969). An individual's locus of control is generally defined as a forward-looking assessment of the determinants of future outcomes, but this is clearly related to past experiences and lessons learned from these experiences. Specifically, the way an individual explains the causes of events in one's life--his so-called "attributional style"--obviously shapes self-efficacy and the evolution of a perceived locus of control more generally. For many, the locus of control and attribution style are consistent and therefore in equilibrium, which is why they are often considered personality traits.

One of the most influential applications of this theory began with a series of experiments conducted on dogs. In these experiments, Maier and Seligman (1976) exposed dogs to inescapable electric shocks. This conditioned the dogs to attribute the shocks to immutable external forces. Once trained with this attribution style, the dogs would not even

[3] Judge et al. (2002) argue that these two concepts along with the other two that compose the four dimensions of core self-evaluations (neuroticism and self-esteem) measure the same, single factor.

attempt to escape the shocks by hopping over a small barrier (S.F. Maier and M.E. Seligman 1976). As a particularly potent application of attribution theory, this concept of "learned helplessness" suggests that how we explain outcomes in our life can constrain our future ability to influence these outcomes in potentially dramatic ways (S.F. Maier and M.E. Seligman 1976, M.E. Seligman 1972).

In the 1980s, Snyder began to build on these insights from a growing body of work in positive psychology to formulate his now classic theory of hope (for his description of the emergence of this theory, see (C.R. Snyder 2002)). Moving from earlier work that focused on how people generate excuses in the wake of mistakes or poor performance, Snyder conceptualized hope as a key alternative to making excuses (C. Snyder 1989). This led him to define hope as "primarily a way of thinking, with feelings playing an important, albeit contributory role"[4] (C.R. Snyder 2002). This distinction between the role of emotion and thought in hope is important: whereas emotion is reactive, thinking can be proactive (C.R. Snyder 2002). Ultimately, Snyder conceptualized hope as consisting of three key elements. First, hope requires that an individual engage the future with specific goals that are meaningful as desired future outcomes. Second, hope requires that an individual be able to visualize pathways to achieving these goals, which requires us to "link our present to [our] imagined futures" (Snyder 2002, p.251). Third, hope requires that an individual possess sufficient agency to motivate the necessary investments and make progress along these pathways, even in the face of impediments. By this definition, an individual who experiences hope has a *goal* of some kind, sees a viable *pathway* to that goal and believes she has the *agency* to progress along this pathway. Thus Snyder's conception of hope, and that of recent psychological research falls squarely into our definition of Hope 2.

Implicit in this definition of hope is a degree of uncertainty about future outcomes: neither the pathway nor the individual agency is deterministic in this framework. Intermediate probabilities of goal attainment may provide the best seedbed for hope (J.R. Averill et al. 1990), but very high or very low probability goals may still be appropriate targets for hope (C.R. Snyder 2002). As Snyder explains, hope is often operative with very high probability goals that appear to be easily attainable because high-hope people commonly stretch and challenge themselves in order to inject additional uncertainty into a goal situation that may otherwise

[4] This tension between hope as feelings and hope as thoughts was clearly on display in the writings of Ernst Bloch on the topic, who claimed hope was "mental feeling" (E. Bloch 1986).

appear to be very certain and attainable. In the case of very low probability goals, high-hope individuals are sometimes able to increase the odds of success by remaining open to alternative pathways that reframe the challenge in new ways (Snyder, 2002). This underscores why pathways are essential to hope in this framework: Regardless of the apparent probability of success of a particular goal, high-hope individuals are more likely to envision specific steps along a given pathway, to produce alternate routes with similar specificity and to use the details of these possible pathways as the basis of their confidence.

In the face of impediments, high-hope individuals often formulate and assess several potential pathways, which can improve the probability of success relative to low-hope counterparts who remain constrained (L.M. Irving et al. 1998, C. Snyder et al. 1998). These hope dynamics can be particularly potent because emotions provide constant feedback throughout this process and can create vicious or virtuous cycles (C.R. Snyder 2002). Snyder's model both borrows from and fits neatly into the goals literature pioneered by Locke and Lantham (E.A. Locke and G.P. Latham 2002, E.A. Locke and G.P. Latham 1990) and Heath et al. (1999), where goals become viewed as reference points that heavily reward effort in utility terms in approaching a goal, but where diminishing returns set in quickly afterwards per a (D. Kahneman and A. Tversky 1979) value function.

Although hope requires agency, it simultaneously implies limitations to one's agency (M. Miceli and C. Castelfranchi 2010); hope is not for the omnipotent. The fact that uncertainty is essential to hope implies that "it is more difficult to disappoint a hope than an expectation" and that "hope allows us to face the unfulfillment of our wishes without becoming desperate" This endows hope with a degree of built-in resilience and frames the achievement of goals as a gain rather than as a potential loss that was avoided (M. Miceli and C. Castelfranchi 2010).

Hope Measurement and Empirical Research

As hope became a legitimate research topic in psychology in 1960s and 1970s, empirical tests of hope and its effects began to flourish. In contrast to philosophers and theologians, researchers in psychology needed more than definitions or rich discussions of hope; they needed the empirical tools to measure it. Only with quantitative measures of hope could researchers reliably detect individual differences in hope and test elements of theory. While qualitative approaches to understanding these differences and the complexity of hope remain central to clinical medical practice and psychology, researchers with less prescriptive objectives have had to quantify hope in measures that are robust across individuals and over time.

Building on earlier efforts to measure hope (L.A. Gottschalk 1974) and guided by the goals-agency-pathways framework described above, Snyder and colleagues have developed and validated three different hope scales as shown in Table 2. The Trait Hope Scale is intended to capture individuals' self-assessment across time and in different situations. It consists of four agency statements, four pathways statements and four distracter statements. The sum of the ratings for the agency and pathways statements provides the overall hope score, which in validation tests is quite stable over time periods of 3-10 weeks (C.R. Snyder 2002). The State Hope Scale is intended to capture individuals' present moment self-assessment. This scale includes both agency and pathways statements, is similarly constructed as the simple sum of the scores and typically varies across days and weeks for a single individual (C.R. Snyder 2002). Finally, the Children's Hope Scale is aimed at eliciting hope among children ages 8-16. Although similar scales exist for related concepts such as positive and negative life stress, locus of control and optimism, measures based on these hope scales reliably add explanatory power beyond these related concepts, suggesting they capture correlated but unique individual characteristics (C.R. Snyder et al. 1991).

Based on Hope Scale measurements, research has documented strong correlations between hope and a variety of outcomes, including academic and athletic performance (L.A. Curry et al. 1997, C.R. Snyder et al. 2002), and physical and mental health (K. Herth 1988, L.M. Irving, C. Snyder and J.J. Crowson Jr 1998). In one study, hope scores were collected from 200 university students at the beginning of their first semester in college, and these students were tracked for the subsequent six years. The hope scores of these students significantly predicted performance in both GPA and graduation rates even after controlling for measures of entrance exam scores (C.R. Snyder, H.S. Shorey, J. Cheavens, K.M. Pulvers, V.H. Adams III and C. Wiklund 2002). Similar results have been found in other studies of college students and studies of children while controlling for measures of intelligence, self-esteem and previous grades. An analogous study of female track athletes, the Trait Hope Scale scores were elicited at the beginning of the season and the State Hope Scales were elicited before track meets. These scores accounted for 56% of the variance of athletes" performance in these competitions (L.A. Curry, C. Snyder, D.L. Cook, B.C. Ruby and M. Rehm 1997).

Hope has been widely tested as a predictor of mental and physical health outcomes as well. In Menninger's original call for psychologists to take the study of hope seriously, he framed hope as a critical factor that determines how well patients respond to treatment and as

the central mechanism in pervasive placebo effects (K. Menninger 1959). Much of the subsequent research into hope focused on these topics, and hope remains a key element of clinical practice in many fields of medicine, including oncology where hope became a "dominant symbol" in the U.S. (M.-J. Del Vecchio Good, B.J. Good, C. Schaffer and S.E. Lind 1990). Whether from qualitative observation from medical practitioners (J. Groopman 2005) or from quantitative measurement and statistical analysis, there is compelling evidence of the role hope plays in recovery from and adaptation to physical ailments and illness.

This work sets the stage for current research and anticipated discoveries related to the biology and neurology of hope. The magnitude of the placebo effects evident in some studies – for example, a saline solution that reduces pain reported by patients so much that it is indistinguishable from morphine (Trouton, 1957) – has opened research into the biological mechanisms behind these effects. This work explores how "belief, expectation and desire activate brain circuits that cause the release of endorphins and enkephalins" (J. Groopman 2005). In clinical medicine, pain and hopelessness can build on each other in a vicious cycle of diminishing hope, which suggests a degree of path dependency that might similarly be evident among the desperately poor whose physical, emotional or social suffering interact in a vicious cycle with hopelessness. Functional magnetic resonance imaging (fMRI) technologies are opening research possibilities and generating discoveries related to the neurological mechanisms that translate positive thinking and emotion into physical and mental health outcomes.[5]

3. Development Economics, Aspirations, and Hope

In contrast to much of the recent research in psychology, which often studies the impact of hope on subjects in developed countries, the interest of development economists in hope and its related concepts stem from a motivation to understand the causal factors of persistent poverty in developing countries. Until very recently, development economics has chosen an approach to poverty that has almost exclusively focused on the relief of *external* constraints, where these constraints might include credit, education, health, infrastructure and so forth. In a new but growing literature, economists are beginning to explicitly explore the role that *internal* constraints – including hope and aspirations – play in conditions of poverty. Although this is considered a relatively new development in the field, as is often with new ideas in economics,

[5] The laboratory at the University of Wisconsin-Madison has several active research projects in this area under the supervision of neurologist Richard Davidson (see http://www.investigatinghealthyminds.org/index.html).

speculation of a causal relationship between low levels of Hope 2 and poverty is not entirely new. Although not recorded in any of his written work, a quote attributed to Adam Smith submits that "The real tragedy of the poor is the poverty of their aspirations."

More recently the importance of internal constraints was reintroduced by another economist with strong ties to philosophy, Amartya Sen, in his well-known capabilities and freedom approach (1992, 1999). In Sen's capabilities framework, genuine development and effective development policy expands human agency--the freedom to define and pursue the goals that are most meaningful to an individual--as both an end and a means to an end:

> "[P]eople have to be seen… as being actively involved… in shaping their own destiny, and not just as passive recipients of the fruits of cunning development programs" (A. Sen 1999).

Indeed it is through Sen (1999) in which the notion of the "internalized constraints" of the poor emerges in economics, in which an individual's perception of agency can become degraded to the point that internal constraints are more binding than tangible economic constraints, creating development traps characterized by a state of mind that one might identify as low-agency "hopelessness" (Hopelessness 1 in Figure 1.) Although Sen does not explicitly articulate "hope" as an element of human agency in our sense of Hope 2, this conceptualization of internal constraints both provides an umbrella for the larger literature emerging today in development economics, while fitting comfortably within the dominant conceptualization of hope in modern psychology.

In a series of 2012 lectures,[6] Esther Duflo directly appeals to Sen's framework by arguing that hope should be classified as a fundamental capability, akin to health, good nutrition, and education (E. Duflo 2012) because of the paramount role it plays in the lives and behavior of the poor. Hopelessness among the poor, she argues, is accompanied by low aspirations, which foster low levels of investment—an example she sites from her own research is in the under-application of top dressing fertilizer to maize crops—and hence poor outcomes.[7]

Economic theory: Hope and Aspirations

How do different notions of hope relate to familiar concepts in economics? In Table 2, we explore the relationship between different notions of hope to eight potentially related economic

[6] Duflo's 2011 book with Banerjee entitled *Poor Economics* develops these ideas in greater detail (A.V. Banerjee and E. Duflo 2011).

[7] Duflo's remarks are similar to an argument put forth nearly 60 years earlier by the influential 20th Century philosopher and theologian Paul Tillich who argued for a "right to hope" (P. Tillich 1965).

concepts: anticipatory utility, discount rates, cost of effort, subjective expectations, risk aversion utility weightings, constraints on choice sets, and reference dependent utility. We restrict our focus in this table to Hope 1 and Hope 2 as discussed above adding as a separate category hope that is spiritual or religious in nature, which we define as a "spiritual trust in God or other transcendental force." As depicted in this table, each of the eight economic concepts is related to some potential meaning of the word hope, but none of these hope types is related to all of the above economic concepts. In our view, Hope 2 is the most encompassing of these hope types and relates to several of familiar economic concepts. Since alternative mappings of hope types into economic concepts are possible, our intent is not to establish an authoritative concordance. Rather, our objective is to illustrate how different conceptions of hope essentially represent a bundle of economic concepts. This is obviously only a point of departure, however, because potential interactions between these concepts implies that the behavioral impact of a bundle of concepts that represent a given type of hope is different than the aggregate effect of these stand-alone concepts.

Much of the more recent work in development economics related to hope focuses on aspirations and can be traced to the work of anthropologist Arjun Appadurai (2004), who develops the notion of the "capacity to aspire." The argument is that the aspirations of individuals originate from ways of thinking that are part of a larger ethos in a given reference community. One might be tempted in economics to translate these into, say, parameters in a utility function. However, the idea is more complex because while in economics we tend to assume utility parameters as exogenous to the preferences of others, aspirations in the framework of Appadurai are jointly determined and shaped through time.

The target, intensity and composition of aspirations in any given community, he argues, reflect the dominant worldviews and ideologies about the nature of worldly possessions and their relative value to social relations, as well as deeper ideas about the meaning of life, family, community, and death. As Appadurai writes:

> Aspirations about the good life, about health and happiness, exist in all societies. Yet a Buddhist picture of the good life lies at some distance from an Islamic one. Equally, a poor Tamil peasant woman's view of the good life may be as distant from that of a cosmopolitan woman from Delhi, as from that of an equally poor woman from Tanzania. But in every case, aspirations to the good life are part of some sort of system of ideas… which locates them in a larger map of local ideas and beliefs…(A. Appadurai 2004)

At the same time, he notes, aspirations can quickly dissolve into more densely local ideas about marriage, work, leisure, respectability, friendship, and virtue. But in practice they may manifest themselves into very specific desires for one type of job over another, a particular marriage connection, or even wearing a certain type of shoes or trousers. Aspirations, above all, are determined largely within a given community so that the "capacity to aspire" itself is bounded by the resources of a particular human context. Appadurai's work sees the capacity to aspire as a "navigational capacity" as it views the aspiration process as a process of exploration of alternatives and possibilities with in a network, where the networks of many in advanced countries are dense with possibilities, personal connections, and ideas, but those of the poor in developing countries are substantially limited and fragile. These aspiration constraints emerge from reference communities and may hamper the ability of the poor to contest their poverty by aspiring to something greater than what is locally understood as practical, desirable, or possible.

Appadurai's work is the foundation for a sequence of discussions and formal theoretical models in the economics literature (F. Bogliacino and P. Ortoleva 2013, P.S. Dalton et al. forthcoming, G. Genicot and D. Ray 2014, D. Ray 2006, O. Stark 2006). Ray (2006) in particular builds directly on Appadurai's conception of the aspiration process to introduce and refine a trio of concepts that are helpful in framing aspirations research. The first of these is the *aspirations window*, which is formed from an individual's cognitive world of perceptibly similar individuals. The set of persons in an individual's aspirations window establishes boundaries, or at least reference points, around future possibilities. The aspirations window is comprised of individuals of similar capability and capacity, individuals likely sharing important traits such as cast, skin color, gender, ethnicity, and religion. It is influenced by the level of social mobility within a community or larger society, as well as the perception of social mobility. An individual's aspirations window will be smaller if there are large information asymmetries or restrictions on the flow of information within the network about opportunities and possibilities.

The second of these is the notion of an *aspirations gap*, the difference between the standard of living one aspires to and that which presently exists. Because moving from the existing state to the aspired state is costly, it is important that the aspirations gap cannot be too narrow, nor too wide: Too narrow a gap reduces the rewards to productive effort; too wide a gap makes the aspiration unattainable and leads to aspirations frustration.

Ray also discusses aspirations failure, which may be the result of a diminished aspirations window or too wide (or too narrow) of an aspirations gap. Aspirations failure may result in, for example, low levels of educational attainment, underinvestment in small enterprises, or lack of concern for the quality, safety, or health of one's dwelling. Ray also notes how aspirations failure in one dimension may lead to perverse aspirations elsewhere. For example, aspirations failure in schooling may lead one to aspire to leadership in a criminal or terrorist organization.

Does inequality in a society generate higher or lower aspirations? Here there is no consensus. Stark (2006) demonstrates in a theoretical model that a higher Gini coefficient produces a stronger quest for status within a society, and hence higher economic growth. Corneo and Jeanne (2001) and Bogliacino and Ortoleva (2013) demonstrate the opposite: that greater equality yields higher aspirations, greater investment in future outcomes, and hence higher growth. Higher inequality fosters a sense of hopelessness about social advancement and in Corneo and Jeanne (2001) it also dampens incentives for the rich to productively invest in the interest of defending their social status. Bogliacino and Ortoleva also compare utility functions that are reference dependent (to others in society) and non-reference dependent, demonstrating in their model that reference dependent economies always grow faster than non-reference dependent economies. The difference in conclusions from this literature appears to be in whether the design of a model emphasizes the incentives to aspire yielded from a moderate gap relative to a small gap in which the result is something akin to our Hope 2 outcome for the less wealthy, or the difference between a moderate gap and a large gap in which incentives to aspire are diminished, yielding something akin to our Hopelessness 1 outcome.

This ambiguity is seen in other models. For example, Ray et al. (2010) find in a geographical model that incorporates aspirations (as a product of neighbor outcomes) with complementarities in skill investments that geographical segregation yields ambiguous effects on macroeconomic outcomes. Both segregated and unsegregated equilibria exist, outcomes which are dependent on the relative interplay of aspirations over human capital investment and complementarities. Furthermore, if the benefits from positive spillovers from neighbors investments in human capital exceed any loss from an aspirations competition between neighbors for higher human capital investment, then overall utility increases with integration and decreases with segregation. The opposite case, in which integration diminishes aspirations, can be viewed as the kind of hopelessness that could be associated with a prohibitively wide

aspirations gap. Genicot and Ray (2014) develop an inter-temporal model in which aspirations are endogenous to outcomes, but outcomes are also endogenous to aspirations. Here again, we find that aspirations and economic growth are higher when differences between individuals are moderate. In a replication of the growth data for 43 countries, Genicot and Ray find that the assumption that best fits the data is one in which individuals employ "umbrella-shaped weights" across those with outcomes nearest to them. Consistent with the ambiguity in other papers, they find that resulting equality conditions are strongly dependent on initial conditions and assumptions and that multiple equilibria are easily generated from the model.

Empirical Research

Empirical analysis of the determinants and impact of aspirations has quickly become one of the liveliest research areas in applied development economics. Here we review a selection from this emerging literature. Our objective is not to provide a comprehensive survey of this work, but rather to summarize a few of the studies that have become – or are likely to become – influential in this area of inquiry.

Interesting new evidence appears to show that role-modeling plays a significant role in driving aspirations among the poor. Beaman et al. (2012) exploit a randomized natural experiment in West Bengal, in which one-third of all village councils are randomly reserved for a female chief councilor (called "Pradhan") in every local election. The researchers surveyed 8,453 adolescents aged 11-15 and their parents in 495 villages, where questions included in the survey strongly focused on aspirations, and the closing of the aspirations gap between boys and girls. Questions included asking if the parent would like 1) the child to at least graduate from secondary school; 2) the child to marry at an age above 18; 3) the child to have an occupation different than housewife or what the in-laws prefer; 4) whether the desired occupation is a doctor, engineer, scientist, teacher or a legal career; and 5) the child to become the Pradhan. The same aspirations-focus questions were asked to the children themselves. The randomized nature of the village-district set aside policy allowed for an estimation of causal effects from the existence of a female Pradhan to the aspirations of young girls in that particular village district. What they find is that the existence of a female Pradhan caused the gender gap in aspirations in these districts to close by 25% in parents' aspirations and 32% in adolescents' aspirations in villages assigned to a female leader for two election cycles. They also find that the gender gap in adolescent educational attainment was erased and that girls in villages with a female Pradhan spent less time on household chores.

In another study in India, Jensen and Oster (2009) explore the impact of cable television in households and its impact on the aspirations of women. The idea is that exposure to outside ideas and norms about the role of women may increase the aspirations and expectations of women in areas such as employment, domestic violence, childbearing, and desire for male (over female) children. They use a three-year panel data set on individuals and find exposure to television to be associated with increases school enrollment for younger children, decreases in the adult acceptability of domestic violence toward women, increases in women's autonomy, and even decreases in adult women's fertility. The effects they find are quite large: differences in attitudes and behaviors between urban and rural areas decreased between 45 and 70 percent within two years of cable TV introduction. While it is impossible to attribute all of these large changes to the impact of television on aspirations, results are certainly consistent with the idea that exposure to new standards of behavior alters the expectations and aspirations of those who were the victim of particularly low aspirations previously.

Glewwe, Ross, and Wydick (2015) carry out an experiment in Indonesia among 540 children living in the slums of Jakarta, about half of whom were internationally sponsored through Compassion, one of the leading child sponsorship organizations worldwide. Children sponsored through Compassion are provided with school tuition, school uniforms, nutritious meals, healthcare and have access to a an afterschool tutoring program that focuses not only on supplemental academic training, but on the development of spiritual formation, character growth, and socio-emotional skills, especially in the area of self-esteem and aspirations. Direct questions were surveyed with standard questions on self-esteem and aspirations. Children were given a new box of 24 colored pencils and asked to "draw a picture of yourself in the rain." The use of children's drawings has been well developed in the clinical psychology literature (see for example, Koppitz, 1968; Thomas and Silk, 1990; and Furth, 2002). Children's self-portraits have been explored in a long psychology literature, where drawings often yield important information into the psychology of children, insights that are often hard to obtain though by posing direct survey questions. This literature empirically correlates children's self-portraits that have missing facial features, fingers, and feet for example, with extreme shyness and insecurity. Those drawn with a dark color or single colors are indicative of depression, hopelessness and anxiety, tiny figures with hopelessness and low self-esteem. Monster figures are correlated (not surprisingly) with aggression.

In this study, identification of causal impacts was carried out through exploiting an age-eligibility rule, which dictated that only children nine years old and younger were eligible for sponsorship when the program was rolled out into the local neighborhood. Factor analysis was used to generate three factors identified as happiness, hopelessness, and self-efficacy based on their correlations with survey questions and mainly with drawing characteristics. OLS (ordinary least squares) and IV (instrumental variable) estimations found that child sponsorship caused children to be 0.24 (OLS) to 0.55 (IV) standard deviations higher in happiness, 0.13 (IV) to 0.33 (OLS) standard deviations higher in self-efficacy, and 0.40 (OLS) to 0.80 (IV) standard deviations lower in hopelessness. Here we see evidence of substantial impacts from a program with an intervention comprised not only of tangible economic interventions (that affect avenues and agency), but of interventions intended to augment noncognitive skills, character, self-esteem, grit, and aspirations.

What is the impact of augmented aspirations? Wydick, Glewwe, and Rutledge (2013) carry out a six-country on the long-term impact of Compassion's sponsorship program through a survey obtaining data on 10,144 adults, 1,860 of whom began sponsorship from 1980 to 1992. A similar age-eligibility rule existed during this period (where a child had to be age 12 or younger to be sponsored instead of 9 years old as in Indonesia) that facilitated identification of causal effects from the program. Although it is difficult to separately identify the relative impacts of the tangible interventions that are a part of sponsorship with the higher aspirations in childhood created by the program, impacts of sponsorship in adulthood are found to be substantial. Sponsorship resulted in an increase in schooling completion of 1.03-1.46 years, a 12-18 percentage point increase in secondary school completion (over a baseline rate of 44.5 percent), and an increase in the probability of white collar employment in adulthood of 6.6 percentage points over a baseline rate of 18.7 percent. Sponsored children were also more likely in adulthood to be community and church leaders. In a separate paper studying economic impacts on income and wealth and demographic impacts on marriage, childbearing, Wydick, Glewwe, and Rutledge (2014) find sponsorship resulting in an increase in monthly income of $13-19 over an untreated baseline of $75, mainly from higher labor market participation, positive impacts on adult dwelling quality in adulthood, and increased probability of mobile phone ownership. There is also some evidence of modest effects on childbearing later in adulthood among those sponsored earlier in the program's history when baseline birthrates were higher.

In research on a cash transfer program in Nicaragua, Macours and Vakis (2009) utilize a two-stage randomized intervention that combined conditional transfers with other interventions aimed at protecting the asset base of the rural poor in six municipalities in the northwest part of the country. In carrying out the program among the 3,000 households involved, both subjects and leaders were randomly assigned to one of three different group interventions within randomly selected treatment communities. The three interventions consisted of *a*) a simple conditional cash transfer; *b*) the conditional cash transfer plus a scholarship for occupational training; and *c*) a productivity treatment that combined a grant for productive investments with the conditional cash transfer. They find that the higher the share of female leaders ("promotoras") with the productivity intervention to a household's proximity, the larger where the impacts of an array of outcomes were on that particular household. Leaders were not allocated equally equal among program assemblies during program rollout, although an average of four leaders per assembly. Results suggest that having one additional leader given the productive investment package in one's initial program assembly increased household income from nonagricultural activities with about 60 cordobas (roughly $US3.30) per capita, and the value of the animal stock by 220 cordobas (roughly $US12.00) per capita. Interestingly, like child sponsorship the intervention Macours and Vakis study is one that not only may improve agency (in this case through learning from group leaders) but also impact aspirations and Hope 2 through the inspiration and role-modeling effects of leaders, and an intervention that yields large impacts.

In some cases it may be that the mere articulation of an aspiration is able to establish a new reference point for enterprise activity that stimulates higher effort and economic outcomes. Cassar et al. (2014) carry out an experiment in Colombia in which randomly selected microfinance borrowers were assigned to combinations of treatments, the first of which included setting an intermediate goal for their training or enterprise.[8] Each of the goals was accompanied by a strict verification procedure and rated in terms of difficulty. Other crosscut treatments included being included in a goal-realization support group, and the receipt of a small prize from the experimenter if a goal was realized. The combination of these treatments together comprises the approach of the Family Independence Initiative (FII) pioneered by

[8] Subjects could choose from a menu of attending a marketing workshop, creating a business plan, implementing accounting practices, paying off an outstanding debt, purchasing a piece of businesss equipment, implementing a marketing strategy, obtaining one of six different licenses to legalize the enterprise, attending a job fair, saving 15,000 Colombian pesos every week (US$8.00), making a payment to improve your credit score, purchasing a durable good for your home, applying for an education grant, attending an adult literacy course, or joining the health security system.

Maurice Lim Miller, recipient of a MacArthur genius grant for the implementation of this model among low-income households in Oakland, California. Subjects formed into groups representing combinations of the above treatments were tracked over a six-month period. Results indicate that all of the treatments, including the support group and the prize, had significant impacts on enterprise outcomes, and that combined in the full FII package had large and significant impacts on enterprise revenues. But perhaps most interestingly, the mere articulation of the goal, the synthetic creation of aspirations, among subjects had by far the most significant impact on the economic outcomes of subjects.

One of the most celebrated pieces of recent research that has important implications for understanding both the cause and effect of aspirations is the Bernard, Dercon, Orkin, and Taffesse (2013) aspirations experiment in Ethiopia. Bernard et al. worked with film producers to create a four 15-minute documentaries featuring families who recounted their personal narrative of how they were able to significantly improve their economic situation by starting a or expanding a small enterprise or by improving their farming practices. The experiment took place in Doba Woreda, a rural district about 250 miles east of Addis Ababa. Individuals from 64 villages took part in the experimental design, which implemented 16 screening sites and individuals invited from four different villages to each site, and where the site was either a school or an agricultural training center. Experimenters selected 18 households from each village, and each of these 18 households were allocated to one of three groups: a treatment group (that watched the documentary), a placebo group (that watched standard Ethiopian TV entertainment), and a control group that was only surveyed. To study the effect of a more intensive treatment, some villages had a higher proportion of households allocated to the treatment group. In order to measure impact through peer networks, data was obtained on the closest four friends of the spouses from the households in the survey, and checked against the list of those who had been randomly chosen for the treatment or placebo groups.

Six months after the screening of the documentary, subjects were resurveyed. Two important sets of results flow from the research. First, Bernard et al. find that the screening of the documentary had a significant impact on an aspirations index with components consisting of income, wealth, social status, and educational aspirations for children, where each component was standardized and weighted according to subjective importance by the individual. They find both direct effects from individuals themselves who had watched the documentary, and from the number of friends who had attended the documentary. Although significant and important,

there are important caveats to these results. A primary one is that the effects are measured with some imprecision, the direct effect significant at only the 10% level. It is also surprising that the impact of an additonal friend watching the documentary in most specifications is larger (0.04 standard devations) than the direct effect of an individual watching the documentary him or herself (0.03 standard devations). The aspirations index, moreover, is significant only through the effect of the documentary on increasing aspirations for children's education, this although, as the authors note, none of the subjects in the documentaries were formally educated nor mentioned the importance of education to their success.

Second, Bernard et al. also report impacts from the screening of the documentary not only on changes in aspirations, but on future-oriented *behaviors* six months after the screening. These include changes in savings, time spent in business relative to leisure, demand for microfinance, and investments in children's education. The results find some evidence for increases in savings, but these results are only significant not by the standard tests of the treatment coefficients relative to the control group, but in Wald tests that examine the statistical significance of differences between the treatment group and the placebo group (where point estimates are slightly negative). Those who view the documentary indicated, responding to a hypothetical, that they would want to borrow significantly more to finance business activity (especially for long-term loans) if microfinance were available. Results fail to show any direct impact on time invested in an enterprise relative to leisure, but they do show a 0.07 standard deviation increase in villages that had a higher allocation of households to the treatment group. Baseline levels of schooling enrollment are low in the study area, and Bernard et al. find no direct impact on educational enrollments or expenditures on children's education. Yet they do report evidence of very large indirect effects, where the proportion of children enrolled in school increases 10% from baseline, and schooling expenditures are 16.6% higher with every additional friend in the village who viewed the documentary.

Despite these caveats to the Bernard et al. study, it is remarkable that measurable and persistent impacts occur from a very light (and inexpensive) intervention. Although this experimental study would have benefited from a pre-analysis plan that prioritizes some subset of the myriad potential treatment effects, it raises the intriguing possibility that simple interventions in the domain of aspirations may be able to realize significant impacts on behavior.

4. An Economic Model of Hope as Aspirations, Agency and Pathways

In this section, we propose a model of hope that integrates the hope and aspirations literature into a simple but unified framework for research. Based on Snyder (1994) and Locke and Lantham (1990) our model of hope uses the framework goals, agency, and pathways and focuses on Aspirational Hope. In this model, we aim to illustrate how hope emerges from these three elements in a way that directly shapes agent decisions and welfare outcomes. While we draw conceptually on the positive psychology of hope literature, our formulation of aspirations leverages recent work in economics on this topic; we therefore consider the role of goals in the framework of aspirations-based utility. We begin with aspirations and subsequently introduce agency and pathways into the model. We apply the model to generate insights about the role the three elements of hope may play in shaping the impact of different types of interventions.

Consider a set of possible life outcomes, Y, which in principle may either be discrete or continuous. Each outcome $Y_j \in \{Y_1, Y_2 \dots Y_n\}$ for the discrete case or $Y_j \in [0, \infty)$ for the continuous case corresponds to a given level of utility that is (weakly) increasing in Y_j. Individuals in this model aspire to one of these possible life outcomes, implying that there is a set of possible aspirations $\mathcal{A}$ that mirrors Y.

Aspirations are context-specific and may relate to either discrete or continuous outcomes. Discrete examples of outcomes to which a health worker, for example, might aspire include professional positions such as orderly, nurse, nurse practitioner, physician, or surgeon. A boy in rural Guatemala might aspire to a different set of discrete work positions, such as day laborer, farmer, policeman, teacher, or civil-servant. Continuous examples of outcomes could include income, farm profit, landholdings, size and quality of a dwelling, or years of schooling (perhaps discretized by completion of different levels).[9] Aspirations in these examples represent target levels of the respective outcome. In the model, we focus on the continuous case to facilitate exposition, but the model can be easily adapted to discrete cases.

Consistent with previous literature (Appadurai 2004, Ray 2006), the model regards individual aspirations A as given exogenously, established by history, culture, and the outcomes within an individual's network of relevant peers. While individual-level factors may cause an individual's aspirations to deviate from the generic aspirations implied by these factors, to keep

[9] For simplicity, this model does not explicitly capture cases in which the attainment of an aspiration in the present changes marginal productivity in the future.

our model simple, we assume that aspirations are exogenous in the sense that they are not a choice variable for the individual, although we do discuss what might be considered an "optimal" level of aspiration and why aspirations might typically depart from this optimum. We also discuss how a policy or program intervention may directly or indirectly affect aspirations, but we view all of these changes as influenced by exogenous factors.

To the extent that it influences utility, an aspiration in a given dimension creates a "reference point" in the utility function such that utility is sharply increasing in outcomes up to the aspiration and diminishing after the aspiration has been realized (Heath, et al. 1999). To clarify this relationship between aspirations and utility, consider a utility function u that evaluates outcomes Y relative to aspirations A according to an aspirations weight $\alpha \in [0,1]$ that captures how much aspirational attainment influences utility. We posit that an aspiration-dependent utility function should satisfy the following four properties:

1. Marginal utility is higher immediately below A than it is just above it: For small ε, $\left.\frac{du}{dY}\right|_{Y=A-\varepsilon} > \left.\frac{du}{dY}\right|_{Y=A+\varepsilon}$.
2. Marginal utility increases with outcome Y below the aspiration and decreases with outcome Y at and beyond the aspiration: $\frac{d^2u}{dY^2} > 0$ for $\forall\, Y < A$ and $\frac{d^2u}{dY^2} < 0$ for $\forall\, Y \geq A$.
3. As aspirations grow in importance to utility, gains in utility become uniquely a function of realized aspirations: As $\alpha \to 1$, $u = c_1$ for $\forall\, Y < A$ and $u = c_2$ for $\forall\, Y \geq A$, where $c_2 > c_1$ and c_1, c_2 are constants.
4. Utility is increasing in higher realized aspirations. That is, $u(Y_2, A_2) > u(Y_1, A_1)$, where $Y_1 = A_1$, $Y_2 = A_2$, and $Y_2 > Y_1$.

These four properties are satisfied by the following utility function:

$$u(Y|A) = A\left(\frac{Y}{A}\right)^{(1/1-\alpha)} \cdot 1(Y < A) + A\left(\frac{Y}{A}\right)^{(1-\alpha)} \cdot 1(Y \geq A) \qquad (1)$$

where $1(\cdot)$ is the indicator function.[10] With utility independent of aspirations ($\alpha = 0$), the utility function reduces to $u = Y$ (although a simple extension of the model incorporate risk aversion). At intermediate values of α, the function resembles a parameterized version of the Kahneman and Tversky (1979) value function with the aspiration A serving as the reference point. Utility is an increasing function of A in any realized aspiration such that $u = A$ for any

[10] Our function can be generalized to $u(Y|A) = A\left(\frac{Y}{A}\right)^{\left(1/1-\alpha_1\right)} \cdot 1(Y < A) + A\left(\frac{Y}{A}\right)^{(1-\alpha_2)} \cdot 1(Y \geq A)$, which allows for a heterogeneous degree of convexity and concavity before and after the realization of A. In the general form, the case in which $\alpha_2 = \frac{\alpha_1}{\alpha_1 - 1}$ it simplifies to the standard concave neo-classical utility function.

realized $Y = A$. At extreme values of α, this utility function becomes a linear ($\alpha = 0$) and piecewise-linear with a vertical step at $Y = A$ at ($\alpha = 1$). Between these values, the function becomes increasingly convex for $Y < A$ and remains linear with a decreasing slope for $Y > A$ as α increases. This can be seen in Figure 2.

As long as aspirations matter ($\alpha > 0$) and there is uncertainty in outcomes, the convexity of the aspirations-dependent utility function below A induces risk-taking in the hopes of realizing the aspiration; falling short of the aspiration may be experienced psychologically as a loss.[11] But aspirations-based utility induces risk-averse behavior after A is realized. For example, consider a peasant living in rural Central America who aspires to save the necessary income, A, that will allow him to build a concrete house, an important signal of relative prosperity in the culture and a goal to which many in the culture aspire. The peasant may engage in a degree of risk-taking behavior in order to achieve A, but once A is reached, he becomes risk-averse for fear of falling short of his aspiration.

With aspirations in the model in place, we turn to agency and pathways. We begin with a conventional economic formulation of these concepts as external constraints that emerge from the structure of production.[12] Returning to the simple outcome function we used to distinguish between dimensions of hope, we add some simple dynamics such that agency is captured as the productivity of an individual's effort e_t at time t in producing outcome Y_{t+1} at time t+1.[13] As before, agency is not such that effort is deterministic: Higher effort increases the expected outcome, but realized outcomes are also subject to an independent random shock at t+1, $\upsilon_{t+1} \sim N(0, \sigma^2)$. Using our simple linear production function we thus have $Y_{t+1} = \pi e_t + \pi_\upsilon \upsilon_{t+1}$, so that as before the coefficients π and π_υ indicate the relative contribution of effort and the random shock to total production, respectively, and υ is scaled in the same units as e.

We incorporate pathways into the production structure through its inverse: constraints on viable pathways available to the agent to generate outcomes. Specifically, beyond an

[11] As discussed in the 'Model Extensions' sub-section below, this is inconsistent with one strand of the psychology literature that asserts that hopes are robust to such loss aversion responses.

[12] Keep in mind that our formulation of outcomes is meant to be general and extend well beyond purely material production or income. Thus, we use the term 'production' as a general term to capture generating an outcome.

[13] We use an individual's effort in this presentation of the model, but *e* can represent virtually any type of input into a productive activity that embodies an opportunity cost to utility.

outcome constraint, $\bar{Y}$, the marginal product of effort falls to zero, reflecting the fact that there is no avenue by which the individual can exert effort to achieve higher outcomes.[14] Although the realized outcome may exceed $\bar{Y}$, this may only occur via a positive random shock υ. The complete production structure in the basic model – reflecting both agency and pathways as external structural parameters – is therefore given by

$$Y_{t+1} = \pi e_t + \pi_\upsilon \upsilon_{t+1} \tag{2}$$

$$E[Y_{t+1}] = \begin{cases} \pi e_t & if\ e_t < \bar{e} \\ \bar{Y} & if\ e_t \geq \bar{e} \end{cases} \tag{3}$$

where $\pi\bar{e} = \bar{Y}$.

To combine these pieces into a simple optimization problem, we introduce cost of effort. Assume that effort is costly in utility terms at an increasing rate according to the function $c(e_t)$ where $c'(e_t) > 0$, $c''(e_t) > 0$ and $c(0) = 0$. The agent then solves the problem

$$\max_{e_t} U_{t+1} = E[u_{t+1}] - c(e_t)$$

subject to (1) – (3). While this basic model includes an aspirations-dependent utility function, the constraints are conventional and external. Even in this basic formulation of the model, differences in aspirations will mediate the impact of standard development interventions that alleviate these conventional external constraints.

But we can extend the model to encompass richer concepts of agency and pathways as reflected in the psychology literature. In the Snyder (1994) conception of terms, they encompass not just *actual* agency and pathways, but the individual's *perception* of agency and pathways, where self-efficacy—the perception of one's agency—is as important in the formulation of hope as actual agency. Indeed, true agency may yet be unknown when self-efficacy is very low because the effort needed to ascertain genuine agency may lie off the equilibrium path in the belief that one's effort will be of no consequence. Additionally, what Sen (1999) describes as "internal constraints" may be more binding in some cases than more readily apparent social and economic constraints. Pathways out of poverty may be limited by conventional physical constraints, the perception of these constraints, or even informational constraints that obviate particular pathways because they fail to enter a subject's mental

[14] This is functionally equivalent to Leontief production in which labor effort and a second input are inputs into production and outcomes are increasing linearly with effort until a particular point at which the second input is constrained at which the marginal product of effort becomes zero.

calculus. Thus, low self-efficacy and binding internal constraints in some cases can have a greater impact on the feelings and behavior associated with hopelessness than real productivity and the genuine social and economic constraints actually imposed upon the individual.

To model misperceptions of agency and pathways, we generalize the production function in equation (2) such that individuals make decisions on their *perceived* agency $\tilde{\pi}$ and *perceived* constraint on a pathway $\tilde{\bar{Y}}$.[15] Specifically, we posit that

$$\tilde{\pi} = \begin{cases} \pi & if\ e_t < e^0 \\ \rho_\pi \pi' & if\ e_t \geq e^0 \end{cases}$$

$$\tilde{\bar{Y}} = \rho_{\bar{Y}} \bar{Y}$$

where effort up to effort level e^0 is known to yield an expected productivity of π, π' is true productivity after e^0, and the perception parameters ρ_π and $\rho_{\bar{Y}}$ allow for individual perceptions to diverge from reality after e^0. The case where $\rho_\pi = \rho_{\bar{Y}} = 1$ indicates perfect alignment between perception and reality. The case of $e^0 = 0$ corresponds to the case where effort into a particular activity is completely untested and true agency is unknown at any level of e. Of particular concern for development economists are cases where poor individuals misperceive their agency and pathways to be more constrained than they really are. We therefore focus our discussion here to under-perceptions of agency and pathways (i.e., $\rho_\pi < 1, \rho_{\bar{Y}} < 1$) rather than misperceptions that overstate agency and pathways.

Under-perception of one's marginal productivity of labor ($\rho_\pi < 1$) implies low self-efficacy. The ratio $\frac{\rho_\pi \pi'}{\pi_v}$ similarly captures one's locus of control (Lefcourt 1976, Rotter 1966): the higher (lower) this ratio the stronger one's internal (external) locus of control. All agents have accurate perceptions of their marginal productivity of effort for $e < e^0$, but in the model perceptions between high and low self-efficacy agents diverge for $e \geq e^0$. The effort threshold e^0 could represent, for example, the maximum effort level that a familiar effort production function can absorb; additional effort beyond this threshold can only be allocated to a new and unfamiliar production function (where π' may be different than π), but π' may be underestimated when there is low self-efficacy.

[15] While it is similarly possible to incorporate individual misperceptions in the marginal cost of effort, $c'(e_t)$, and to interpret these as indirect reflections of hopelessness, we focus on direct misperceptions of agency and pathways.

Analogously, individuals with $\rho_{\bar{Y}} < 1$ "internalize constraints" (Sen, 1992) and may perceive them to be more limiting than they actually are. These internalized constraints represent a failure to envision or appreciate possible pathways by which an individual might achieve her aspirations. Such under-perceptions of agency and pathways can thereby produce low aspirations and feelings of hopelessness. A young girl perceives that employment as an engineer is unavailable to women, so she reduces her effort in schooling. This internalization of constraints on pathways (low $\rho_{\bar{Y}}$) is distinct, however, from a case in which low self-efficacy causes her to falsely believe that she is not capable of sustaining the grades needed for the degree (low ρ_{π}). Either low ρ_{π} or low $\rho_{\bar{Y}}$ may constitute a poverty trap because the effort needed to ascertain what might be genuine constraints lie off the equilibrium path.

The escape from this low-level trap may occur through an intervention that more closely aligns perceptions of agency and pathways with reality: $\rho_{\pi} \to 1, \rho_{\bar{Y}} \to 1$. This may entail a process of dynamic self-discovery in which beliefs about *what is possible* begin to matter in important ways. A prior belief that additional effort is futile can be self-reinforcing as it stifles any desire to experiment with higher effort levels and new pathways. In these dynamics of self-discovery, openness to investing effort in new activities can enable individuals to correct misperceptions and gradually remove internal constraints, recalling John Stuart Mill's statement that, "a hopeful disposition gives a spur to the faculties and keeps all the working energies in good working order" (Reardon 1966, p.303).

Within this framework, we say an intervention increases hope if it spurs a greater effort at time t down a specific pathway with the expectation of a higher net utility at time $t+1$. Thus, consistent with the new literature in psychology and economics, the focus of our model is Aspirational Hope as the product of efficacious effort optimistically directed toward an aspiration. Thus in our model increases in hope may derive from a number of sources: augmented aspirations, increases in actual productivity or in self-efficacy, and the relaxing of actual binding constraints or the release of internal constraints such that they become no greater than the actual constraints. Such gains can be real and non-trivial. As Snyder (2002) argues, high-hope individuals are sometimes able to increase the odds of success by remaining open to alternative pathways that reframe a challenge in new ways.[16]

[16] This underscores that the structural parameters π and $\bar{Y}$ in this model must reflect the production potential of high-hope individuals. That is, these parameters must represent the complete fulfillment of an agent's potential after the dynamics of self-discovery have run their course and eliminated all internal constraints.

To the extent that aspirations are malleable, there does exist an optimal aspiration A^* that maximizes net expected utility. While for now we do not consider aspirations to be a choice variable, consider briefly the notion of an A^*, which can be seen most clearly when $\alpha \to 1$, $\sigma_\varepsilon^2 \to 0$, $e^0 = 0$, $\pi' = \pi$, and $\rho_{\bar{Y}}\bar{Y} \to \infty$ and, consequently, gross utility for a realized aspiration in equation (1) is $u(Y|Y \geq A) = Y$. In this case, the optimal aspiration A^* satisfies the first-order condition $\rho_\pi \pi' - c'(e) = 0$. If $c(e_t) = \gamma e_t^2$, then $e^* = \rho_\pi \pi'/2\gamma$ and hence $A^* = (\rho_\pi \pi')^2/2\gamma$. Not surprisingly, A^* is increasing in perceived agency and decreasing in cost of effort. However, because external factors play such a dominant role in the formation of aspirations, there is little reason to assume that $A = A^*$ for anyone. Moreover, a traditional development intervention, *ceteris paribus*, may not raise aspirations at all, let alone move A to A^* given the powerful role that history, culture, role modeling, and peer behavior have been shown to play in the establishment of aspirations (Appadurai 2004, Ray 2006).

To illustrate the solution to the constrained optimization problem in our model, we rely on a graphical depiction that incorporates agency, pathways and aspirations into a "hope-adjusted" expected utility function. Specifically, individuals in this model set optimal effort e_t^* such that $E\left[u'\left(Y_{t+1}(e_t^*)\right)\right] = c'(e_t^*)$ where expected utility is hope-adjusted in the sense that the utility function is conditioned on aspirations $u(Y_{t+1}|A)$ and the outcome function is conditioned on actual and perceived agency and pathways $Y_{t+1}(e_t^*|\pi, \pi', \pi_v, \bar{Y}, e^0, \rho_\pi, \rho_{\bar{Y}})$. This set of relationships can be seen in the quadrant diagram in Figure 3. The southeast agency quadrant shows the underlying production function in equation (2) that maps effort e_t into expected future outcomes Y_{t+1}. The model allows for low self-efficacy in the case of $\rho_\pi < 1$. The southwest pathways quadrant depicts both actual constraints on outcomes in equation (3) as well as internalized constraints. The northwest aspirations quadrant maps the distribution of outcomes over Y into our aspirations-based utility function in equation (1). The northeast quadrant combines these three elements of hope, mapping expected utility over the distribution of Y resulting from a single level of effort into expected utility. In the northeast quadrant, optimal level of effort is chosen based on the cost of effort $c(e_t)$ and its payoff in expected

utility.[17] The figure shows net expected utility as expected utility minus the cost of effort at the optimal effort level.

While e^* is clearly an equilibrium, the model shows how low self-efficacy can introduce inferior equilibria and a low-level development trap. This is illustrated in Figure 2. If $\rho_\pi = 0$, then e^0 is an equilibrium since the agent never invests effort beyond this level; and therefore never ascertains true efficacy. More generally, e^0 is an equilibrium for all $\rho_\pi \in [0, \rho_\pi^0]$ where $E\left[u'\left(Y_{t+1}(e^0|\rho_\pi = \rho_\pi^0)\right)\right] = c'(e^0)$ and $\left[u'\left(Y_{t+1}(e^0|\rho_\pi > \rho_\pi^0)\right)\right] > c'(e^0)$. Movement away from the inferior equilibrium may occur through any event or intervention that induces agents to "experiment" with greater investments in effort and update their perceptions of efficacy accordingly. This process of self-discovery is unleashed when $\rho_\pi > \rho_\pi^0$: As soon as optimal effort based on these perceptions increases beyond e^0, the agent sequentially discovers that marginal productivity continues undiminished after e^0.[18] The model therefore generates a low self-efficacy trap at $(e^0, \rho_\pi \in [0, \rho_\pi^0])$ and a superior equilibrium with true realization of self-efficacy at $(e^*, \rho_\pi = 1)$.

Figure 3 uses the model (assuming $\rho_\pi = \rho_{\bar{Y}} = 1$ and $\pi' = \pi$ for simplicity) to illustrate how the magnitude of the "aspirations gap" - the difference between an existing state and an aspiration (perhaps as developed from outcomes within a reference group) – can have a nonlinear effect on effort (Ray 2006). In the case where aspirations are important (high α), low effort can result from aspirations that are either too low or too high. As seen in Figure 3, if aspirations are too low (A_L), effort and outcomes are limited by the low aspiration, making effort level e_L optimal. But if aspirations are too high (A_H), sufficient convexity of the cost function of effort can make the cost of reaching these aspirations prohibitive, yielding an even lower optimal effort e_H that epitomizes a genuinely hopeless condition. Only with a lower cost of effort function $c_2(e_t)$ would the higher aspiration the induce substantially greater effort

[17] We use a graphical short-cut to represent this expected utility, which deserves some explanation. Since we have in mind a continuous distribution of v, we cannot compute the expected utility as a simple weighted average of high and low utility outcomes. We include these weighted average lines only as a point of reference. The actual expected utility given the distribution of possible utility outcomes between the low and high outcomes is between this line and the utility function shown in the northwest quadrant. Note as well that this expectation operator on utility rounds off the sharper aspirations kink shown in the northwest quadrant.

[18] Among other things this requires that the variance of the random shock σ^2 be sufficiently small that it does not impede learning from experience.

$e_{H2} > e_L > e_H$. Note that this figure captures a situation of sub-optimal aspirations that may have emerged from an individual's social context: A^* exists at an intermediate level that maximizes net expected utility. Finally, consider how the aspirations gap in this figure depends on α: with a decrease in this preference parameter even high aspirations may not induce greater effort.

We can expand our model to include cases where, in addition to having sub-optimal aspirations, $A \neq A^*$, individuals may misperceive their agency and avenues. Specifically, we generalize the production function in equation (2) such that $\pi_{i1} = \rho_{\pi i}\tilde{\pi}_{i1}$ and $\bar{Y} = \rho_{\bar{Y}i}\tilde{\bar{Y}}_i$ where the perception parameters $\rho_{\pi i}$ and $\rho_{\bar{Y}i}$ allow for individual i's perception of her agency and avenues to diverge from reality. Specifically, low self-efficacy is evident if $\rho_{\pi i} < 1$, which leads an individual to underestimate the marginal productivity of her effort. subscript serves to emphasize that $\rho_{\pi i} = \rho_{\bar{Y}i} = 1$ in the that diverge from reality. We view these individually and corporately as "internalized constraints" (Sen, 1992). In our basic model, actual constraints are incorporated into aspirations in decision-making (e.g. a person with poor eyesight has diminished aspirations for playing baseball and therefore allocates little effort to it). But low self-perceptions of agency and avenues also can produce low aspirations and feelings of hopelessness. For example, a woman of low caste may falsely believe that women such as she are incapable of growing a small enterprise beyond a certain low threshold, where she internalizes this belief into low aspirations, diminishing her effort toward this end.

Empirical Framework of the Oaxaca Hope Project

Consider the impact of a conventional economic intervention in Figure 4. Here a constraint is released (a pathway is opened) but where aspirations lie below these constraints. Because aspirations represent the binding constraint (rather than the more obvious economic constraint), effort, outcomes, expected utility, and net expected utility remain unchanged. In the case where an intervention that relaxes an economic constraint is released when aspirations are high, this may result in substantial impacts in the form of greater effort, higher outcomes, higher expected utility, and higher net expected utility. But when aspirations (or self-efficacy) is low, release of the economic constraint fails to affect these welfare measures.

In Figure 5, however, we depict an intervention that increases self-efficacy and internal constraints in the context of an intervention in which economic constraints have been released. A primary example of this may be some forms of child sponsorship (Wydick et. al., 2013) in

which the intervention not only increases agency through an after-school tutoring programs (and avenues through the provision of tuition, uniforms, and other materials so that children may continue in school), but intentionally devotes resources to increasing aspirations about educational and vocational outcomes. Some practitioners refer to this kind of multi-faceted intervention as "integral (or integrated) development," programs designed to exploit complementarities between economic, psychological, spiritual, and social interventions.[19] Our hope intervention in Oaxaca takes just such an approach in the context of a group of women who have had economic constraints ostensibly released via access to microfinance loans, but at least anecdotally have realized only very small impacts from microcredit.

5. Oaxaca Hope Project: Preliminary Empirical Results

Here we present preliminary results from experimental work in Oaxaca, Mexico that is carried out within the theoretical framework of this paper. Our experiment was implemented with our field partner, *Fuentes Libres*, a nonprofit faith-based humanitarian organization that oversees a network of 52 community banks in the Mexican state of Oaxaca. The banks are located primarily in two regions, the Oaxaca Valley surrounding the state capital of Oaxaca City, and in the Mexican isthmus region in and around the coastal city of Salina Cruz. All of the roughly 600 community bank members are female. Meetings in the community banks occur weekly, where women pay off current loans and make savings deposits. A minimum savings contribution of 20 pesos per week is required of each community bank member. The size of the 52 community banks range from about six to thirty members, the median size being 13 members.

We carried out a stratified cluster randomization using pairwise matching. Groups were matched into pairs by a hierarchical process based on focus group interviews with loan officers to rank factors in order of the importance to community bank performance. To form matched pairs, community banks were first clustered by loan officer, then among those with the same loan officer, banks were matched by size. When there were more than two banks of nearly identical size, community banks were then matched by number of loan cycles, then if close similarities continued to exist, respectively by age of members, and then by similarity of microenterprises within the group until 26 matching pairs consisting of A and B groups were formed. Then a single coin was flipped to determine whether the 26 A-banks or 26 B-banks

[19] The United Nations Development Programme, the Organization of American States, Save the Children, World Vision, Compassion International are several of many development organizations that espouse an integrated development approach.

would be selected into treatment status, the other chosen for control. In all 601 community bank members took part in the experiment, 326 in the 26 treatment banks and 275 in the 26 control banks. Table 1 shows that treatment and control was well-balanced over 24 variables at baseline.

The baseline survey obtained data on basic control variables such as age, marital status, and education. It also contains sets of five questions each on aspirations, agency, and conceptualization of avenues out of poverty. These questions were designed to create indices capturing changes in Snyder's three components of hope. The survey also contained questions obtaining subjective measures of well-being and happiness, optimism, future orientation, risk-aversion, and spiritual questions oriented toward ascertaining an individual's perception of locus of control. Subjects also filled out a 3x3 matrix of hypothetical levels of sales based on interactions of three levels of work effort (high, medium, low) and three levels of "luck" (good, normal, and bad). Variation in sales across levels of effort relative to the total variation in the matrix yields a measure of self-efficacy or agency from an ANOVA-type calculation on the ratio of the variation in sales due to changes in effort over the total variation in sales within the matrix.

Treatment

There are three aspects to the hope intervention carried out among the community banks selected for treatment. First, a film crew from Sacramento State University produced a documentary on the four of the women who were deemed by the directors and loan officers to of been the most successful in using their microloans to expand their enterprises. The 35-minute documentary was filmed in Oaxaca and produced and edited in Sacramento, California under the direction of film studies professor and documentary producer Robert Machoian. The documentary film was screened to treatment banks immediately after the baseline survey was carried out in these locations. Initial impressions were that the women took pleasure in seeing the film, and focus groups carried out after the film indicated that women found the film to be highly inspiring to them.

After viewing the documentary, the borrowers in the 26 treatment groups received a 3x8 inch refrigerator magnet, articulating Snyder's three components of hope which were translated as *Aspiraciones*, *Habilidades*, and *Avenidas* in Spanish. Congruent with the faith-based nature of the NGO, an inspirational scripture verse was given under each of these three words (see Figure 6). At the bottom of the refrigerator magnet there were three spaces for women to

write in personal goals for weekly sales in their enterprise, weekly savings in the community bank, and a long-term goal. Common goals were leasing a stall in a market, sending a son or daughter to high school or college, or adding a room to the house.

The third aspect of the intervention was a 4-week "hope curriculum," in which each of the components of hope were discussed for approximately half an hour during the weekly community bank meeting and a fourth week consisted of the discussion of several case studies. In these case studies women had to learn how to apply the different components of hope to practical microenterprise problems. The curriculum, however, was designed as much as possible to be scrubbed of any traditional type of business or financial training. Only the "soft-skills" of developing goals and aspirations, enhancing self-efficacy, and the practice of visualizing pathways from poverty were emphasized in the curriculum.

Five weeks after the baseline survey and the completion of the hope curriculum, a follow-up survey was undertaken that was virtually identical to the baseline survey. Here we present ANCOVA regressions that estimate impact at one-month (more specifically five weeks) after the intervention is estimate impacts on psychological and business variables. We estimate intervention impacts using ANCOVA due to its greater efficiency than difference indifferences using experimental data with baseline and follow-up surveys (McKensie, 2012). Our specification is

$$y_{ijt} = \alpha + \tau Treat_j + y_{ijt-1} + \boldsymbol{X_i}'\boldsymbol{\beta} + \varepsilon_{it}. \quad (4)$$

where $\boldsymbol{X_i}'\boldsymbol{\beta}$ are a vector of variables that include controls for age, education, religion, number of children, children under 18, bank leader, dwelling index, loan officer, type of business, and missing baseline data. ANCOVA estimates also control for the baseline value of the impact variable. The coefficient τ measures impact. The results we present are for only the first (one-month) follow-up survey.

Results

Our first results show impacts on psychological variables and are given in Table 2 and Figure 7. The intervention clearly appears to have impacted aspirations, but much less so agency and avenues and other psychological measures. Columns 1 and 2 in Table 2 show point estimates indicating that happiness and optimism increased approximately 0.10σ under treatment, but the 95% confidence intervals of these estimates contain zero. Future orientation increases among the treated by 0.13σ, significant at just the 10% level. Smaller point estimate increases are seen in agency (0.05σ), conceptualizing avenues out of poverty (0.04σ), and risk-

aversion reduction (0.03σ). Our ANOVA-based measure of agency shows no impact on perception of agency. Nevertheless our Hope-7 Index (which includes all seven of our variables potentially related to hope: aspirations, agency, avenues, happiness, optimism, future orientation, risk aversion reduction) increases significantly (at the 5% level) by 0.17σ and our Hope-3 index (which contains only Snyder's three components, aspirations, agency, and avenues) increases by 15σ. The increase in the overall hope indices, however is due to two factors: first, that nearly every hope-related factor displayed positive point estimates, and secondly that the impact on aspirations was substantial. Indeed the overall impact on hope was driven largely by increases in aspirations.

Impacts on small enterprise outcomes of the women in our study are shown in Table 3 and Figure 8. We expected the number of hours per week that a women dedicated to her business to increase with increased aspirations, however our point estimates indicate a negative impact here, although statistically insignificant. Our ANOVA point estimates find positive impacts on log sales (increase of 17.7%), log profits (increase of 19.1%), and log community bank savings (increase of 14.2%) although the 95% confidence interval for all of these includes zero. As we suspected over such a short duration after treatment, we find no increase in employees, or even plans for new employees. A standardized business performance index increases by 0.095σ, but is statistically insignificant.

How do the effects of the intervention vary by religious denomination? Our sample is made up of approximately 80% Catholic women and 20% evangelical Protestant women. One could make the case that impacts could be greater for either group. But what Figures 9 and 10 show that essentially all of the impact of the treatment was on Catholic women. This may be because the Protestant women start with a higher baseline value in most of these categories, including aspirations (0.20σ higher) and the Hope 3 index (0.17σ higher).

In summary, we find some evidence that our intervention increased aspirations and future orientation among women in treated community banks who received the hope intervention, but less evidence that other important psychological variables, such as agency, were impacted by the treatment. We find modest evidence for positive impacts on business performance, where point estimates are quite large, but cannot reject the null hypothesis of no impact at this early stage of follow-up.

The intervention will continue for 12 months in the experiment as women in the treated groups will continue to attend weekly talks at community bank meetings and engage in weekly

discussion on the different components of hope. The hope intervention is designed to be an intensive one over the course of one year, and the 12-month follow-up survey will give us an excellent read on longer-term impacts.

6. Poverty and the Economics of Hope: Prospects and Priorities

The study of hope is inherently interdisciplinary. In the past 70 years, significant inroads have been made into what gives rise to hope and into the effects hope displays on a wide array of outcomes. Economists are relative newcomers to this area of investigation, which raises important questions about where they might make the greatest contributions in better understanding the role that hope plays in helping people transition out of poverty.

At the most basic level, development economists have an opportunity to build a richer understanding of poverty and poverty dynamics by embracing the concept of hope and the light it can shed on poverty and development more generally. This is potentially a first-order contribution to "hope studies" more generally, which have focused primarily on developed country research contexts. There is no substantial field, for example, in psychology that correlates strongly with the field of international development economics. As a result, most of the exciting work that is being done on the relationship between various types of internal constraints among the poor and human outcomes has been undertaken in recent years by behavioral economists working in the development field. Moreover, because economic analysis has stronger links to state policy actors, even though economists may be arriving somewhat late on the scene relative to other disciplines, they may be better placed to shape policy. Thus there appears to be great scope for a richer collaboration between psychologists and economists, who each bring strength and their respective skills of psychological measurement, research design, and rigorous identification of the effects of interventions.

Moreover, there are a number of lingering questions that remain to be answered about hope and its relationship to poverty. First, and most fundamentally, how might a better understanding of hope shape development policies? This question involves several key elements and raises its own important questions. How potent are the standard economic interventions (e.g. education, health, access to credit, vocational training, information about returns to investments) at increasing hope and aspirations relative to the deeper existential mechanisms that have traditionally been the domain of psychologists, therapists, and clergy and that have only recently come to be explored by development economists? What complementarities or synergies exist between these material and more transcendent sources of

hope? How can we distinguish between what constitute reasonably optimistic, or one might say "optimal" hopes, and false or misleading hopes, and how ought this distinction to shape development interventions? Can greater aspirations alone help to break poverty cycles, or do higher aspirations only complement tangible interventions that directly improve productivity and enhance human development and welfare? All of these questions have important contextual dimensions to them, but many insights will be at least partially generalizable.

One valuable contribution by economists to the study of hope lies in the methodological rigor that our discipline can bring into the estimation of causal effects. The psychology literature contains a plethora of studies that establishes quite clearly that hope is associated with higher psychological, health, spiritual, academic, and intellectual outcomes (Lopez, 2013). Yet the potential for reverse causality runs thick through this literature. The literature both on what gives rise to elevated levels of hope and an estimation of causal effects of hope on outcomes is far smaller. In order to make useful contributions, economists can generate empirically rigorous insights into the effects that hope can have on economic outcomes, the mechanisms that transmit these effects, and the persistence of effects over time. Thus a primary area in which economists can contribute to this field is in the development and implementation of identification frameworks that are able to cleanly estimate causal effects in both the creation of hope and aspirations and their impact on human welfare.

In studies of the impact of hope among the economically poor, the dynamics of human welfare might be most directly measured via changes in temporal quality of life (in contrast to emotional or mental stability). Research on hope by economists seems particularly feasible among the poor because their hopes are more likely to share the common goal of improving basic needs and material quality of life. Economists have developed sophisticated tools for understanding poverty dynamics in the past decade. At the current frontier of this work, researchers are developing tools to characterize heterogeneous poverty dynamics that are conditioned on observable factors and control for unobservable influences. The elements of hope we have explored here may be important heterogeneity components. With some successful adaptation of hope measures from psychology, this may be an important area of comparative advantage for the discipline.

Economists are well-placed to contribute empirically to an understanding of the effects of hope on longer-run welfare and poverty dynamics in poor countries. Our preliminary evidence from Oaxaca suggests that it is possible to raise aspirations, although it may be more

difficult to help the poor to conceive of avenues out of poverty and elevate levels of agency. Our final follow-up survey taken at 12 months will allow us to better gauge the long-term impacts of the intervention.

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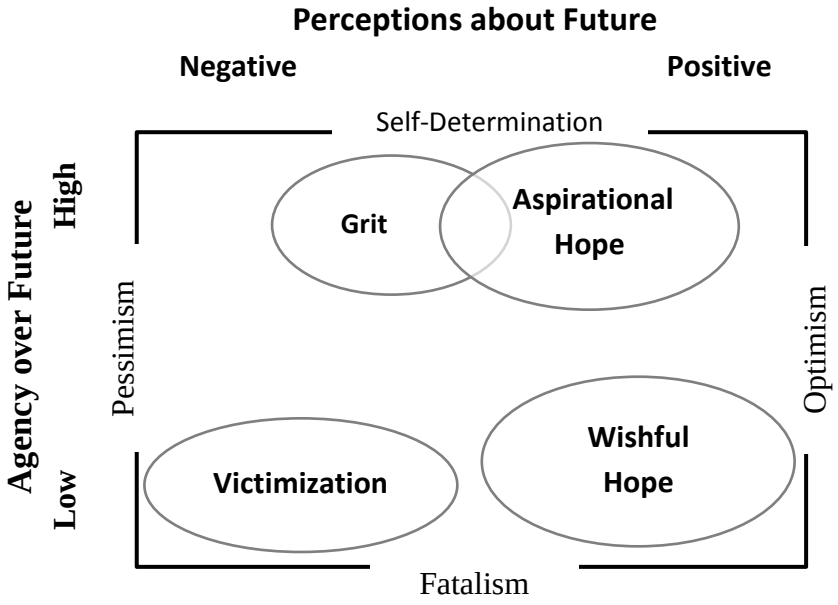


Figure 1 Hope and Optimism

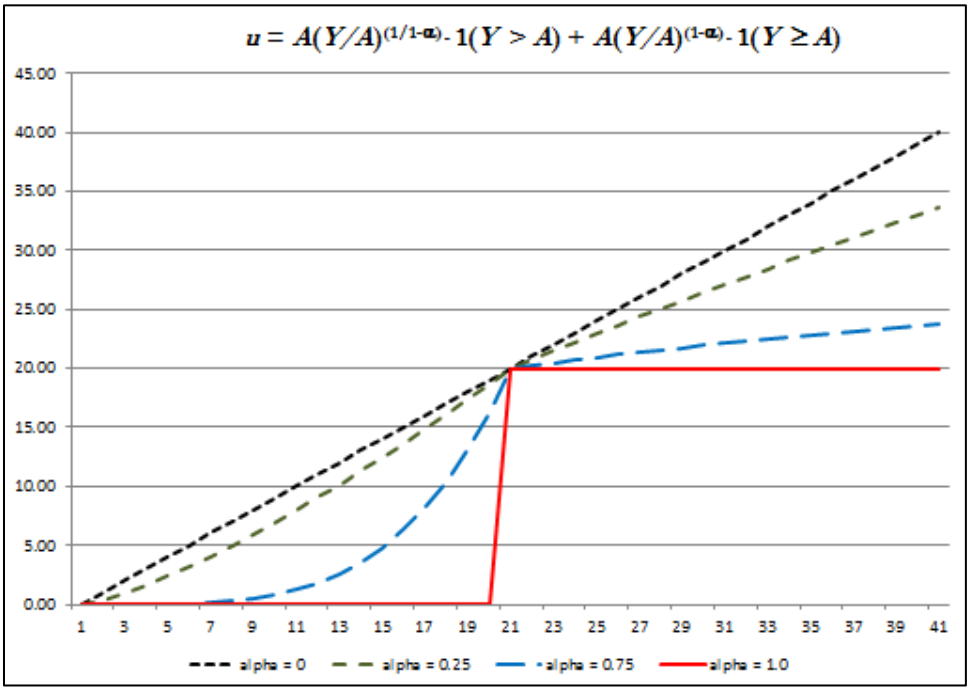


Figure 1: Aspirations-dependent utility function for A=20 and different levels of the utility weight on aspirations (alpha)

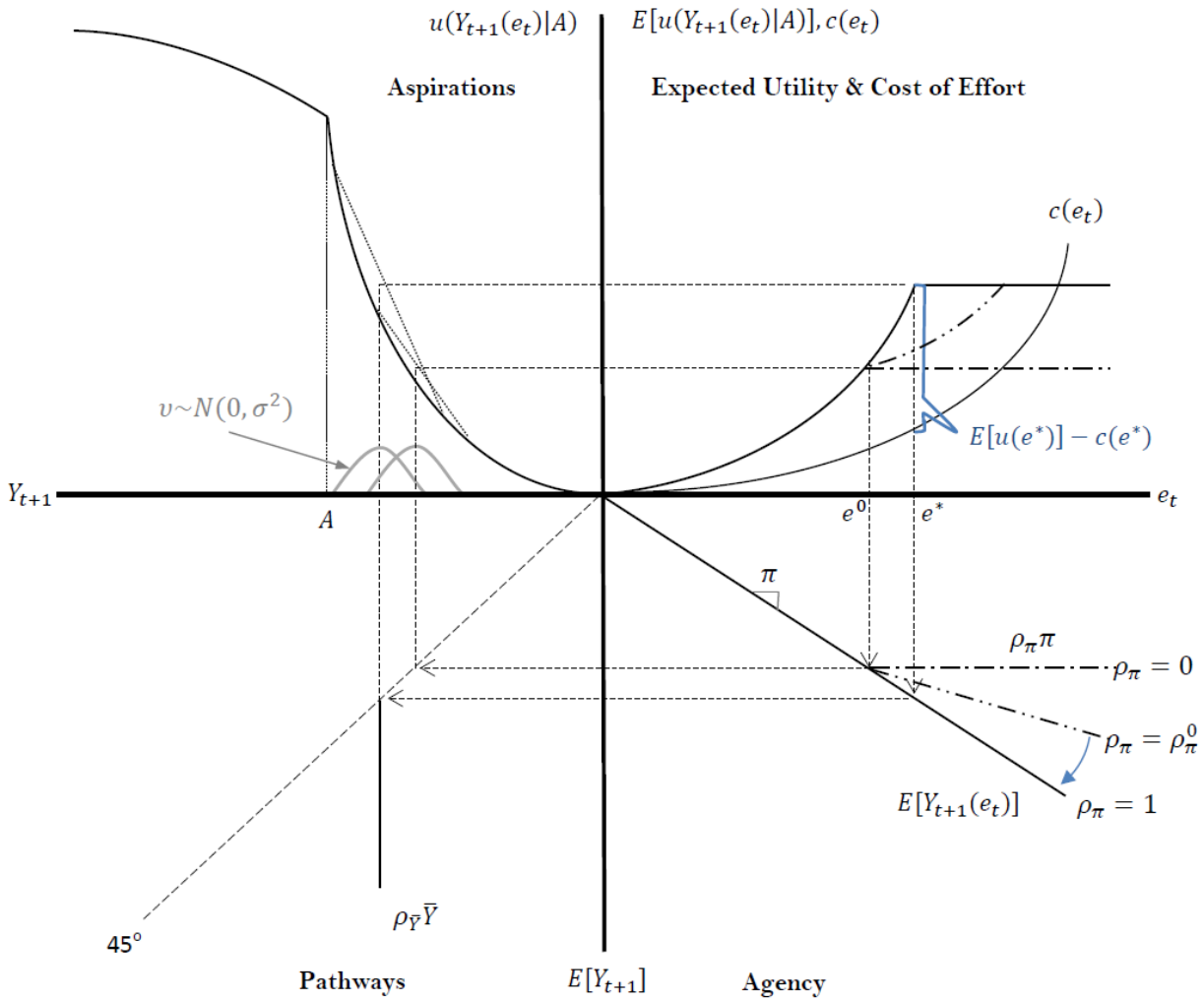


Figure 3: Graphical depiction of the economic model of hope with optimal effort (e^*) with "pathways" constraint binding below aspiration and optimal expected utility net of cost of effort depicted by $E[u]$-c. Increased perception of self-efficacy drives the individual from a low-effort trap to a higher effort and higher utility outcome.

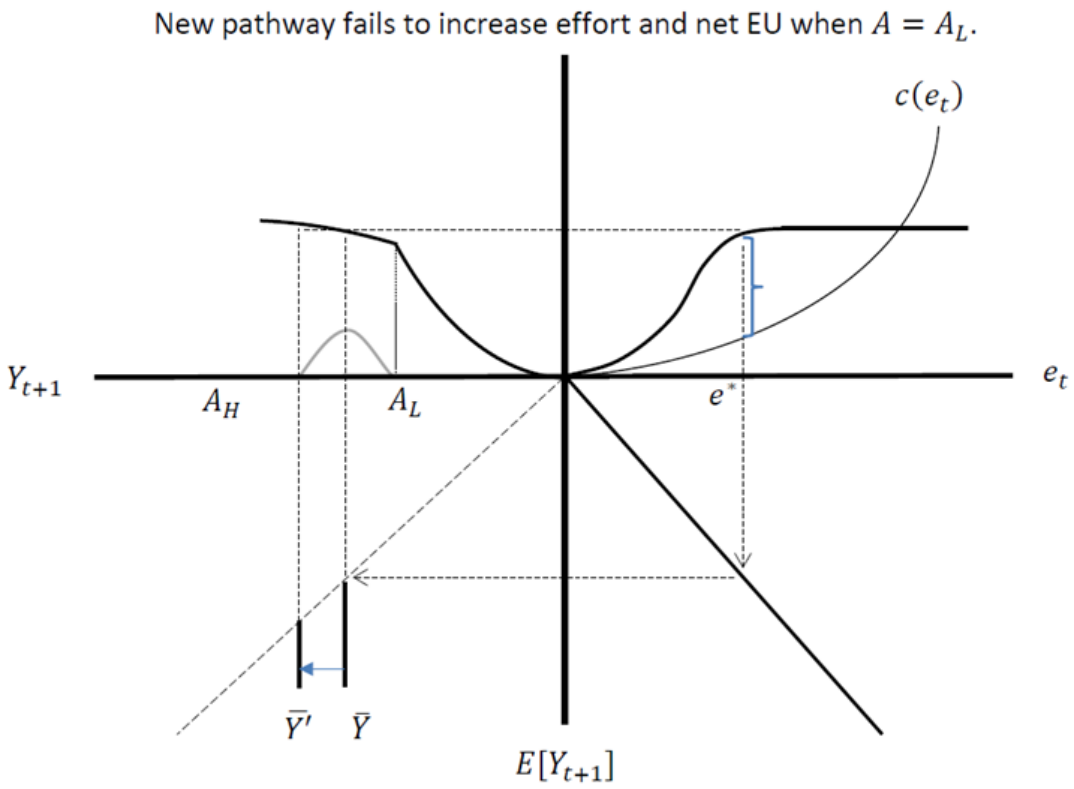


Figure 4: A new pathway opens, such as releasing a credit constraint, but this fails to have substantial impacts due to low aspirations.

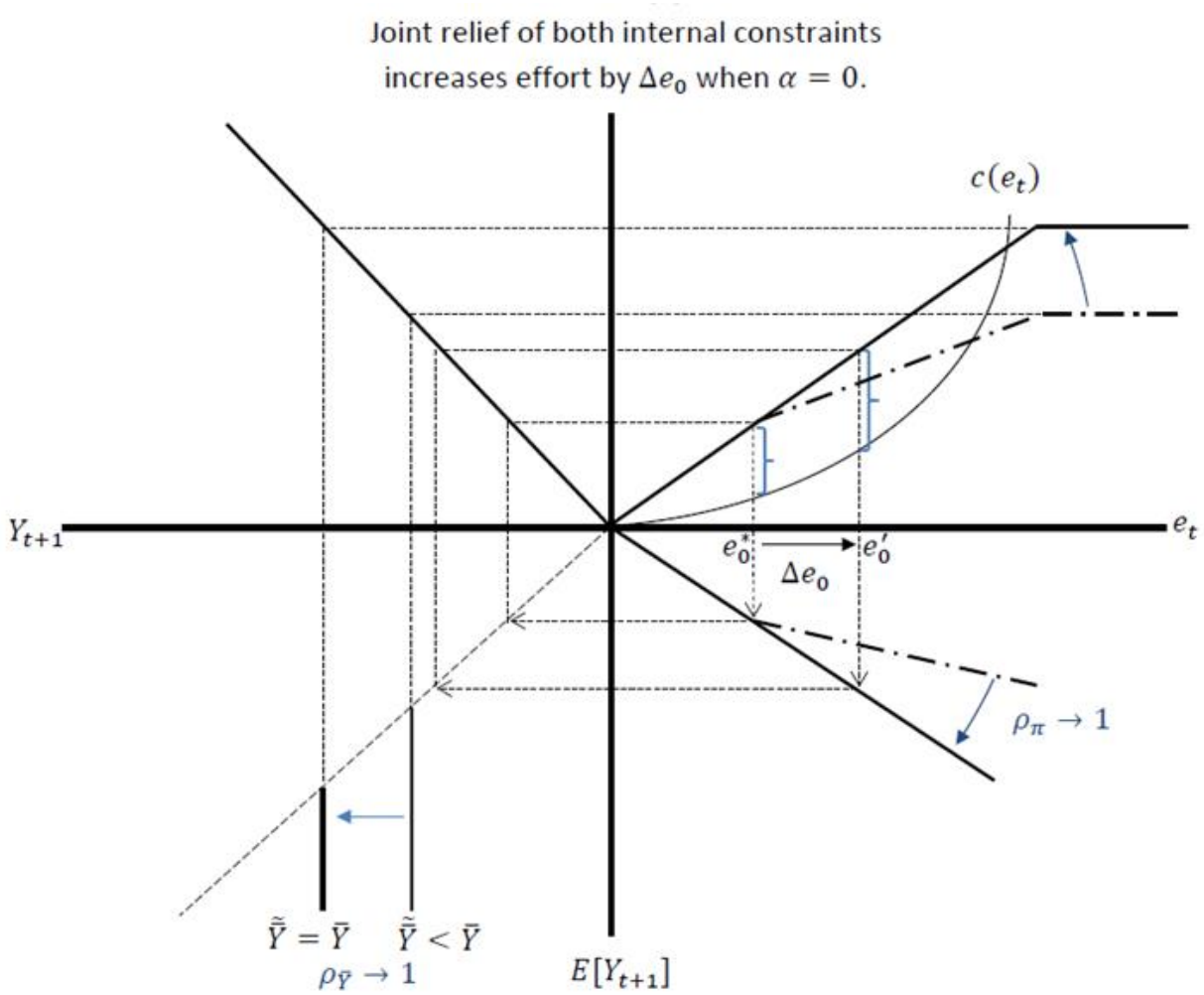


Figure 5: The impact of an intervention that opens up pathways while at the same time increasing self-efficacy and aspirations.

Figure 6

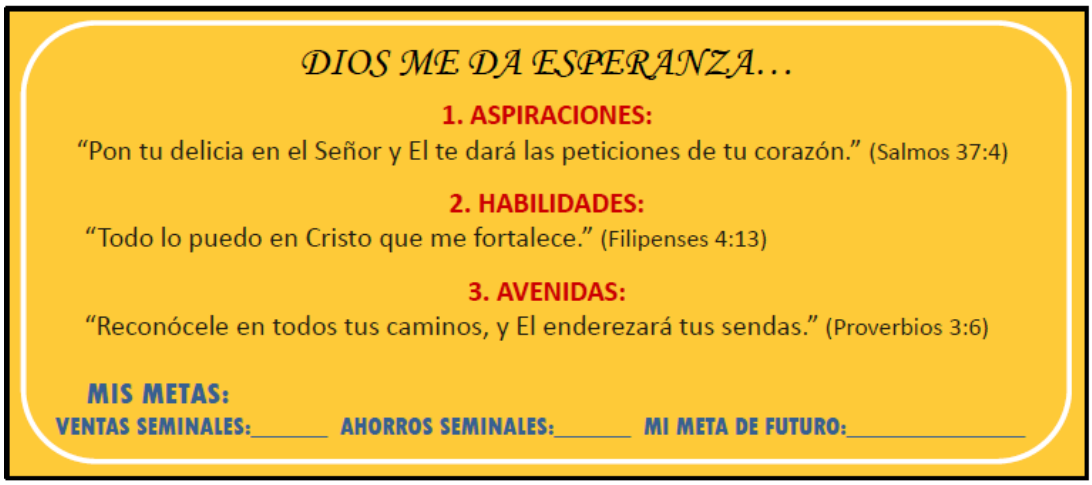

DIOS ME DA ESPERANZA…
1. ASPIRACIONES:
"Pon tu delicia en el Señor y El te dará las peticiones de tu corazón." (Salmos 37:4)
2. HABILIDADES:
"Todo lo puedo en Cristo que me fortalece." (Filipenses 4:13)
3. AVENIDAS:
"Reconócele en todos tus caminos, y El enderezará tus sendas." (Proverbios 3:6)
MIS METAS:
VENTAS SEMINALES:_____ AHORROS SEMINALES:_____ MI META DE FUTURO:_____

Figure 7

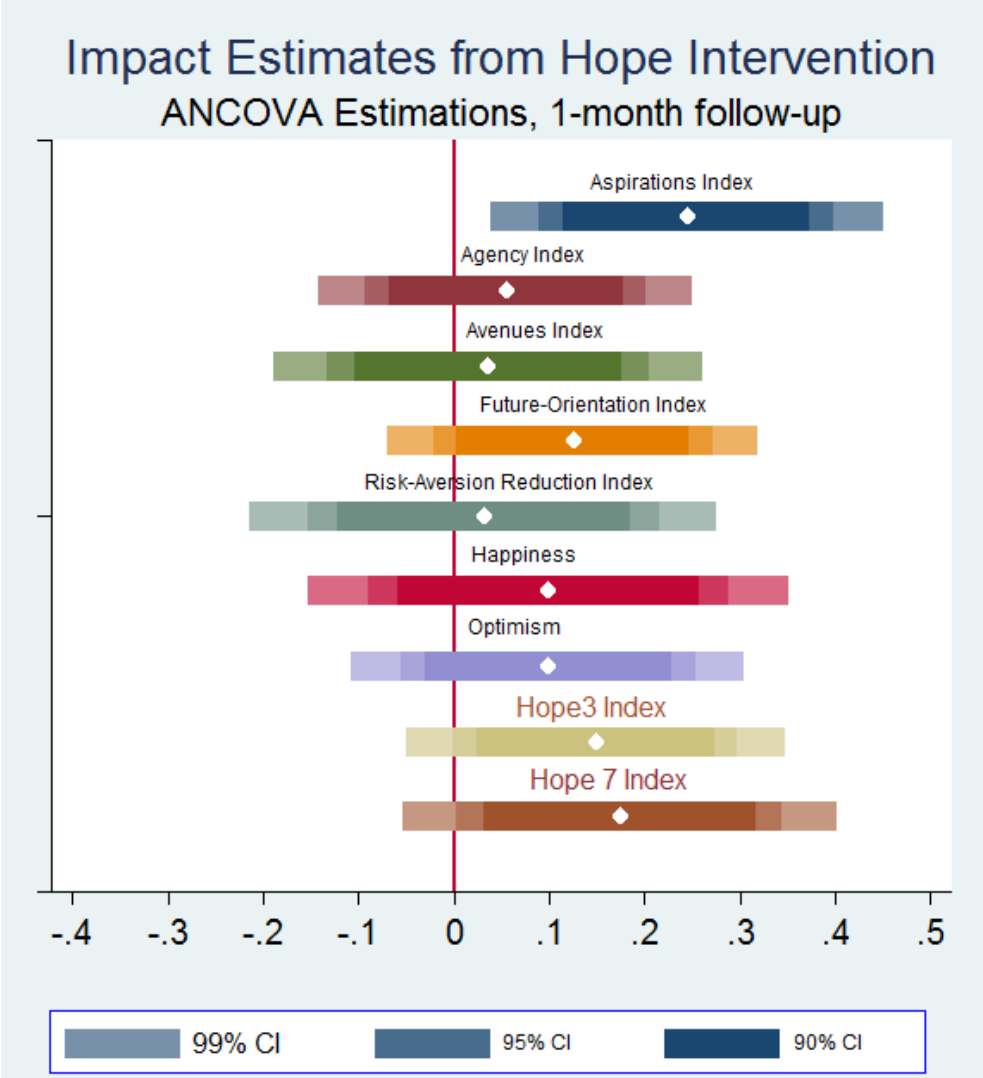
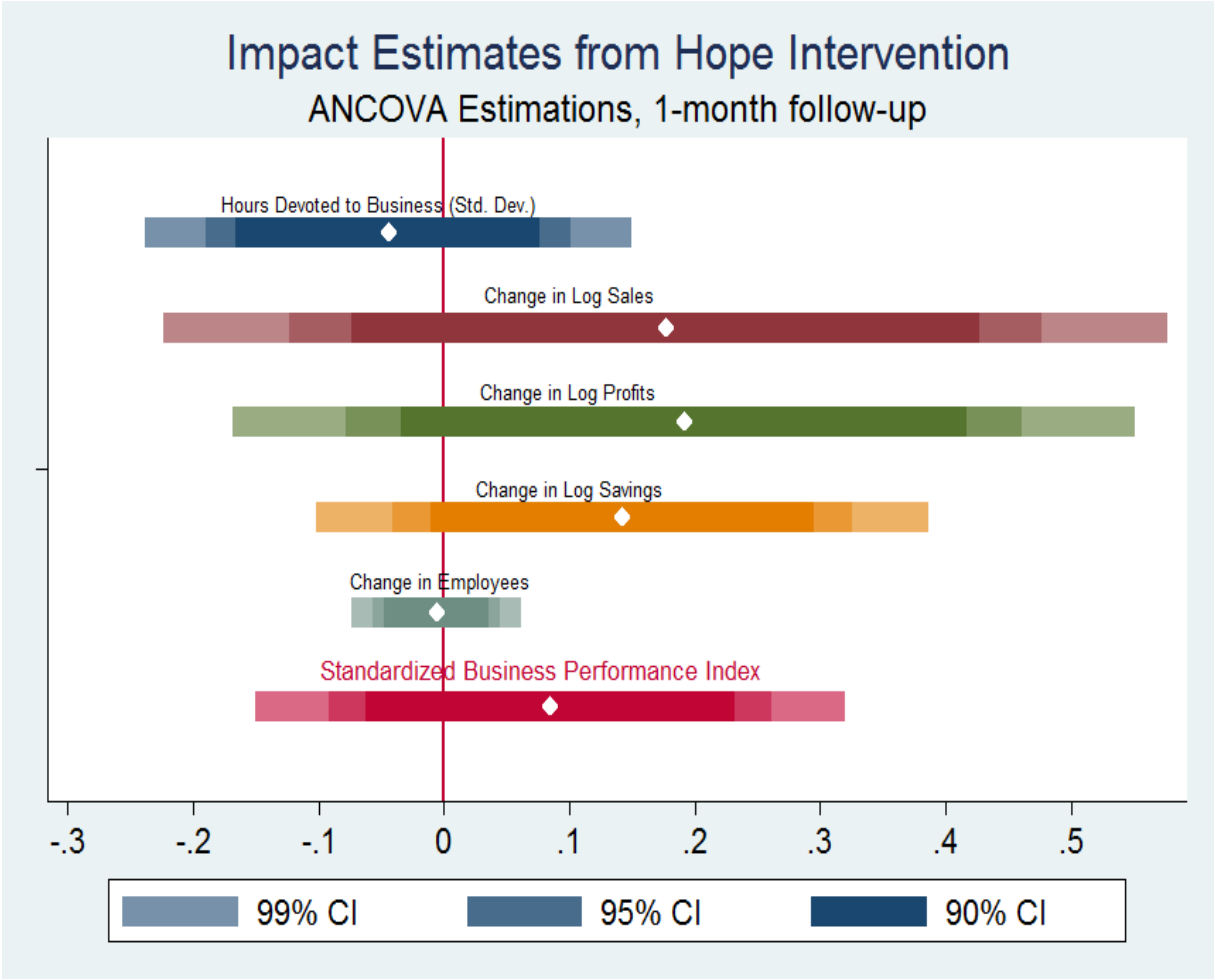

Impact Estimates from Hope Intervention
ANCOVA Estimations, 1-month follow-up
Aspirations Index
Agency Index
Avenues Index
Future-Orientation Index
Risk-Aversion Reduction Index
Happiness
Optimism
Hope3 Index
Hope 7 Index
-.4
-.3
-.2
-.1
0
.1
.2
.3
.4
.5
99% CI
95% CI
90% CI

Figure 8


Impact Estimates from Hope Intervention
ANCOVA Estimations, 1-month follow-up
Hours Devoted to Business (Std. Dev.)
Change in Log Sales
Change in Log Profits
Change in Log Savings
Change in Employees
Standardized Business Performance Index
-.3
-.2
-.1
0
.1
.2
.3
.4
.5
99% CI
95% CI
90% CI

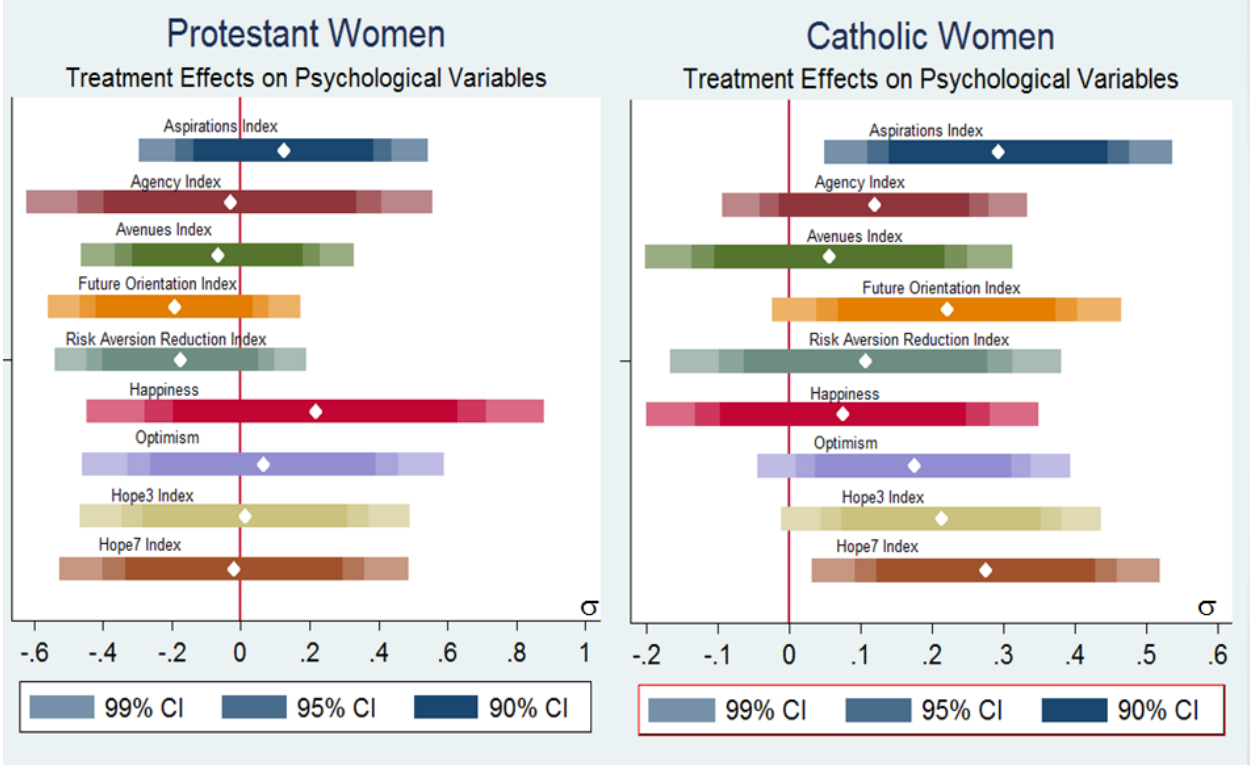


Figure 9: Psychological Impacts of Hope Treatment by Religious Denomination

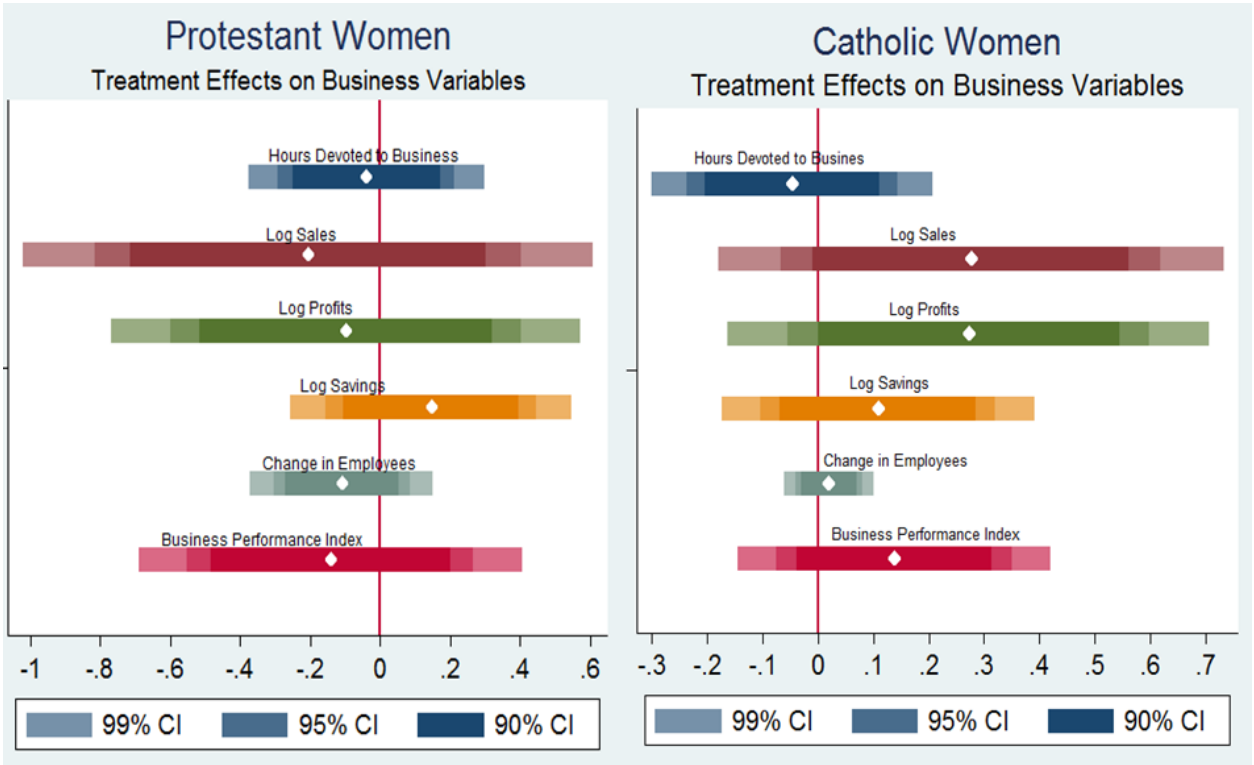


Figure 10: Economic Impacts of Treatment by Religious Denomination

Table 1: Means and Balancing Tests

VARIABLES	(1) **Age**	(2) **Education**	(3) **Religion**	(4) **Number Children**	(5) **Number children<18**	(6) **Bank leader**	(7) **Clothing business**	(8) **Food business**
Hope group	2.670*	0.547	-0.068	0.099	-0.282**	-0.024	0.022	0.073*
	(1.350)	(0.601)	(0.062)	(0.218)	(0.130)	(0.028)	(0.037)	(0.042)
Baseline Control Group Mean	41.0	7.31	0.27	2.91	1.34	0.28	0.13	0.30
VARIABLES	(9) **Grocery business**	(10) **Hope3 Index**	(11) **Hope7 Index**	(12) **Happiness Index**	(13) **Optimism Index**	(14) **Aspirations Index**	(15) **Agency Index**	(16) **Avenues Index**
Hope group	-0.013	0.068	0.025	-0.022	-0.070	-0.047	-0.002	0.089
	(0.024)	(0.131)	(0.125)	(0.160)	(0.169)	(0.118)	(0.130)	(0.134)
Baseline Control Group Mean	0.064	-0.34	-0.054	8.68	8.62	-0.010	0.041	-0.112
VARIABLES	(17) **Future Orient.**	(18) **Spiritual Obv. Index**	(19) **Business Hours**	(20) **Weekly Sales**	(21) **Weekly Profits**	(22) **Weekly Savings**	(23) **Employees**	(24) **Plans for Employees**
Hope group	-0.044	0.005	-0.181	85.478	100.423	17.279	-0.001	-0.056
	(0.123)	(0.109)	(3.319)	(317.135)	(121.387)	(11.041)	(0.039)	(0.060)
Baseline Control Group Mean	-0.004	-0.062	35.3	2,274.1	827.2	46.5	0.106	0.543

Regression of variable on treatment only. Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.10$

Table 2: ANCOVA Estimations: Psychology

VARIABLES	(1) **Happiness**	(2) **Optimism**	(3) **Aspirations**	(4) **Agency**	(5) **Avenues**
Hope group	0.099	0.098	0.244***	0.054	0.036
	(0.094)	(0.077)	(0.077)	(0.073)	(0.084)
Observations	555	555	555	555	555
R-squared	0.096	0.118	0.206	0.191	0.237

VARIABLES	(6) **Future Orientation**	(7) **Risk Aversion Reduction**	(8) **ANOVA Agency**	(9) **Hope3 Index**	(10) **Hope7 Index**
Hope group	0.125*	0.031	-0.005	0.149*	0.174**
	(0.073)	(0.092)	(0.021)	(0.074)	(0.085)
Observations	555	592	548	555	555
R-squared	0.148	0.173	0.073	0.298	0.291

ANCOVA egressions include controls for baseline value of impact variable, age, education, religion, number of children, children under 18, bank leader, dwelling index, loan officer, type of business, and missing baseline data. Clustered standard errors at community group level in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 3: ANCOVA Estimations: Business Outcomes

VARIABLES	(1) **Business hours**	(2) **Log Weekly Sales**	(3) **Log Weekly Profits**	(4) **Log Weekly Savings**
Hope group	-1.104	0.177	0.191	0.142
	(1.800)	(0.150)	(0.134)	(0.091)
Observations	550	551	549	544
R-squared	0.352	0.280	0.271	0.167

VARIABLES	(5) **Employees**	(6) **Plans for Employees?**	(7) **Bus. Perform. Index**	(8) **Anderson BP Index**
Hope group	-0.006	-0.005	0.095	0.085
	(0.025)	(0.041)	(0.091)	(0.088)
Observations	550	549	555	555
R-squared	0.354	0.242	0.336	0.335

ANCOVA egressions include controls for baseline value of impact variable, age, education, religion, number of children, children under 18, bank leader, dwelling index, loan officer, type of business, and missing baseline data. Clustered standard errors at community group level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.