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Measuring Hope: A Quantitative Approach with Validation in Rural Myanmar

JEFFREY R. BLOEM*, DUNCAN BOUGHTON**, KYAN HTOO†, AUNG HEIN† & ELLEN PAYONGAYONG**
*University of Minnesota, **Michigan State University, †Centre for Economic and Social Development

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ABSTRACT *Development economists are increasingly considering the role of hope in behaviours relating to investment, production, and consumption decisions of the poor. Although several studies have examined how the concepts of hope and aspirations may fit into economic theories, empirical studies have yet to validate a reliable measurement of hope. We adapt a quantitative approach to measure hope in the context of rural Myanmar. We present three tests of measurement validity. This study finds that hope measurements are correlated with covariates in a way supported by theory, are distinct from other psychological concepts, and are positively correlated with welfare perceptions.*

1. Introduction

In recent years the topic of aspirations has intrigued empirical development economists. As a relatively new addition to the theory of economic behaviour, much is to be studied and understood. Many have pointed out that for most of its short history, development economics has primarily focused on relieving the *external* constraints of the poor (Besley, 2017; Glewwe, Ross, & Wydick, 2014; Lybbert & Wydick, 2016). The emerging literature on aspirations is part of a larger trend to expand the possibilities of what truly binds the economic and social progress of individuals, households and societies. Development economists are now considering the implications, and even the primacy, of *internal* constraints the poor may face (Banerjee & Mullainathan, 2010; Basu, 2011; Kaboski, Lipscomb, & Midrigan, 2014; Dupas & Robinson, 2011; Haushofer & Fehr, 2014; Jäntti, Kanbur, Nyyssölä, & Pirttilä, 2014; Karlan, Ratan, & Zinman, 2014; Mani, Mullainathan, Shafir, & Zhao, 2013; Yoshikawa, Aber, & Beardslee, 2012). More specifically, investments that resolve internal constraints may be complementary to those resolving external constraints, and hence are important to identify to achieve desired outcomes.

Empirical research in psychology in the 1960s and 1970s made some of the first attempts at quantifying a measurement of hope (Gottschalk, 1974). Charles Snyder, a social psychologist, built upon this early work throughout his career, where he developed several quantitative methods for measuring hope (Snyder, 1994). Most, if not all, of this work developing a quantitative measurement technique was carried out among university students and in clinical settings in the United States and Europe. Despite the recent interest in hope as a potential causal mechanism of poverty reduction in

Correspondence Address: Jeffrey R. Bloem, Department of Applied Economics, University of Minnesota, Ruttan Hall, 1994 Buford Ave., Falcon Heights, MN 55108 Email: bloem023@umn.edu
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developing countries, little to no research has tested and validated a quantitative approach of measuring hope amongst the rural poor in developing countries.

We examine the performance of a standard measurement approach, developed by psychologists, for the use of researchers interested in understanding the role hope plays in the lives of the poor. Our objective is to evaluate this approach to measure hope in the context of a rural household survey conducted in Mon State, Myanmar. Although the method used in this study is essentially that developed by Charles Snyder to measure hope in laboratory and clinical settings in the United States and Europe (Snyder, 1994, 2002), contextualising the survey instrument to the context of rural Myanmar represents an important and nontrivial task.

We find that the measurement approach performs relatively well in rural Myanmar. More specifically we find that our measurement of hope correlates with educational attainment and gender in a direction as suggested by existing theory. We also find that Snyder's hope scale (1994, 2002) is relatively distinct from, but nevertheless related to, the similar psychological concepts of self-efficacy and locus of control. Finally, we find that scores on Snyder's hope scale correlate with survey respondents' welfare perceptions, both broadly speaking and along specific dimensions, again in a way supported by existing theory. These findings come with two caveats. First, contextualising the survey instruments to rural Myanmar was not a simple task and should not be overlooked in future data collection exercises. Indeed, factors specific to the context of rural Myanmar seem to influence the performance of our measurement approach. Second, potential improvements could be made to this measurement approach by investigating the interpersonal comparability of the data and through additional qualitative validation efforts.

Modern-day Myanmar presents an interesting and unique setting to develop an approach to empirically measure hope. After nearly five decades steeped in civil wars, economic mismanagement and authoritarian military rule, Myanmar has entered a period of relative peace and broad political and economic reforms. This study takes place specifically in Mon State, a coastal region in lower Myanmar with close proximity to Thailand. Mon State is primarily home to those with Mon ethnicity, who have their own unique history of political oppression and marginalisation. Considering this history, it may be unsurprising to find that many living in Myanmar over the past five decades have experienced despair due to authoritarian rule, social marginalisation and diminished human agency. As the political and economic landscape within Myanmar slowly changes, questions remain: is this despair truly being replaced by hope? Are all within the country feeling the psychological dividends of this top-down transformation? Or are there specific stratifications within the population that are being left behind? Our paper represents the beginning of an effort to answer these questions.

The remainder of this paper is organised as follows. In the next section we summarise the theoretical work produced by anthropologists, psychologists and economists to date. These theories help us organise our thoughts about the definition of hope and provide a framework for interpreting our tests of measurement validity. Section 3 presents some important details of the survey design and the steps taken to ensure that the questionnaire was culturally appropriate, emotionally sensitive and correctly translated into the local language. Section 4 presents a series of validation tests that seek to answer the question: is this measurement approach effectively measuring hope and only hope? Section 5 discusses the limitations of the validation tests presented in this paper and highlights several priorities for future research. Finally, section 6 concludes.

2. A theory of hope

In what has become a classic essay, the anthropologist Arjun Appadurai suggests that, 'the relatively rich and powerful invariably have greater capacity to aspire' (Appadurai, 2004, 68). In this view the poor may underinvest in future-oriented activities, in part, because their own experiences and observations of those similar to them suggest that escaping poverty is nearly impossible. Thus, upward mobility by the poor in developing countries might be stalled due to internal constraints such as low aspirations, low self-esteem and low self-efficacy. Debraj Ray (2006) builds upon this view of the

individual and develops several concepts that have become central in the study of aspirations. The most important is the 'aspirations gap', which is defined as the difference between an individual's aspired standard of living and their present standard of living. The aspirations gap is, at least theoretically, how aspirations inspire effort in future-oriented behaviour. Too narrow of a gap and the benefits are too small of a reward. Too wide of a gap and the effort required to achieve the benefits are too large. Somewhere, in between too narrow and too wide, there is an optimal aspirations gap that maximises effort in future-oriented behaviour.

An important aspect of the theory developed by Ray (2006) is that high aspirations – defined as aspirations that are 'far away' from one's current level of livelihood – are not sufficient for spurring increased effort in future oriented behaviours. According to Ray (2006), aspirations failure can take two forms: one, 'aspirations fatalism' or having too narrow an aspirations gap and two, 'aspirations frustration' or having too wide an aspirations gap. This is not merely a theoretical concern as published (van Kempen, 2009) and emerging works (Ross, 2016; Janzen, Magnan, Sharma, & Thompson, 2016) find empirical evidence that points to the real-world existence of both aspirations fatalism and aspirations frustration. It is worthwhile, therefore, to consider what other psychological factors may meaningfully interact with aspirations so as to actually inspire hope within the minds of individuals.

This leads to the psychology literature on hope. According to much of the this literature, hope is anchored by meaningful and desired future goals, commonly referred to as aspirations, which provide mental reference points and lay a foundation for action in the present (Snyder, 2002; Snyder, Cheavens, & Sympson, 1997). Without the necessary cognitive and physical means to reach these goals, however, simply having aspirations can be futile (Snyder, 1994; Snyder et al., 1991). Snyder's theory of hope implies that in order for an individual to possess a hopeful disposition, two additional elements are necessary: pathways and agency (Snyder, 2002). An individual must be able to adequately visualise pathways, which are defined as a causal chain of actions linking present choices to future outcomes. Finally, hope requires that an individual possess sufficient personal agency to motivate progress along these pathways.

Taking the work of Appadurai (2004) and Ray (2006) into account and building on the psychology literature on hope mentioned above, Lybbert and Wydick (2016) develop an economic model of hope consisting of three components: an aspirations-dependent utility function and two production functions, one representing agency and the other representing pathways. The model demonstrates how each of the three elements of hope could be influential in determining an individual's effort in future-oriented behaviour and informs our strategy for measuring hope.

The aspirations-dependent utility function shows how the existence of an aspiration may influence an individual's decision-making and behaviour. The model includes a parameter that represents how much achieving some aspiration influences an individual's utility. When utility is influenced by a combination of aspirations and realised outcomes then this aspirations-dependent utility function resembles the value function developed by Kahneman and Tversky (1979), with utility increasing at an increasing rate in outcomes below the aspiration and decreasing at a decreasing rate in outcomes after the aspiration.[1] The psychological concepts of agency and pathways are both modelled in terms of production functions. In this sense, agency is considered to be the marginal productivity of an individual's effort in producing an outcome in the future. Pathways are considered as similar to agency, but with the addition of a binding constraint so that marginal productivity of effort in producing future outcomes beyond this constraint is zero.

The presentation of this model here should only be viewed as a brief summary; the full paper introduces interesting extensions as well as graphical representations of this model (Lybbert & Wydick, 2016). A critical aspect of the psychology literature on hope, and one such interesting extension, is that an individual's *true* agency and pathways need not exactly equal an individual's *perception* of agency and pathways. In psychology, self-efficacy is understood as an individual's perception of their own agency. A person with low self-efficacy will likewise possess an external locus of control, meaning they believe that future outcomes are primarily influenced by factors external to themselves. Similarly, Amartya Sen's concept of 'internalised constraints' align well with the possibility that perceived pathways are more restrictive than true pathways (Sen, 1999).

Finally, Lybbert and Wydick (2016) further discuss and develop the conceptual foundations for their model of hope. In particular, they make the useful distinction between 'aspirational hope' and 'wishful hope', where the difference is shown in the meaning of the word hope in the phrases 'hope *to*…' and 'hope *that*…'. Aspirational hope includes some sort of perceived agency over events in the future – 'I hope *to* install irrigation', while wishful hope possess little to no agency over the future – 'I hope *that* it rains'. This conceptual formulation of aspirational hope draws a distinction between the theory underlying the measurement of hope in this paper and other measurements that may be more closely related to wishful hope. An example of such measurements of wishful hope can be found in the work of Carol Graham, whose research identifies a survivalist notion of hope among the most destitute around the world (Graham, 2012).

While it may be easy to consider the concept of hope to be dependent on other psychological factors – such as proactivity, determination or grit – this study aims to validate the measurement approaches used by psychologists through several decades of empirical research, but applied to a much different context than most development research. The theories of hope that stem from this research posit that hope is a function of aspirations, agency and pathways. Indeed, a worthwhile research agenda would be investigating if these theories hold in other contexts or if other theories (Besley, 2017; Dalton, Ghosal, & Mani, 2016) are more appropriate. A necessary requirement for this research, however, is a reliable and valid quantitative measurement methodology. Developing this methodology, specifically for the context of rural Myanmar, is what we turn our attention to next.

3. Contextualisation and survey design

The Hope Survey consisted of four instruments all first developed in other settings but adapted to the local context of rural Myanmar. Careful work went into translating the survey instruments and ensuring that the concepts imbedded in the survey were interpreted correctly. This point about contextualising these survey instruments seemingly cannot be stressed enough. While aspirations and hope may play an important role in seemingly all cultures, what individuals specifically aspire and hope for may be quite different across cultures. As stated by Appadurai (2004),

> 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 about: life and death, the nature of worldly possessions, the significance of material assets over social relations, the relative illusion of social permanence for a society, the value of peace or warfare.

We therefore spent considerable time conducting open-ended qualitative interviews, before any survey was brought to the field. The central goal of these qualitative interviews was to better understand some of the common dimensions in which the majority of the study population aspired and hoped.[2]

Although an in-depth anthropological analysis of the role of aspirations and hope is beyond the scope of this paper, several important insights stemming from these interviews inspired the design and informed the contextualisation of the Hope Survey. One example from an interview with a particularly poor family left a lasting impression on the interview team. The head of the household explained that his family was happy when everyone in their family has had enough to eat in a day. When asked how often this occurred, he responded, 'About twice a week'. When asked what would make his family happy in the future he responded, 'Last year someone gave us $100 US, we hope that this happens again'. This discussion demonstrates why aspirations may indeed be a necessary but not sufficient element of hope. This person's aspiration was for someone else to do something for them – it was a 'hope *that*…' – devoid of personal agency and similar to the survivalist notion of hope discussed by Graham (2012). Other interviews highlighted the importance of giving donations, the reliance on

remittances from urban areas or from abroad and the potential links between aspirations of a child's future occupation and investment in education.

It should also be noted that anthropologists are currently conducting research in southeast Myanmar that may offer insight about the role of hope, aspirations and other psychological factors in the local context. Several of these emerging studies provide relevant discussions about how cultural experiences and local history can influence the decision-making process of forced migrants (South & Jolliffe, 2015), the expectations of political reforms (Lall, 2016) and rural political participation (Lall & Win, 2013). In section 5 of this paper we will discuss how in-depth qualitative research of this sort could assist in further validating and understanding the local dynamics of the concept of hope in rural Myanmar and in other contexts.

The Hope Survey consisted of four relatively distinct instruments and each is included, in their English translations, in the Supplementary Materials. The first two instruments provide measurements of the three essential elements of hope defined in the Lybbert-Wydick model. The last two instruments were included to contribute to validity tests regarding the conceptual specificity of our measurements. Before we present these validity tests, however, a brief explanation of the design and contextualisation of each of these survey instruments is necessary.

The first instrument, following the method employed by Beaman, Duflo, Pande and Topalova (2012) and Bernard, Dercon, Orkin and Taffesse (2014), measured aspirations directly relating to specific dimensions. The aspirations instrument included questions about education of both the respondent and the children of the respondent, agricultural landholdings of the household, remittances, donations and earned income. Summarised statistics on aspirations are reported in Table A1 of the Supplementary Materials. These data show that the mean of each aspired level is substantially greater than the mean of each current level and suggests that, on average, respondents have unmet aspirations along these specific dimensions. Additionally, the standard deviation around the mean aspiration level is generally larger than it is around the mean of current levels. This indicates that even though many individuals in Mon State, Myanmar aspire along these dimensions, there seems to be a fair amount of variation in these aspirations.

The hope scale is an instrument developed by Snyder (1994, 2002) and found to be a reliable assessment of hope among respondents from universities in the United States and Europe. It consists of six Likert-scale statements, three that map to an 'agency' sub-score and three that map to a 'pathways' sub-score. Contextualising Snyder's hope scale presented one of the most difficult challenges, because this instrument has been almost exclusively administered in the English language during previous work. We were faced with the task of accurately translating these six statements, not only into Burmese but also into Mon (the local language in Mon State), which include English idioms. Ultimately, after numerous iterations of these statements with local collaborators, which included a professional language tutor who specialises in teaching Burmese and Mon to native English speakers, we were satisfied with the translated version of Snyder's hope scale. The individual components, as well as summary statistics, of the hope scale are presented in Table A2 in the Supplementary Materials.

Self-efficacy is a concept that is concerned with an individual's perceived ability to act and influence future desired outcomes (Bandura, 1977). The self-efficacy instrument, used in the Hope Survey, largely follows from the method used by Bernard, Dercon and Taffesse (2011). This instrument consists of three questions, each asking the respondent to choose which of two statements they most agree. Each of the three questions asked the respondent to compare the relative importance of some concept versus their own effort. The first question focused on destiny, the second on luck and the third on their own connections with powerful others. While it was relatively easy to find direct translations for the concepts of destiny, luck and connections with powerful others, we paid careful attention to how each of these concepts were understood in the local context. Summary statistics relating to self-efficacy are reported in Table A3 in the Supplementary Materials and suggest, contrary to the findings of Bernard et al. (2011) in Ethiopia, that the concepts of destiny and luck are quite distinct in Myanmar.

Locus of control refers to an individual's belief about the relative location of the primary factor of influence over future desired outcomes (Rotter, 1966). An individual with an *internal* locus of control

believes that their own efforts and actions primarily influence their own future and an individual with an *external* locus of control believes their future is primarily influenced by fate, luck or stochastic error. The final section of the Hope Survey includes the locus of control instrument adapted from the scale initially developed by Rotter (1966). The locus of control instrument was designed in a similar fashion to the method of Caliendo, Cobb-Clark and Uhlendorff (2015) and consists of 10 Likert-scale statements. Again, careful work translating and adapting these statements from English into Burmese and Mon was required. This instrument allows for the creation of a locus of control indicator where an individual has an internal locus of control if their average response is greater than the median response. Using this technique, the results presented in Table A4 in the Supplementary Materials suggest that 73 per cent of the population of Mon State, Myanmar have an internal locus of control.

After these open-ended interviews, discussions with local collaborators and several weeks of pre-testing, the Hope Survey was implemented in March of 2016. The Hope Survey is representative of rural Mon State and includes responses from 503 households in 48 enumeration areas. We now move to testing the validity of the measurements of aspirations and hope, with a primary focus on the investigation of Snyder's hope scale. We will discuss the results of these tests by drawing upon lessons learned during the process of contextualising this survey to rural Mon State, Myanmar.

4. Empirical validity tests

Measurements of attitudinal indicators, particularly those that are as nebulous as hope, have historically raised a fair amount of scepticism among empirical economists. Issues leading to measurement error may lead to important challenges, particularly when using attitudinal measurements in econometric analyses (Bertrand & Mullainathan, 2001). Given increasing interest among economists to understand the underlying mechanisms relating specific attitudes with economic behaviour, a growing literature has formed that examines the validity of attitudinal data (Manski, 2004). With sufficient care and effort spent on the design of such survey instruments, worthwhile and relevant empirical analysis can be undertaken using attitudinal data. Our paper now turns to examine whether the measurement approach is effectively measuring hope and only hope.

In this section, we run a series of validity tests on this measurement approach. These validity tests included three broad analytical investigations: construct validity, conceptual validity and empirical validity. We use ordinary least squares (OLS) regressions throughout this section for several reasons. First, the dependent variables in this section, the aspirations z-scores and the scores produced by the hope scale, are continuous variables.[3] Second, the latent variable the hope scale is trying to measure is theoretically continuous, as individuals are not simply 'hopeless' or 'hopeful'; rather individuals exist on a continuum either between or at these extremes. Third, as shown in Figures A1–A3 in the Supplementary Materials, a very low proportion of the sampled population have scores that are close to the bounds of 0 or 10. For all these reasons, plus the added benefit of ease of interpreting coefficients, OLS regression is the preferred econometric specification. Of course, the data could be transformed in a way to work with a logit model. For the purposes of a robustness check on this analysis, we present logit regressions in Tables A5–A7 in the Supplementary Materials. This robustness check largely confirms the results of the OLS regression analysis, albeit typically with less statistical significance.

Finally, it is important to note that the analysis presented does not seek to establish causality. Although some correlations are quite tight, the possibility of reverse causality and other issues relating to endogeneity is high in this analysis. Thus, at the present time, we are unable to comment on the causal relationships between hope and economic behaviour. Indeed, future work should aim to take on the challenge of rigorously identifying causal effects relating to the role of hope in daily economic and social life.

4.1 Construct validity

The first analytical investigation tests the construct validity of both aspirations and hope. In essence, this test investigates to what extent aspirations and hope correlate with expected determinants. We break down a variable indicating education attainment into several dummy variables that signify the attainment of various levels of education. The first level represents attaining less than five years of primary school. The second level represents completing almost, but not all, of primary school. The third level represents completing primary school, but not completing intermediate schooling – ninth grade in Myanmar's education system. The fourth level represents completing at least 10th grade and perhaps more years of schooling, such as attaining a tertiary education. This method for representing education attainment allows for the understanding of threshold effects or any sort of nonlinearities in the relationship between education and aspirations or hope. A dummy variable identifies the sex of the respondent, where the value one represents male and zero represents female. Finally, age is simply reported as the age of the respondent.[4] For matters of clarity, this test of construct validity is run on the measures of aspirations and hope separately.

Table 1 presents the results for the construct validity test of aspirations, with separate regressions for each dimension in which aspirations are measured and a standardised aspirations index. Similar to the analysis of Bernard and Taffesse (2014) in Ethiopia, we find that a higher aspirations index is generally associated with individuals who have higher educational levels. This relationship seems to be primarily driven by relatively strong relationships between aspirations for a child's education and the respondent's own education level attainment. Additionally, Table A1 in the Supplementary Materials shows aspirations are not significantly different between sons and daughters and so we find no evidence of a gender gap in educational aspirations of parents. Finally, weaker evidence suggests that males are associated with a higher aspirations index. This relationship is mostly driven by the observation that males report higher levels of aspirations for agricultural land and income.

The results shown in Table 1 also provide insights into the contextualisation of the hope survey. An important factor of the local context, in regards to how people respond to survey questions regarding aspirations, is the philosophical belief system of Buddhism; as over 90 per cent of households in rural Mon State identify as practicing Buddhists (Hein, 2016). In particular, Buddhist teaching generally discourages openly expressing cravings or desires for material things. Thus, aspirations for material things associated with wealth and power may be difficult to measure in rural Myanmar. Local people use phrases such as 'power-hungry' or 'wealth-hungry' to discourage the un-Buddhist motives of aspiring beyond moderate wants and needs. On the other hand, education is broadly encouraged and there is no similar colloquial phrase such as 'education-hungry' that would discourage an open and strong aspiration for more education, either for oneself or one's children. These cultural nuances can be seen in Table 1. Aspirations for agricultural land, remittances, donations and income are not statistically correlated with expected determinants. These results are qualitatively different from a similar analysis performed in rural Ethiopia (Bernard & Taffesse, 2014). Aspirations for education, on the other hand, have a strong statistical relationship with the respondent's own level of education attainment, which qualitatively agrees with previous analysis in a different context (Bernard & Taffesse, 2014).

Next we test the construct validity of measurements generated by the hope scale. The results of this test, presented in Table 2, provide three broad insights. First, scores generated by the hope scale seem to increase slightly as education outcomes increase. Although this trend is not always statistically significant at conventional levels, the average scores do generally increase until the respondents achieve intermediate levels of education. This observation is curious in that those who have achieved secondary education are, in a statistical sense, no different than those who have achieved only primary education. One potential explanation for this is how migratory incentives facing many families in Mon State impact the role of education. For many, short-term migration into neighbouring Thailand represents an immediate increase in earned income, but this often carries the cost of forfeiting additional years of education. Future research could focus on the relationships between migration, education and the psychological lives of those in Mon State, Myanmar. Second, males tend to generate higher scores on the hope scale than women. This association is again not statistically significant at

Table 1. Determinants of aspirations

	(1) Own Education Aspiration	(2) Son Education Aspiration	(3) Daughter Education Aspiration	(4) Agricultural Land Aspiration	(5) Remittances Aspiration	(6) Donations Aspiration	(7) Income Aspiration	(8) Aspirations Index
Education:								
Primary	0.1245	0.4242***	0.4583**	0.0325	−0.1272	0.0207	0.0505	0.1111*
(up to 4^{th})	(0.1284)	(0.1473)	(0.1934)	(0.1136)	(0.1315)	(0.0580)	(0.1264)	(0.0650)
Primary	0.1910	0.5603***	0.6018***	0.0135	−0.0597	0.2457*	0.1356	0.2039***
(4^{th} and 5^{th})	(0.1448)	(0.1607)	(0.1715)	(0.1249)	(0.1239)	(0.1410)	(0.1512)	(0.0637)
Intermediate	0.3489**	0.6543***	0.7004***	−0.0608	−0.1993	−0.0049	0.1036	0.1654**
(6^{th} – 9^{th})	(0.1546)	(0.1950)	(0.1791)	(0.1803)	(0.1459)	(0.0636)	(0.1530)	(0.0719)
Secondary	0.3811**	0.6988***	0.8098***	0.1082	−0.3318*	0.0586	0.1346	0.1932**
(10^{th} – up)	(0.1734)	(0.2016)	(0.1619)	(0.2124)	(0.1163)	(0.1030)	(0.1455)	(0.0738)
Sex:	−0.0330	0.1542	0.1208	0.2370**	0.0347	−0.0575	0.2116*	0.0894*
(Male = 1)	(0.1078)	(0.1103)	(0.1362)	(0.1126)	(0.0741)	(0.0662)	(0.1172)	(0.0473)
Age	−0.0082	−0.0052	−0.0043	−0.0020	0.0069**	−0.0030	−0.0022	−0.0019
	(0.0027)	(0.0049)	(0.0039)	(0.0029)	(0.0028)	(0.0045)	(0.0021)	(0.0014)
Obs.	465	342	351	465	462	465	464	462
R-squared	0.0463	0.0859	0.0966	0.0140	0.0281	0.0135	0.0135	0.0509

Notes: Reported are coefficients from OLS estimates. Standard errors in parenthesis. ***P < 0.01, **P < 0.05, *P < 0.1. Robust standard errors are clustered at the enumeration area level.

Table 2. Determinants of hope (agency and pathways)

	(1) Agency Sub-scale	(2) Pathways Sub-scale	(3) Hope Scale
Education:			
Primary (up to 4th)	0.2805	0.2119	0.2465
	(0.2384)	(0.2819)	(0.2306)
Primary (4th and 5th)	0.3544	0.5348**	0.4497**
	(0.2557)	(0.2609)	(0.2165)
Intermediate (6th – 9th)	0.6353**	0.5064*	0.5713**
	(0.2487)	(0.2662)	(0.2281)
Secondary (10th – up)	0.0246	0.3453	0.1857
	(0.2423)	(0.3400)	(0.2210)
Sex: (Male = 1)	0.2328	0.4348*	0.3317*
	(0.1821)	(0.2439)	(0.1843)
Age	−0.0030	−0.0054	−0.0041
	(0.0074)	(0.0079)	(0.0067)
Obs.	465	464	464
R-squared	0.0196	0.02110	0.0252

Notes: Reported are coefficients from OLS estimates. Standard errors in parenthesis. ***P < 0.01, **P < 0.05, *P < 0.1. Robust standard errors are clustered at the enumeration area level.

conventional levels, and is not significant at the 10 per cent level for the agency sub-scale. Third, there is no evidence of an age relationship with the hope scale scores as the coefficient on age across the subscales is very close to zero and the standard error is relatively large. Finally, these results are qualitatively robust to a different and nonlinear econometric specification and results calculated using logistic regression models are presented in the Supplementary Materials.

Additional levels of educational attainment and the associated societal benefits of being a male, seems to increase scores of agency and pathways on average, however, there are clearly many other factors that influence how individuals develop these elements of hope. These other factors may, again, stem from the philosophical belief system of Buddhism that is prominent in Mon State. In particular, the cycle of cause and effect in the Buddhist tradition goes beyond the present life. One hypothesis is, when the present situation is difficult or unfortunate, explanations often relate to past lives. Many state that present sufferings are caused by 'bad karma'. This implies relatively low agency sub-scale scores. On the other hand, when considering the future karmic contributions hard work and personal responsibility is encouraged by Buddhist philosophy. This implies relatively high agency and pathways sub-scale scores. Therefore, additional testing of construct validity would ideally include an unobserved variable of an individual's karmic beliefs about their past and future lives.

Taken together, the results shown in Tables 1 and 2, suggest that the measurements of aspirations and hope partially hold up to what is expected and predicted by existing theory and also perform in broad constancy with contextual and socio-religious nuances of the local context. Namely, as is emphasised by Appadurai (2004) and Ray (2006), hope and aspirations tend to expand as an individual's aspirations window expands. What this likely indicates is with increased levels of education and with the greater opportunities typically afforded to men in Myanmar comes both marginally greater aspirations for the future and also an improved perception that these aspirations can be achieved. Some of these results, however, are relatively weak in terms of statistical significance. It is nevertheless instructive to recognise the consistency of the direction of these estimated relationships. On average we tend to observe relationships as theory would suggest, but there may be many other important factors that influence reported aspirations and measured hope scores. Some of these factors may be a socio-religious apprehension to admit aspirations for material things associated with wealth or power. Another factor could be an individual's belief in their karma and how their present life is determined by actions in past lives.

4.2 Conceptual validity

The second analytical investigation examines how the measurements generated by the hope scale (Snyder, 1994, 2002) correlate with other similar, yet distinct, concepts. This conceptual validation is motivated by a number of recent empirical studies that measure concepts similar to hope (Bernard et al., 2011; Caliendo et al., 2015; Macours & Vakis, 2014). The indicators included in these studies may be positively related to the various components of hope, but it remains to be seen to what degree these concepts are correlated in the real world. Furthermore, an important aspect of any measurement validation exercise includes an understanding of the specificity of a given approach. Thus, in this subsection we investigate the following question: Is this measurement of hope only measuring hope, or are other concepts included in some way?

One of the simplest ways to understand to what degree different variables correlate is to perform a factor analysis using a correlation matrix.[5] Table 3 presents a matrix with correlations on the following sets of variables: the agency and pathways sub-scores from the hope scale (Snyder, 1994, 2002), the variables representing the primacy of destiny, luck or relationships with powerful others (Bernard et al., 2011) and the full index from the locus of control scale (Rotter, 1996). This correlation matrix allows us to evaluate the similarities of each of these psychological variables.

Several observations on the correlations presented in Table 3 provide insights on the conceptual validity of this approach to measure hope. First, the agency and pathways sub-scores generated by the hope scale have a moderately positive relationship with each other. This sort of relationship confirms the conceptual framework developed by Snyder (1994) in that, although the concepts of agency and pathways are distinct, there may be some degree of positive correlation between the two concepts. Second, both agency and pathways have a weak positive relationship with the full locus of control index. Although these relationships are relatively weak, this again is expected based on the work of Snyder (1994), who suggests that having higher agency and pathways sub-scores may indicate a more internal locus of control among individuals. Finally, the agency and pathways sub-scores both have roughly non-existent relationships with the dummy variables generated by the self-efficacy survey instrument. This may suggest that the concepts captured by the self-efficacy measurements are more profoundly distinct than the concepts embedded in hope.

Also of note is that the self-efficacy measurements are all positively related to each other to some degree. A belief in the primacy of luck has a moderately positive relationship with a belief in the primacy of destiny and a weakly positive relationship with a belief in the primacy of relationships with powerful others. Additionally, a belief in the primacy of luck is negatively related with the locus of control index. This locus of control index has a negligible relationship with beliefs both in the primacy of destiny and of relationships with powerful others. As hinted by the previous discussion about karma, the concept of destiny may carry important cultural

Table 3. Factor analysis

	Agency (HS)	Pathways (HS)	Destiny (SE)	Luck (SE)	Others (SE)	LoC Index
Agency (HS)	1					
Pathways (HS)	0.4788	1				
Destiny (SE)	0.0411	−0.0904	1			
Luck (SE)	−0.0478	−0.0781	0.5870	1		
Other (SE)	−0.0706	−0.1159	0.1272	0.2190	1	
LoC Index	0.2306	0.1652	−0.0996	−0.2349	−0.0481	1

Notes: Polychoric Correlation Matrix

or religious connotations in the context of Myanmar and it is difficult to tease out how exactly to interpret a disbelief in the primacy of relationships with powerful others.

Taken together, this empirical investigation suggests that this measurement approach is conceptually valid, at least among the concepts measured by the Hope Survey. Although very few of the relationships between these variables are all that strong, the correlations recorded in Table 3 seem to run in the direction in which existing theory and expectations imply.

4.3 Empirical validity

The third investigation examines how the hope measurement is associated with measurements of perceived welfare.[6] This test of empirical validity looks at how the measurements of hope correlate with welfare perceptions – first in the general sense and next along several specific dimensions of basic needs. The three panels in Table 4 present results from simple OLS regressions between the scores generated from the hope scale and perceived household welfare at the present situation (panel A), perceived household welfare compared to neighbours (panel B) and the perceived improvement of household welfare over the past year (panel C). Broadly speaking, it is worth noting that each of the coefficients relating to less desirable independent variables – such as the present situation being 'not good', the household being 'worse' off than neighbours or the household feeling 'worsened' over the past year – are all negative. This suggests, albeit with varying degrees of statistical significance, that less desirable welfare perceptions are associated with lower scores generated by the hope scale. This finding is in line with existing theory, namely the work of Ray (2006), as scores generated by the hope scale are related to an individual's own experiences and their own perception of their own wellbeing.

More specifically, perceived welfare compared to neighbours seems to provide the strongest insights. Particularly along the agency sub-scale, but also along the pathways sub-scale, the perception that an individual's household is doing better than surrounding neighbours is associated with higher scores in the

Table 4. Perceived household welfare and hope (agency and pathways)

	(1) Agency Sub-scale	(2) Pathways Sub-scale	(3) Hope Scale
(A) Present Situation:			
'Good'	0.2979	0.0248	0.1584
[N = 135]	(0.1963)	(0.2284)	(0.1775)
'Not Good'	−0.4190**	−0.4500*	−0.4375**
[N = 194]	(0.1810)	(0.2424)	(0.1798)
Obs.	480	479	479
R-squared	0.0255	0.0095	0.0204
(B) Compared to Neighbours:			
'Better'	1.1160***	0.7251*	0.9186***
[N = 25]	(0.2529)	(0.3826)	(0.2783)
'Worse'	−0.5646***	−0.3159	−0.4422**
[N = 142]	(0.1824)	(0.2390)	(0.1786)
Obs.	480	479	479
R-squared	0.0482	0.0112	0.0330
(C) In the past year:			
'Improved'	−0.1519	0.3073	0.0752
[N = 97]	(0.1964)	(0.2972)	(0.2021)
'Worsened'	−0.3264*	−0.0043	−0.1678
[N = 128]	(0.1897)	(0.2527)	(0.1961)
Obs.	477	476	476
R-squared	0.0063	0.0032	0.0027

Notes: Reported are coefficients from OLS estimates. Standard errors in parenthesis. ***P < 0.01, **P < 0.05, *P < 0.1. Robust standard errors are clustered at the enumeration area level.

Table 5. Perception of basic needs and hope (agency and pathways)

	(1) Agency Sub-scale	(2) Pathways Sub-scale	(3) Hope Scale
(A) Food Consumption:			
'More than Adequate'	0.4086	0.1561	0.2809
[N = 32]	(0.3403)	(0.3435)	(0.2973)
'Less than Adequate'	−0.4723*	−0.3770	−0.4261
[N = 55]	(0.2614)	(0.4026)	(0.3022)
Obs.	478	477	477
R-squared	0.0118	0.0035	0.0087
(B) Housing:			
'More than Adequate'	0.6084**	0.3057	0.4554
[N = 43]	(0.2961)	(0.3310)	(0.2877)
'Less than Adequate'	−0.2758	−0.1733	−0.2262
N = 102	(0.1732)	(0.2593)	(0.1881)
Obs.	480	479	479
R-squared	0.0161	0.0031	0.0102
(C) Clothing:			
'More than Adequate'	0.2059	0.4281	0.3155
[N = 49]	(0.2480)	(0.3329)	(0.2580)
'Less than Adequate'	−0.6461**	−0.3472	−0.4982
[N = 55]	(0.2934)	(0.3990)	(0.3076)
Obs.	480	479	479
R-squared	0.0162	0.0068	0.0132
(D) Health Care:			
'More than Adequate'	0.4985*	0.1897	0.3425
[N = 36]	(0.2926)	(0.3446)	(0.2576)
'Less than Adequate'	−0.6917***	−0.7377**	−0.7163***
[N = 70]	(0.2394)	(0.3641)	(0.2629)
Obs.	478	477	477
R-squared	0.0277	0.0154	0.0271
(E) Education:			
'More than Adequate'	−0.1484	0.2251	0.0358
[N = 28]	(0.3533)	(0.4377)	(0.3330)
'Less than Adequate'	−0.5226***	−0.4029	−0.4653**
[N = 184]	(0.1849)	(0.2546)	(0.1962)
Obs.	477	476	476
R-squared	0.0204	0.0095	0.0181

Notes: Reported are coefficients from OLS estimates. Standard errors in parenthesis. ***P < 0.01, **P < 0.05, *P < 0.1. Robust standard errors are clustered at the enumeration area level.

hope scale roughly of a magnitude of one point. Conversely, the perception that an individual's household is doing worse than surrounding neighbours is associated with lower scores in the hope scale roughly of a magnitude of half a point. Although the magnitudes of these associations are not deterministic in any sort of practical manner and some correlations are noisier than others, the direction of the association is largely constant between various welfare perceptions and scores on the hope scale.

We present a similar analysis on the perception of the adequacy of the provision of several basic necessities. Table 5 presents results for food consumption (panel A), housing (panel B), clothing (panel C), health care (panel D) and education (panel E). Each of the coefficients relating to the perception of relative inadequacy of the provision of some basic necessity is negative, again with varying statistical significance. Furthermore, all but one of the coefficients relating to the perception of the more than adequate provision are positive, but all with less statistical significance. These results seem to suggest that individuals who perceive a relative inadequacy of provision of some basic necessity are associated with individuals with lower scores on the hope scale.

Here again, the magnitudes of these associations, at approximately half a point on the visual zero through 10 Likert scale, are not overwhelming by any means. It is again worth noting the consistency of these results across a variety of different basic necessities. This note bears an important caveat, that the share of the overall sample that self-reported either a 'more than adequate' or 'less than adequate' provision of basic needs is typically relatively small. The majority of the sample population, roughly in the neighbourhood of 70–80 per cent, reported a perception of 'adequate' provision of basic needs. Thus these results demonstrate the associations of welfare perception at the extremes. A final observation is that in panels A, B, C and E it is always the agency sub-scale that is statistically significant. One hypothesis explaining this observation is that food, housing, clothing and education can all be relatively easily obtained with higher income in Mon State, whereas in the rural areas of Mon State quality health care is inaccessible to even the relatively well-off.

Taken together this empirical validity provides supporting, although inconclusive, evidence that this data represents an attitude close to the concept of hope. The results demonstrated by this analysis seem to align with existing theory, that the perception of less wellbeing or worse welfare is associated with a lower score on the hope scale. These results are, however, contrary to some work on happiness around the world (Graham, 2012), which purports a much more 'survivalist' view of hope. In this framework, hope is considered a coping mechanism and that without hope people would simply not be able to bear their own circumstances. As previously noted, the difference here seems to point to the distinction between wishful and aspirational hope. While wishful hope may indeed be a coping mechanism necessary for survival, aspirational hope may be a cognitive asset possessed by those who may one-day achieve success. More work should be undertaken in the future to examine how this approach to measuring hope correlates with changes in real-life wellbeing, such as asset dynamics and stochastic economic shocks that substantially impact household consumption.

Overall these validity tests find that this measurement approach may provide a solid foundation for future research to improve upon. Broadly speaking, the results from these tests suggest that the approach developed by psychologists to measure hope, most notably Snyder (1994, 2002), holds up well when administered with a household survey and carefully adapted in a context of a rural developing country.

5. Limitations and future research

This paper presents the first attempt to validate an approach to measure hope in a rural development setting, and in particular rural Mon State, Myanmar. Future work is necessary to improve upon the interpersonal comparability and further validating the data generated by this measurement approach. The potential limitations to the present study inform future avenues for research which are discussed below.

5.1 Interpersonal comparability

Due to the relative sophistication of the concept of hope the issue of interpersonal comparability of Likert scale responses must be addressed in future work. This issue arises when survey respondents understand the 'same' concept in vastly different ways (Brady, 1985). Often this is driven by researchers' aim to measure a concept that they are able to carefully and narrowly define themselves, but is defined widely – or perhaps even in relative terms – among the general population. Measuring reality on the basis of the perceptions of respondents can provide results that are extremely different than the empirical reality and can be very misleading without any sort of methodological validity check.

In the current study, in line with a serious tradition in survey design, this situation is partially addressed by taking care in crafting and asking survey questions in a clear contextually appropriate manner. Indeed the fact that the survey instrument used in this study did not simply ask, 'How hopeful

are you?' potentially reduces the amount of incomparability in the data. Instead, respondents were asked to respond, through use of a visual scale, the level of their agreement or disagreement to a battery of statements pertaining to the concept of hope. Furthermore, the use of a visual scale and practice questions were included in the survey design to ameliorate the inevitable incomparability of individual responses within the data. It would be potentially misleading, however, to suggest that the data collected in this study is perfectly comparable across individuals. Future work should examine various methods for testing how well this measurement approach generates comparable data and seek to improve upon this basic approach.

One worthwhile method to consider in future work is the use of anchoring vignettes[7] (Kahneman, Schkade, & Sunstein, 1998; King, Murray, Salomon, & Tandon, 2004; King & Wand, 2007; Martin, Campanelli, & Fay, 1991; Rossi & Nock, 1983). This method directly measures the incomparability of responses within a survey and then, using these measurements, the researcher can reasonably correct for the incomparability between individuals using relatively straightforward recode commands (King et al., 2004). The use of anchoring vignettes was left out of the present study due to concerns with survey length and the cognitive tax it would levy on the respondents. A worthwhile future research topic would be to investigate how much an approach using anchoring vignettes would add to the validity of data collected that measures hope.

5.2 Qualitative validation

Although the measurement approach seems to pass the validity tests discussed in this paper, we also note that these tests do not provide conclusive evidence of the validity of this data in the specific context of Mon State, Myanmar. Measurement error driven by enumeration difficulties or social desirability bias – among other things – could be present in our data, particularly because hope is a complicated concept and is seemingly axiomatically understood as good to report possessing. Thus, we suggest that future research should aim to improve upon the validation of this measurement approach via the use of intensive qualitative validation, similar to that of open-ended clinical validation often utilised by psychologists (see Spitzer, Kroenke, & Williams, 1999).

In Blattman, Jamison, Koroknay-Palicz, Rodrigues and Sheridan (2016) a simple, yet intensive, approach for validating self-reported survey data in the field is detailed through the use of an open-ended qualitative method of participant observation and questioning. Their approach sent so-called validators out to embed themselves in the daily lives of a random subset – in their case 7.3 per cent – of their sample. Validators would visit survey respondents four times over the course of 10 days. Through a process of relationship and trust building, validators conduced in-depth interviews, participant observation and open-ended questioning. The validators then coded a short list of indicators based on their experience with the survey respondent.

Of course qualitative approaches of data generation are not immune to factors of bias either. Validators may project their own assumptions into the analysis and desirability bias on behalf of the respondent may still persist. Blattman et al. (2016) take these concerns in to account but ultimately assume that these biases are reduced through relationship and trust building over four days of social interactions. The basic assumption, however untestable as it may be, is that survey respondents will behave and respond more truthfully through conversations that feel more like everyday conversation than through a rather ridged household survey that asks many questions on a wide variety of topics over the course of just a couple hours. We propose that future studies on the role of hope amongst the rural poor in developing countries should experiment with this type of qualitative validation methodology.

6. Conclusion

Why spend the time and effort developing and validating a quantitative measurement of hope? This is an important question and one that rests at the heart of this study. Indeed, hope is a concept that is

difficult to understand even when equipped with a well-developed definition. Anthropologists could spend a lifetime observing and recording the dynamics of hope within a given population and still have unanswered questions. Although these observations display elements of truth, a growing number of development economists are examining how hope influences outcomes of interest, and whether having hope in the future is a mechanism that allows for a break in the cycle of poverty. This being the case, careful work should be undertaken to understand how to best quantify a measure hope. The present study provides a foundation for this work, by contextualising and testing several survey instruments that measure the concepts of aspirations, hope, self-efficacy and locus of control. By no means does this study attempt to present any sweeping or dramatic conclusions; rather, it offers preliminary suggestions based on the validity tests the data collected in rural Mon State, Myanmar allowed us to perform.

The validation exercises presented in this paper suggest that this measurement approach does in fact measure the concept of hope. A test of construct validity suggests that scores generated by the hope scale correlate with expected determinants in a manner supported by existing theory. A test of conceptual validity suggests that this measurement approach is uniquely measuring hope and not some other related attitude. Finally, an empirical validity test suggests that perceptions of welfare correlate with scores generated by the hope scale in line with *a priori* expectations. Measurement issues, however, remain to be addressed in future research. Specifically, future research should aim at developing methods for limiting bias and for improving the interpersonal comparability of a quantitative measurement of hope.

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Notes

1. Lybbert and Wydick (2016) also discuss the extreme cases where utility does not depend on aspirations and when utility is only a function of aspirations. The most interesting aspect of this model, however, is when utility depends on both aspiration achievement and realised outcomes.
2. These open-ended interviews began with the discussion starter: ‘Tell me about a time in which [you/your family/your community] was happy’. After some dialogue, interviews would shift to discuss: ‘What are some things that would make [you/your family/your community] happy in the future’.
3. The aspirations variables are continuous because only continuous aspirations variables are used in this analysis. The scores from the hope scale are generated as continuous variables because when the scores are calculated, by averaging responses to the six questions, a respondent may have a score that is not an integer, but is bounded between 0 and 10.

4. The square of age was included in alternative regression specifications, but was not found to be significantly different from zero in all cases.
5. A standard correlation matrix will, often by default, assume that the variables under consideration are continuous. This assumption is violated for a number of the variables generated by the survey instruments in the Hope Survey. A solution is to run polychoric and polyserial correlations due to their flexibility to the specific distributions of each variable included (Lee, Poon, & Bentler, 1995).
6. Welfare perceptions data was collected on the same households via a household survey, conducted by the Center for Economic and Social Development, administered six months prior to the enumeration of the Hope Survey.
7. More detailed instructions and examples can be found at http://GKing.Harvard.edu/vign/.

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