

## **From Depression to Hope, Psychology Driven Poverty Traps and Their Solutions**

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Psychology has gone a long way in the analysis of personality, emotions and mental states that can lead individuals to make decisions that classical economics would consider irrational. Economics provides a number of tools that allow the analysis of how such phenomena might affect poverty dynamics. A first step necessary to make progress in this area is for economists to assimilate the rich literature from psychology and other fields, before integrating such insights into economic models.

This comment provides a discussion of the two preceding chapters, “Depression for Economists,” by de Jonathan de Quidt and Johannes Haushofer (hereafter DH) and “Hope as Aspirations, Agency and Pathways: Poverty Dynamics and Microfinance in Oaxaca, Mexico,” by Travis J. Lybbert and Bruce Wydick (hereafter LW). QH and LW both develop particularly valuable insights from psychology on depression and hope, respectively, in a language very understandable and relevant to economists. Each chapter also includes an analytical framework, some strengths and weaknesses of which this comment discusses. I also provide a broader discussion of the condition under which a behavioral poverty trap might emerge, and of future steps necessary to better understand the issue and to design policies that can address it.

### *Socio-emotional skills and behavioral poverty traps*

As explained by Barrett, Carter and Chavas (this volume) as well as Azariadis and Stachurski (2005), a poverty trap arises when poverty becomes self-reinforcing. A drop in capital leads to a reduction in productivity or wealth accumulation that perpetuates the low equilibrium. A central role of this volume is to enrich this approach by understanding that it can apply to multiple forms of capital, including skills broadly defined.

Many economists have given a central role to physical capital accumulation as a driver of economic growth (Harrod 1939, Solow 1956), before better incorporating human capital (Mankiw et al. 1992). The latter was initially narrowed to health and education, before being refined to a whole set of cognitive and socio-emotional skills which determine people’s decisions and thus their generation and accumulation of wealth. The research in anthropology, psychology and behavioral economics provides some mechanisms through which such skills can be affected by one’s conditions (Appadurai 2004, Ray 2006, Laajaj 2017, Moya 2015, Carter 2016, Dalton et al. 2016). The bi-directional effect between skills (broadly defined) and economic conditions raises the possibility of a behavioral poverty trap, define as a situation where poverty reduces some aspects of the skills of the agent, which in turn perpetuates the situation of poverty.

A number of conditions are required for a behavioral poverty trap to emerge:

- 1) There are at least two possible dynamically stable equilibria<sup>1</sup>; for simplicity we will consider the case with two equilibria.
- 2) Individuals who behave optimally/rationally<sup>2</sup> would always find themselves in the high equilibrium (even if they start in the neighborhood of the low equilibrium).
- 3) The individual's skills are affected by her economic environment.
- 4) The skills that result from the low equilibrium behaviors are such that it leads the person to decisions that perpetuate the low equilibrium.

QH and LW both fit within this framework. QH claims that negative economic shocks lead to depression, which is associated with pessimistic beliefs about the returns to individual effort, which can thereby generate a poverty trap if the individual reduces effort, thereby confirming and reinforcing the pessimistic beliefs. LW present a model where a lack of hope affects both one's preferences (via the utility function) and perceived return to effort, also causing a behavioral poverty trap.

#### *Depression for Economists: Should Depression Adapt to Economists or Economists Adopt Depression?*

QH do a fantastic job at defining and explaining Major Depressive Disorder (MDD, hereafter "depression") and its symptoms, in a language very understandable for economists, which is extremely valuable. They also propose a model where individuals derive utility from consumption, food and sleeping, and where a strong negative shock lowers the beliefs about the returns to effort. As a result individuals tend to revert to their natural tendencies in food or sleeping. This explains why depressed individuals often display either hypersomnia or insomnia and they tend to either overeat or lack appetite. The proposed model is intuitive and efficient in the sense that it explains a number of behaviors within a simple framework.

The main shortcoming of the analysis comes from the attempt to interpret the wide set of conditions that characterize depression within the limited framework of beliefs about the return to one's effort. Although many syndromes do fit very well, others seem to affect elements other than beliefs: negative expectations may simply be a general pessimism (if pessimism is "neutral to effort", expected future utility may fall holding the return to effort constant); reduction in gratification can be expressed with a flattening of the utility function without changing return to effort; paralysis of the will and indecisiveness may reflect a higher cost of effort (or a consequence of the flattened utility). Hence as much as beliefs about the returns to one's effort can, by itself, predict many observed behaviors, the whole range of effects may lead to a more complete understanding of depression and how it affects decisions.

The set of symptoms mentioned also map nicely with a number of socio-emotional skills: locus of control, self-efficacy, optimism, and tenacity are all skills that seem to be affected by depression and have been found to be good predictors of decisions and economic outcomes. It is also conceivable that the emotional effects of depression are likely to reduce patience and the ability to undertake risk. I used

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<sup>1</sup> Some other research have included single equilibrium situations as poverty trap (Carter and Barrett 2006). Whether one decides to include this in the concept of poverty trap is mostly a semantic debate. In this case we call it a trap only if there is a possible exit in the sense that another equilibrium is possible within the model.

<sup>2</sup> Here rationality does not incorporate many forms of bounded rationality, or the fact that an optimum might incorporate psychological costs (e.g., the cost of having high hopes that go unsatisfied).

data from a skills measurement exercise among 960 farmers in rural Kenya (Laajaj and Macours 2017) to look at correlations between depression and different socio-emotional skills. Our analysis shows the numerous challenges related to the measurement of socio-emotional skills, but also points at the Center for Epidemiologic Studies Depression CESD scale (a measure of depression) as one of the most consistent measures. Among the 13 other socio-emotional skills, CESD best correlates with (starting from the highest bivariate correlation coefficient estimate) neuroticism, metacognition, locus of control and self-confidence,<sup>3</sup> which is very much in line with the symptoms highlighted by QH. Depression may play a key role as a determinant of multiple skills and provide a key tool for understanding the mental processes under which skills might be affected. Further research in this area holds great potential for our understanding of the interactions between psychological factors and poverty dynamics.

The QH model is a story about optimal behavior under imperfect information about the returns to one's effort. Under these conditions, a negative shock may lead to underinvestment as a consequence of Bayesian updating, and in extreme cases it might discourage the individual enough that she will not invest in effort anymore and thus not learn anymore and thereby remain in the low equilibrium. However, depression is diagnosed precisely when an attitude is excessively pessimistic with respect to one's experience. In practice, effort is multidimensional, and a failure in one type of effort may lead to the learning that this type of effort is ineffective. But complete discouragement of any form of effort may come from the "egocentric notions of causality" of depressed people (mentioned by QH). This tells us first that a fully rational framework may miss fundamental elements of the concept of depression; its effects go beyond a Bayesian update, taking people away from the optimal reaction (under imperfect information). Furthermore, it raises fundamental questions: why would some individuals associate the failure to a particular form of effort, and others to themselves and be discouraged? Is there an underlying skill such as emotional resilience that makes some individuals more prone to depression than others (in particular, depression triggered by a negative, exogenous event)? Could this skill be a common factor that explains the level and stability of multiple socio-emotional skills, which themselves independently affect poverty dynamics? The introduction of this volume emphasizes the importance of understanding the determinants of resilience. The extent to which some individuals' skills are more or less affected by an adverse shock may play an important role in the persistence of poverty and is an area that remains relatively unexplored by economists.

#### *Hope as Aspirations, Agency and Pathways: Can Hope Bring New Exit Solutions to Poverty Traps?*

LW provides a particularly useful review of the psychological literature on hope and its three main components: aspirations, agency and pathways. This maps again with some traditional socio-emotional skills such as locus of control and self-efficacy. The authors propose a model where hope affects effort decisions in multiple ways: the goal setting affects utility while agency and pathways affect beliefs. It shows how a lack of hope might generate internal constraints to development and potential poverty traps.

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<sup>3</sup> Neuroticism is a personality trait characterized by anxiety, moodiness and frustration. Metacognition sometimes defined as "thinking about thinking", refers to the extent to which a person is aware of herself as a thinker and a learner. Locus of control is internal when an individual believes that she has a strong influence on what happens to her but external when she believes it is mostly driven by factors outside of her control. Self-confidence can be defined as the trust in one's abilities, qualities and judgments.

One may think of a number of alternative ways in which hope could be modelled: 1) given that “falling short of aspirations may be experienced psychologically as a shock” (as mentioned by the authors), then a discontinuity in the utility function at the level of the goal could represent the added satisfaction that comes from reaching one’s goal; 2) the time dimension is very important in the role of hope: the anticipation before reaching a goal generates utility or disutility (Lowenstein 1987, Laajaj 2017) that should be a function of aspiration, just like the utility at the time of achievement and after it, all leading to more complex utility functions and effects that will be affected by the lag between an effort and its potential reward; and 3) an alternative way to represent pathways would allow individuals to have multiple draws of  $\pi_v$ , the random shock of total production: this would mean that an individual with high pathways is less subject to random shocks because of her ability to find alternative solutions when facing a negative external shock.

I do not claim that the proposed alternatives are better, merely that they are also intuitive ways to model hope. This highlights a fundamental issue about the literature on internal constraints: given that utility functions and beliefs are never perfectly observable, we need to be cautious about results that require a model with specific, strong assumptions. Because it is infeasible to check the robustness of the conclusion to any viable alternative model, it may be preferable to start with models that are as broad as possible, and relatively minimalist in their assumptions.

On the other side, recent progress in survey methods are offering non-negligible improvements in the estimation of utility functions and beliefs, even among populations with relatively low education. The authors’ estimation of locus of control, asking for expected sales under different scenarios of luck and work effort are a good example of innovative survey methods to estimate beliefs and locus of control. There is, however, a fundamental issue that affects many measures of socio-emotional skills. According to LW’s measure, a greater locus of control is inferred when the respondent’s answers show that she believes that sales are affected by her effort more than by luck. It is certainly true that the measure captures the respondent’s subjective perception (and thus agency). But it also captures exogenous reality; the respondent may be selling in a street where the demand is particularly low, have no access to credit, or any other external constraint that truly reduces the return to her effort. Hence the questions proposed capture not only the locus of control, but also external constraints that can prevent effort. Similar concerns apply to self-efficacy, of which standard questions broadly ask whether the person believes that she has many qualities. But one person may answer no because of some realism about a low level of education and cognitive skills, in which case, this is rather a standard lack of human capital constraint. But it would be attributed to psychological constraints if one jumps to the conclusion that it is capturing only socio-emotional skills. Amartya Sen (1990) defines low development as the lack of capabilities, i.e., the number of things that a person can be and do in her life. By definition, even without internal constraints underdevelopment is associated with a reduced set of options. In order for the claim that internal constraints can cause poverty traps to gain credibility, this literature absolutely needs to find ways to distinguish this effect from a realistic observation by the poor of their reduced opportunities.

Following a new trend in the literature (Bernard et al. 2014), LW propose an intervention that directly targets aspirations. Their intervention includes videos, sessions and magnets all aimed at encouraging hope. The immediate follow-up shows significant changes in aspirations and positive but not statistically significant impact on agency, pathways and economic decisions and outcomes such as working hours, sales, savings, etc. One great potential of the study is that the results from this round and coming

follow-up can tell us a lot about the dynamic evolution of hope, from early changes in aspirations level, to changes in behavior, and perhaps followed by changes in agency and pathways.

The existence of a vicious cycle between psychological factors and economic conditions lead to two types of interventions, depending on whether they affect psychology or economic conditions. Even though LW certainly have the best of intentions in their attempt to directly raise hope, their approach raises a number of concerns. Most theoretical models on the topic (including the one of the authors or for example Genicot and Ray 2014) find that aspirations are set at a given level for good reasons that include adjustments to a difficult reality or the reduction of frustrations or other psychological costs. Hence at least for some individuals, an increase in hope may have negative effects. A video showing the most successful cases may inspire some, but it may also mislead others. It may push some people with lower skill or opportunities to invest and lose their money, and/or reach greater levels of frustration. Psychology research has shown the importance of treating people who suffer from depression. However, treating everyone for depression without prior testing of who suffers from it may generate mixed consequences. Interventions that focus on internal constraints can be received negatively by a population who may see it as a lack of consideration of the real constraints that they face. For these reasons internal constraints certainly deserve to be studied, but researchers and policymakers should be cautious before implementing interventions or policies that aim at directly changing psychological factors. It may be more effective and less risky for the populations if interventions first address external constraints and measure resulting behavioral changes and estimate the multiplier effects that might be generated. Research that documents aspirational effects of leadership within a community may also help design interventions that enhance this positive effect while limiting the risks mentioned (Beaman et al. 2012, Macours and Vakis 2014). Empirical research that combines credible exogenous variation in economic conditions with rich measures of socio-emotional skills and studies the changes resulting from an intervention remain quite scarce and offer a rich avenue for future research on the dynamic between economic and psychological changes in the path out of poverty traps.

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