

ASPIRATIONS: A REVIEW

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August 2019

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ABSTRACT


This paper reviews the literature on *aspirations* in economics, with a particular focus on socially determined aspirations. The core theory builds on two fundamental principles: (a) aspirations can serve to inspire, but still higher aspirations can lead to frustration and resentment; and (b) aspirations are largely determined by an individual's social environment. Explicitly using the structure of this core theory, we discuss the implications of our framework for the study of interpersonal inequality, social conflict, fertility choices, risk taking and goal-setting.

JEL Classification Numbers: J62, D9, O15, 040.

Keywords: Aspirations, reference points, inequality, scapegoating, fertility.

1. INTRODUCTION

The purpose of this paper is in part to review the rapidly growing literature on aspirations in economics, but also to provide a general perspective on the concept and suggest directions for future research. The theory we develop and survey falls squarely into a broader literature that builds on the relativistic nature of human happiness. Some natural starting points for this literature can be traced back to the contributions of Veblen (1899) and Duesenberry (1949), who were concerned with the general problem of relative (and often invidious) comparisons of economic well-being. And yet, mainstream economics has lived off the simple — and simplistic — view that preferences are privately determined, immutable objects. This is fine enough depending on the question to be addressed, but surely no study of economic inequality or uneven growth is complete without some consideration of the social determinants of individual preferences. That call does not seem to have been generally heeded. Writing in the *New York Times*

¹Genicot: Georgetown University; Ray: New York University and University of Warwick. This article has been accepted for publication in Volume 12 of the Annual Review of Economics. Genicot thanks the AMSE for its hospitality. We are grateful to the EDI for their support and Deniz Sanin for excellent research assistance. Our research was funded by the National Science Foundation under grant SES-1851758. Please address correspondence to debraj.ray@nyu.edu and gg58@georgetown.edu. Names are in random order, as proposed by Ray  Robson (2018).

as recently as 2005, Robert Frank lamented the “mysterious disappearance” of James Duesenberry from economics:

“In light of abundant evidence that context matters, it seems fair to say that Mr. Duesenberry’s [relative income] theory rests on a more realistic model of human nature than Mr. Friedman’s. It has also been more successful in tracking actual spending. And yet, as noted, it is no longer even mentioned in leading textbooks.”

Fortunately, this attitude has begun to change as economists increasingly come to realize that preferences are deeply molded by the society in which individuals reside. The sub-literature on aspirations views such social molds as forming in a particular way. Specifically, it is posited that the distribution of characteristics in the “cognitive neighborhood” of an individual shapes her ambitions and goals, which in turn affect the evaluation of her investment choices. Such goals are summarized in the form of a reference point, or *aspiration*, that anchors individual utility functions, but that reference point changes as societal distributions change, thereby generating a change in preferences in a very structured way.

That structure is as it should be. Economists often avoid questions such as the social foundations of preferences, because of the reluctance that such an exercise involves “putting things in the utility function,” thereby unleashing a large number of free parameters that could explain any observable outcome. While such hesitation is understandable, it should not entirely shut down an important area of inquiry, provided we do so with a sense of minimalism. With that in mind, we observe that the literature on the social determinants of preferences has taken three broad routes:

1. Theories that emphasize a desire for social conformity and acceptance, which give rise to various kinds of observed behavior in order to signal one’s type or belong to a group; see, among others, Veblen (1899), Bernheim (1994), Bagwell and Bernheim (1996), Fryer and Austen-Smith (2005), Moav and Neeman (2010) and Genicot (2019);
2. Theories that emphasize a sense of social identity, causing individuals to cluster in particular groups — demarcated by religious, ethnic or racial lines — for either intrinsic or instrumental reasons; see for instance Akerlof and Kranton (2000), Akerlof and Kranton (2011), Esteban and Ray (2008), Mitra and Ray (2014) or Currarini, Jackson, and Pin (2009);
3. Theories that emphasize the relativistic foundations of happiness or individual welfare, such as Duesenberry (1949), Van Praag and Kapteyn (1973), Easterlin (1974),

Frank (1985, 1989), Cole, Mailath, and Postlewaite (1992), Clark and Oswald (1996), Corneo and Jeanne (1997, 1999), Frey and Stutzer (2002), Stutzer (2004), Luttmer (2005), Hopkins and Kornienko (2006), Ray and Robson (2012).

The theory of aspirations belongs squarely to this third class of theories. But the relativism enters in a specific way: through the setting of individual goals. Those goals serve as a salient dividing line between achievement and failure, and it is the presence of that dividing line that is central to the theory. It is in this sense that socially determined aspirations serve to both inspire and frustrate, leading to a theory in which individual growth can be initially pulled up by aspirations, but can be stymied if those aspirations are too high. Because aspirations are generated by the ambient society in which the individual is located, this gives rise to an interplay between economic development as a whole, the speed and distributional consequences of that development, and individual behavior. That interaction forms a two-way street: economic development influencing individual outcomes via aspirations, and the latter giving rise to the former simply by virtue of aggregation over all individuals in society. Such interaction has been highlighted, though from somewhat different perspectives, in the work of Ray (1998, 2006) and Appadurai (2004), and analyzed in depth in Genicot and Ray (2017). Section 2 generalizes Genicot and Ray (2017) to propose a multi-dimensional model of aspirations.

There is a body of evidence on the effect and the determinants of aspirations. Section 3 reviews the literature on the effect of aspirations both on utility *levels* and on behavioral *incentives*, indicating how these connections fit within the larger literature on relativism in happiness. Section 4 discusses the literature on the determinants of aspirations, ranging from factors external to the individual to deliberate goal-setting by the individual herself. A number of studies show that reported aspirations evolve over time in response to life experience and social comparisons. Particularly important is the concept of an “aspirations window,” defining the relevant group that shapes one’s aspirations. This is one channel through which an individual’s self-defined identity, along with other forces such as economics, politics and the media, affect one’s aspirations. In addition, role model programs or other interventions sometimes deliberately attempt to shape individuals’ aspiration. Finally, aspirations can also to some extent be self-determined with the objective of motivating oneself or managing one’s aspirations.

The study of aspirations can inform many important topics in economics. One can use this device to study poverty traps that are created by despair or frustration, as Appadurai (2004), Dalton, Ghosal, and Mani (2016) and Ray (1998, 2006) have done. The framework can be brought to bear on the connections between economic growth and evolving economic inequality, as in Genicot and Ray (2009), Bogliacino and Ortoleva

(2015) and Genicot and Ray (2017). It can be deployed to think about socio-economic mobility, as in Esteban et al. (2016). It can inform studies of violent conflict, as in Mitra and Ray (2014). It can be used to think about “appropriate goal-setting,” as in Besley (2015), Schwenkenberg (2010), Kearney and Levine (2016) or Goux, Gurgand, and Maurin (2017). In what follows, we discuss some of these applications. Section 5 provides a number of new directions for research on aspirations, such as fertility choice, scapegoating and risk taking. Section 6 concludes.

We conclude this introduction with two remarks on the limitations of our review. First, while the core framework we develop has ample space to study the *individual* determinants of aspirations, our emphasis is quite decidedly on social influences.² This deliberately chosen emphasis means that we do not take detailed account of rich theories of *individually* determined reference points that do exist in the literature; see, e.g., the prospect theory approach developed in Kahneman and Tversky (1979), the personal equilibrium concept of Kőszegi and Rabin (2006, 2007) or the habit formation models studied in Carroll and Weil (1994) and Overland, Carroll, and Weil (2000). Second, there is a long and important literature in psychology on aspirations — see Frank (1941) for an early review — that also views aspirations as a reference point that divides feelings of failure or success.³ The concept probably goes back to Hoppe (1930) (Frank (1941)) and spurred many developments (see, for example Lewin et al. (1994) and Michalos (1985)). The concept probably goes back to Hoppe (1930) (see Frank 1941) and spurred many developments (see, for example Lewin et al. 1994 and Michalos 1985). Some of this literature is surveyed in the encyclopedia entry by Henne and Stutzer (2014), who also draw connections to economics. Limitations of space and expertise, as well as a different focus, prevent us from giving fuller consideration to this literature.

2. A FRAMEWORK FOR ASPIRATIONS

2.1. Aspirations as Milestones. We begin with a framework for aspirations. Consider the possibility of accomplishment on a number of dimensions: income, education, social status, cultural heritage and so on. On each of these dimensions one might imagine that individuals have aspirations for themselves, or parents have aspirations for their children. Under either interpretation, both individual *payoffs* as well as their future-oriented *investments* — broadly conceived — will surely be affected.

²Some exceptions are Section 5.5, where we discuss aspirations management by deliberate action, and Section 5.6, where we discuss the inertial effects of a shock to individual wealth.

³The American Psychological Association’s *Dictionary of Psychology* defines “aspiration” as “an ambition, goal, or any kind of desired end that might be achieved through personal effort.” This is certainly in line with what we do here, though we emphasize a different set of determinants and outcomes.

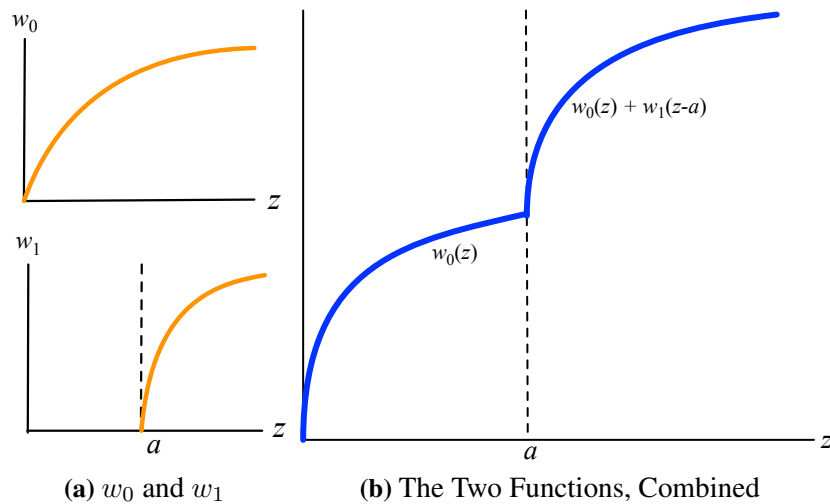


Figure 1. Aspirations Along a Single Dimension.

To be more concrete, suppose that $\mathbf{y} = (y_1, y_2, \dots, y_K)$ represents a vector of state variables for an individual (such as wealth, education levels and health status), and that $\mathbf{x} = (x_1, x_2, \dots, x_L)$ is a vector of investments that can be deployed to achieve levels of *future outcomes* $\mathbf{z} = (z_1, z_2, \dots, z_K)$, which translate into future state variables. An *aspiration* is a collection of thresholds $\mathbf{a} = (a_0, a_1, \dots, a_K)$, to be thought of as levels of the state variable that an individual desires to attain. If there are components i of the state variable for which there are no aspirational considerations, then $a_i \equiv 0$, where it is understood that 0 is the normalized lower bound of each component. Let $e_k = \max\{z_k - a_k, 0\}$ be the excess of outcome z_k over the aspiration threshold a_k . We will presume that the crossing of each threshold is “celebrated” by an additional, separable payoff, so that overall utility is given by

$$(1) \quad u(\mathbf{y}, \mathbf{x}) + w_0(\mathbf{z}) + \sum_{k=0}^K w_k(e_k),$$

where u is a standard current payoff, w_0 is also a standard payoff defined on future outcomes \mathbf{z} , and w_k are “aspirational payoffs” defined on the *excess* of future outcomes over the aspirational thresholds.

Just as in any intertemporal model, a “technology set” summarizes various possibilities for transforming investments into new values of the state variables. This can be succinctly represented by a collection $T(\mathbf{y})$, which contains all pairs of investments and outcomes (\mathbf{x}, \mathbf{z}) that are feasible given the initial state \mathbf{y} .

This framework contains the one-dimensional model of Genicot and Ray (2017). They consider a society populated by a large number of single-parent families. Each person

lives for a single period, and has a single child. A parent-child sequence forms a dynasty. Parents allocate their starting wealth y across their own consumption and investment x in their child. Parental aspirations are defined over a single variable, the wealth of their child's wealth z . In short, $L = K = M = 1$, $u(y, x)$ is simply defined on parental consumption $c = y - x$, w_0 is defined on the child's wealth z , and w_1 is on the excess e of that wealth over parental aspirations. See Figure 1. It is possibly the simplest model of aspirations that can be written down.

This simplest one-dimensional model can be extended without much harm. Panels *a* and *b* of Figure 2 outline a variant in which there is not only satisfaction when aspirations are met, but an active sense of disappointment when they are not met (rather than a mere flat). That imparts a more complex shape to the combined function (Panel *b*) but — as we shall see — does not substantially alter the central insight of this model. Panel *c* outlines a second variant in which there are multiple levels of aspirations or milestones, each of which kicks in when the next generation crosses different thresholds, such as various education levels. We will return briefly to this variant below (see also Ray 2016 for more discussion).

The multidimensional framework presented in this section does have additional implications. Possibly the most important of these variations comes from the possibility that an individual may not only harbor economic aspirations but also other goals such as self-esteem, recognition by peers, and — on a somewhat more sinister note — cultural or religious dominance. Section 5.2 shows that multidimensional thresholds can act as substitutes, so that satisfaction across one threshold can serve as some compensation for failure along another. Alternatively, Section 5.4 shows that we can think of each component as an aspiration for a different child in a model with endogenous fertility, and extends this framework to think about fertility choices in an aspiration-based world. But before we do any of these, we need to close the model by discussing how aspirations are determined.

2.2. The Determination of Aspirations. A central feature of this framework is that aspirations embody social influences on the individual. Individuals look at others “around” them, and their experiences and achievements shape their desires and goals. As already observed, this in no way negates the effects of individual character or past individual experiences, as in the literature on reference points or habit formation; see, for instance, Kahneman and Tversky (1979), Köszegi and Rabin (2006, 2007) and Shalev (2000)), Carroll and Weil (1994), Overland, Carroll, and Weil (2000), Croix and Michel (2001) and Alonso-Carrera, Caball, and Raurich (2007) or Dalton, Ghosal, and Mani (2016).

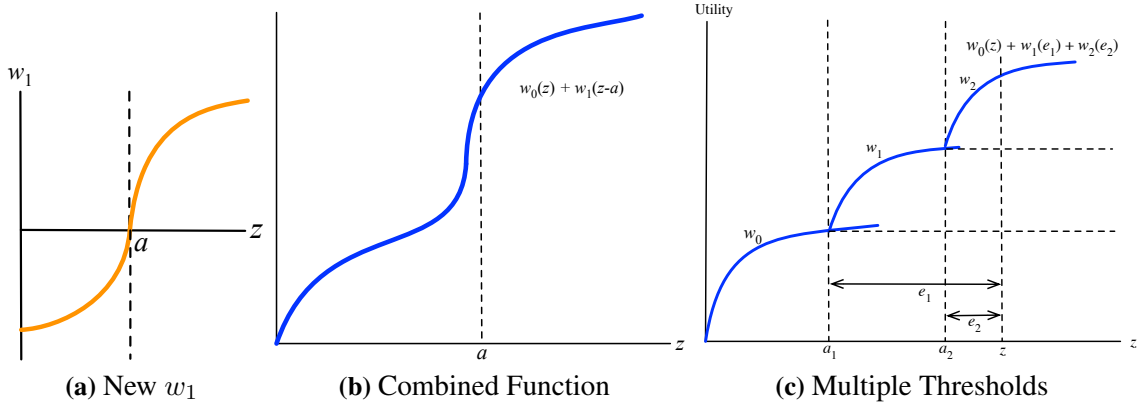


Figure 2. Variations on the Baseline Model.

But the particular defining feature of the theory we describe here is that it places the *social* determinants of aspirations on center-stage.

Specifically, extending Genicot and Ray (2017), we assume that aspirations are given by

$$(2) \quad \mathbf{a} = \Psi(\mathbf{y}, \mathbf{a}_{-1}, F),$$

where \mathbf{a}_{-1} stands for past aspirations and F the ambient distribution of the state variable in society. The presence of the own state \mathbf{y} accounts (to some degree) for individual experiences in the determination of aspirations. But it plays another distinct role: \mathbf{y} can serve to truncate F within some “window.” For instance, an individual might only consider the conditional distribution of state variables that lie above hers. Or \mathbf{y} might define both lower *and* upper bounds that narrow the window through which F is viewed. In all such cases the following restrictions on the function Ψ appear to be sensible, though reasonable exceptions are also possible (Genicot and Ray 2017):

[A.1] Aspirations are nondecreasing in own state and past aspirations: if $\mathbf{y}' \geq \mathbf{y}$ and $\mathbf{a}'_{-1} \geq \mathbf{a}_{-1}$, then $\Psi(\mathbf{y}', \mathbf{a}'_{-1}, F) \geq \Psi(\mathbf{y}, \mathbf{a}_{-1}, F)$.

[A.2] Aspirations are nondecreasing in the states of others: if there is a “rightward” shift from F to F' in the sense of multidimensional first-order stochastic dominance, then $\Psi(\mathbf{y}, \mathbf{a}_{-1}, F') \geq \Psi(\mathbf{y}, \mathbf{a}_{-1}, F)$.

[A.1] asserts that if our own circumstances improve (or if past aspirations are higher for the same circumstances), then current aspirations are no lower. [A.2] states that the same is true if we embed an individual with the *same* characteristics into a richer society.

We have assumed that it is the *ongoing* income distribution that affects aspirations, but aspirations might be in fact based on one’s anticipated distribution for tomorrow’s society. Genicot and Ray (2009) and Bogliacino and Ortoleva (2015) model aspirations

based on the expected *future* distribution of income. The use of the ongoing distribution instead has the advantage of allowing us to define an equilibrium in a recursive way, so that societal evolution is fully pinned down; as an example, see Section 5.1. On the other hand, the use of anticipated distributions will require the taking of some stand on just how those expectations are pinned down — such a story, if pursued seriously, can give rise to a rich description of equilibrium multiplicity and poverty traps.

The inclusion of past aspirations a_{-1} allows us to nest individual histories in a tractable way, perhaps as a sufficient statistic for an individual's experiences. Those experiences will generally interact with her current value of wealth or income to determine current aspirations. For instance, someone who has suffered a sudden loss in income, say, on the stock market, could still be hung up on his “old” aspirational levels. It could lead to excessive effort or risk-taking in a bid to regain those past levels; see Section 5.6. Additionally, and now interpreting (2) as an updating rule for aspirations, a_{-1} could summarize one's past experience of failure or success at meeting even earlier aspirations.

The single-dimensional model, with y treated as income or wealth, and with a single aspiration, is obviously a focal case. But there are important extensions that exploit the possible multidimensional structure. For instance, aspirations could depend on social groups over and above the anonymous distribution of state variables. This can be easily accommodated by appending an (unchanging) component to y that describes group membership. That generates an aspirations formation model in which the aspiration of an individual in a particular group is allowed to depend on her own income and group identity, as well as *separate* distributions (induced by F) over the incomes of each of the groups. (We will return to this extension in Section 5.3.)

3. THE EFFECTS OF ASPIRATIONS

3.1. Level Effects. A central feature of our model is that utility — or reported happiness — decreases in aspirations. Using this observation along with the restrictions A.1 and A.2 yields the following testable implication: happiness should decrease when the economic circumstances of *others* improve. This is a prediction shared with much of the literature on social status: see, e.g., Veblen (1899), Duesenberry (1949), Scitovsky (1976), Frank (1985), Robson (1992), Schor (1992), Clark and Oswald (1996), Corneo and Jeanne (1997), Corneo and Jeanne (1999), Cole, Mailath, and Postlewaite (1992), Hopkins and Kornienko (2006) and Ray and Robson (2012).

A body of evidence shows that indeed higher society-wide incomes have a negative effect on individual reports of well-being, *controlling* for individual income. In the U.S.

for instance, Luttmer (2005) shows that controlling for an individual's own income, higher earnings of neighbors are associated with lower levels of self-reported happiness. Bottan and Perez-Truglia (2017) show that individual's expectation of their rank in a society affects their location choice. Experimentally increasing the rank expectations associated with their earnings (by citing the expected rank according to different surveys) in a location makes graduating medical students more likely to apply for a residency there.⁴ In a lab-experiment setting, McBride (2010) found that social comparisons significantly affect reported satisfaction.

Researchers have found evidence of a preference for status using a variety of comparison groups including coworkers (Brown, Charlwood, and Spencer 2012; Clark and Oswald 1996; Clark and Senik 2010), siblings (Kuegler 2009), others sharing the same race and ethnicity (Davis and Wu 2014), others within the same region with a similar age and education level (Ferrer-i Carbonell 2005), people within one's state of residence (Blanchflower and Oswald 2004) or others in the country (Tella and MacCulloch 2008a; Clark and Senik 2010; D'Ambrosio and Frick 2007). Clark, Frijters, and Shields (2008a) and Heffetz and Frank (2011) review this literature.

At the same time, aspirations formed according to (2) also increase with one's own living standards. This results in "happiness adaptation," thereby attenuating the otherwise positive effect of an increase in one's own income. Stutzer (2004), Tella and MacCulloch (2008a) and Clark, Frijters, and Shields (2008b) hypothesize that happiness adaptation to income changes and social income comparisons are the two main explanations for the so-called "Easterlin paradox." That is, although at any point in time happiness varies directly with income both among and within nations, happiness does not seem to trend upward as income continues to grow (Easterlin 1974 and Frey and Stutzer 2002). Though Stevenson and Wolfers (2013) re-assessed this paradox and found that economic growth is associated with rising happiness both across countries and over time within countries, this by no means contradicts "happiness adaptation."

Direct support for such adaptation is found in Tella and MacCulloch (2008b) and Di Tella, Haisken-De New, and MacCulloch (2010), who observe a significant adaptation to income using German panel data. Knight, Song, and Gunatilaka (2009) finds that relative income within the village and relative income over time, both in the past and expected in the future, are shown to influence happiness (see also Castilla (2010)). Stutzer (2004) finds that higher aspirations are associated with lower happiness and that aspirations

⁴Keeping everything else constant, Bottan and Perez-Truglia (2017) find that on average, an increase of 1 percentage point in earnings rank increases the probability that a program will be chosen by 0.186 percentage points.

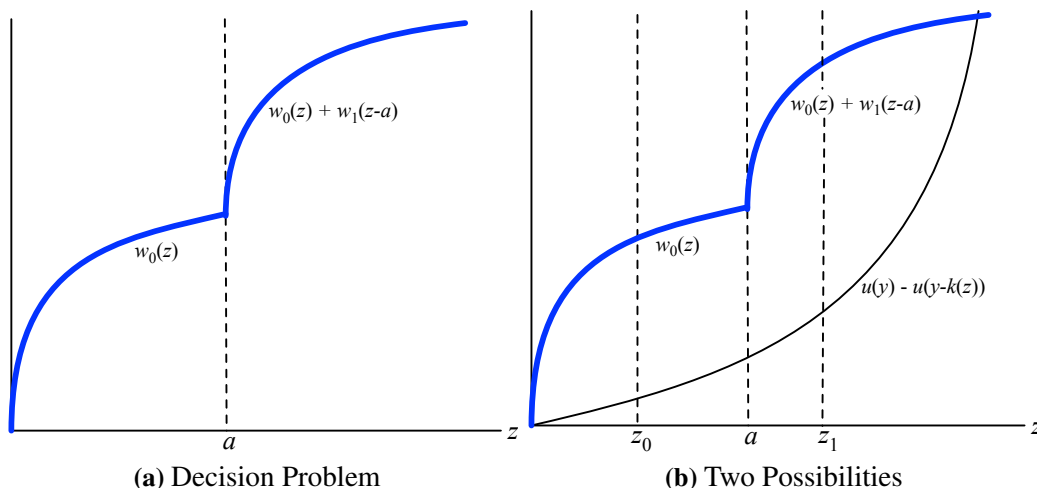


Figure 3. The Instrumental Role of Aspirations.

adapt in time to higher income for the person (see also Van Praag and Kapteyn (1973)) or for his community. Studying the impact of a multi-country program providing housing improvement to extremely poor populations, Galiani, Gertler, and Undurraga (2018a) find that the increase in subjective perceptions of well-being generated by the program dissipates quickly.⁵ In a companion paper, Galiani, Gertler, and Undurraga (2018b) also report that the program had raised aspirations among the non-recipients of housing improvement, though it did not seem to decrease their subjective well-being.

3.2. Incentive Effects. So much for the intrinsic effects of aspirations. More relevant from a behavioral perspective are the *instrumental* effects: the implications of aspirations for individual decision-making. To this end, consider the one-dimensional special case, so that given some scalar aspiration a , an individual seeks to choose between current consumption c and future wealth z so as to maximize

$$u(y - x) + w_0(z) + w_1(\max\{z - a, 0\}).$$

Panel A of Figure 3 depicts the sum of the second and third terms of this maximand when each of the functions w_0 and w_1 are taken to have the standard shape: increasing and concave. The presence of some positive a ensures that w_1 “begins” after w_0 , so that their sum inherits a double hump. Panel B of the same figure sketches in current utility u viewed as a cost of sending more resources to the future. If that utility function has standard properties, the corresponding cost function will be increasing and convex in desired wealth transmitted to the future.

⁵They found large increases in reported well-being sixteen months after the receipt of improved housing, but 60% of that gain had dissipated eight months later.

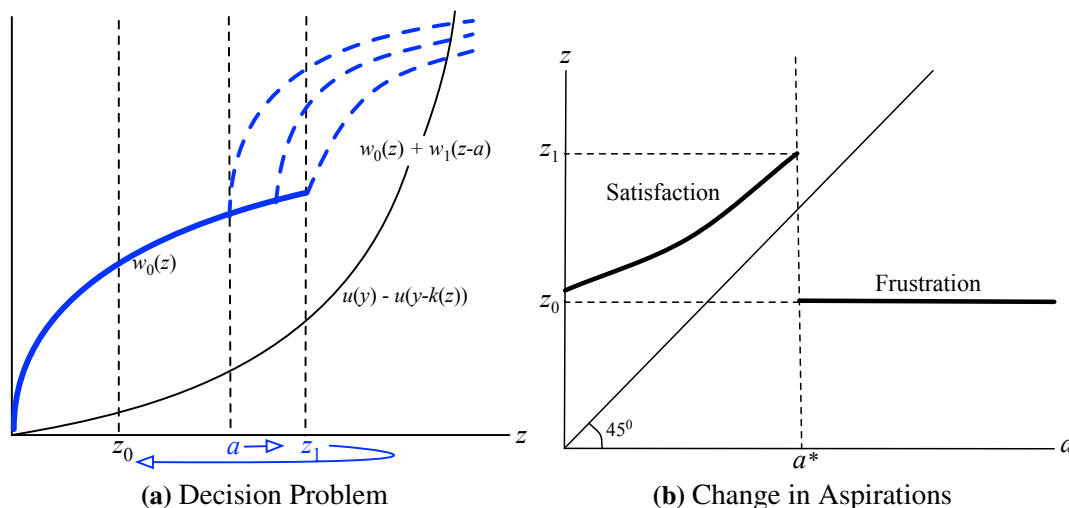


Figure 4. From Satisfied to Frustrated Aspirations.

The solution to this “non-concave” problem involves checking at most two first order conditions — one (such as z_0) to the left of the kink induced by the aspirational threshold and one (such as z_1) to the right of it — and then picking the solution that yields the higher payoff, or equivalently, the larger vertical gap between payoff and cost. Say that aspirations are *satisfied* if the solution involves high investment, leading to a wealth level to the right of the threshold, and *frustrated* if the solution involves wealth to the left of the aspirational threshold. Figure 4 examines these possible outcomes. From Panel A, notice how if a “satisfied” choice analogous to z_1 remains optimal before and after an increase in aspirations, our individual reacts to higher aspirations by putting in greater effort, leading to higher income and welfare for the next generation. Yet at the same time, a continued increase in aspirations — controlling for starting individual wealth — cannot elicit a positive response forever. At some point, the higher choice is too costly, and inspiration turns to frustration, leading to an abrupt drop in investment. So the very same direction of aspirational movement can cause a complex sequence of reactions. Panel A of Figure 4 summarizes this, and Panel B charts the course of investment as aspirations climb. This transition is a fundamental starting point for the theory developed in Ray (2006) and Genicot and Ray (2017).

Augmenting the model by an additional sense of despair if aspirations are not attained will not change the basic non-concave structure, and while the solution might be more complicated, it essentially has the same features. Panel A of Figure 5 replicates the observation in Figure 4, while Panels B and C describe two extensions introduced in Figure 2. Panel B incorporates despair if aspirations are frustrated, and shows how investment can then react negatively to increased aspirations. In Panel C, there are several

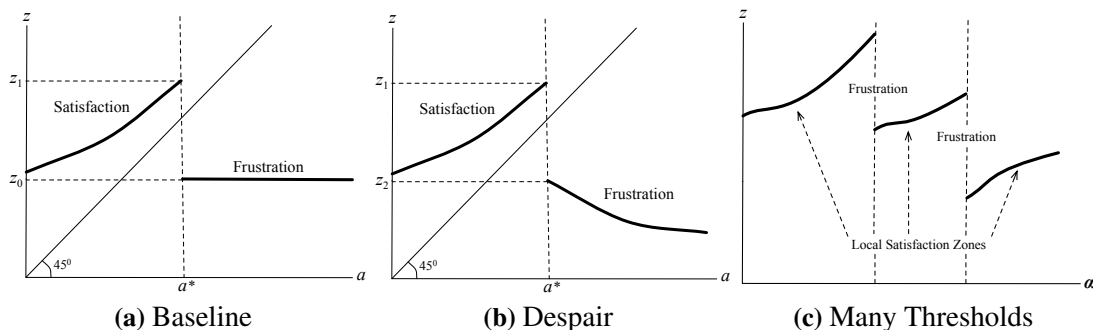


Figure 5. From Inspiration to Frustration: Extensions

aspirational milestones. Then investment drops down if an aspirational threshold cannot be reached, though these are punctuated by phases in which increased aspirations continue to inspire. Extending the model matters, but does not detract from the potential transition from inspiration to frustration.

Evaluating the effect of aspirations on incentives is a challenging and extremely interesting line for empirical research. Our observations on the non-monotonic response of incentives to aspirations finds an immediate parallel in the education literature. On one side of the inverted-U curve, Carlna, Ferrara, and Pinotti (2018) describe how immigrant children in middle school in Italy have systematically lower aspirations than native students, and they find beneficial effects from a program that target high-achieving immigrant students, providing tutoring and career counseling. The program increased enrollment of high-achieving immigrants into the high track mainly by raising their educational and occupational aspirations and affecting teachers recommendations. On the other side of the predicted curve, Goux, Gurgand, and Maurin (2017) find a positive effect of lowering the aspiration gap for low-achieving students in France. Using a randomized controlled trial, the authors show that low-achieving students' aspirations can be made more realistic through a series of meetings facilitated by the school principals, and that more realistic aspirations are followed by a significant reduction in grade repetition and high-school dropout. These very different findings can obviously reconciled if the key — as in our theory — is that aspirations should be high but not too high relative to the academic potential of students. These two studies illustrate well the parallels between having aspirations that are too low and aspirations that are too high.

In similar vein, it has been observed that some students (in particular working class students) tend to hold high aspirations that are beyond what the labour market can support. This has led researchers to question the assumption among politicians and policy makers that raising aspirations necessarily enhance educational achievement (Clair

and Benjamin 2011, Carter-Wall et al. 2012, Gorard, See, and Davies 2012). These authors claim that having high aspirations without being able to achieve them would negatively influence students by causing disappointment, frustration and possible social withdrawal, and that would result in lost talent.

Moving beyond education, there is evidence from cognitive psychology, sports, and lab experiments that goals that lie ahead — but not too far ahead — provide the best incentives; see, e.g., Berger and Pope (2011), Heath, Larrick, and Wu (1999) and Lockwood and Kunda (1997). Children that age into the next competitive bracket in swimming are discouraged (swim slower) when facing faster competition (Bernhardt and Botta 2019). To cite just one example from social psychology, LeBoeuf and Estes (2004) find that subjects score *lower* on trivia questions when first primed by self-listing the similarities between them and Einstein (an exercise that could be interpreted as raising their aspirations), relative to when not primed; and they score *higher* when asked to list the differences between them and Einstein (interpreted by us as lowering their aspirations) relative to when not primed.

In more specific economic settings, using the Young Lives data from India, Ross (2017) documents an inverse-U shaped relationship between the size of the aspirations gap for a child at age 12 (such aspirations could be those of the child or those of the caregiver) and the child's outcomes at 19: human capital levels, household expenditure on education in total, and household expenditure on the child in question. Similarly Janzen et al. (2017) finds an inverted-U relationship between the income aspirations gap and various proxies of future-oriented behavior, such as savings and intertemporal planning. These findings are consistent with the idea that moderate aspirations serve to motivate while aspirations that are too high might discourage. However, despite a number of controls, there are always concerns that measures such as aspirations or the aspiration gap could be endogenous to the outcomes in question, issues that we come back to in Section 4.4.

Such endogeneity also raises interpretive concerns with randomized role-model programs that are deliberately designed to raise aspirations but naturally also provide hard information. For instance, Bernard et al. (2014) design a field experiment by randomly inviting individuals to watch documentaries about people from similar communities who had succeeded in agriculture or business, without help from government or NGOs. They found that their intervention had a motivating effect on savings, the use of credit, school enrollment, and parental expenditure spending on the schooling of children. Similarly, Riley et al. (2017) find a motivational effect of viewing a film featuring a potential role model. These are, of course, welcome findings, but it is unclear what role is played

by aspirations *per se*, as opposed to the alternative story that these sources provide new information to the viewers, thereby altering their beliefs in a way that encourages new investment.

An attempt to separate the notion of beliefs and aspirations is made in Mukherjee (2017). This paper reports on a field experiment in India to identify the causal effects of having “high” or “low” aspirations on actual outcomes. Subjects are asked about both educational aspirations and beliefs regarding performance, but the *order* in which these questions are asked is randomized across subjects. Aspirational questions that are asked prior to beliefs receive significantly different responses from those asked after belief questions. Mukherjee (2017) then finds an incentive effects of these reported aspirations, which may be negative. In particular, the reporting of higher aspirations can lead to lower test scores.

In the context of a housing improvement program mentioned earlier, Galiani, Gertler, and Undurraga (2018b) found that the program raised aspirations, but not their expectations, among the non-recipients, and found no investment effect on their part.

A distinct approach consists in studying interventions that adjust aspirations (without seeking to directly elicit what they are). A first example that suggests that aspirations have a motivating effect is Ager, Bursztyn, and Voth (2016). They study the effect of awards (prestigious but financially negligible) on the performance of German pilots during World War II. Using information on pre-existing social networks, they find that former peers of pilots who were publicly recognized were inspired to try harder, increasing their score of aerial victories significantly during the months in question. This is particularly true among the best pilots (i.e., those more likely to be successful in being publicly recognized after they tried harder), and of those who were closest in terms of social distance to the pilot receiving the award. Other related examples are studies that allow the consumption of others or past consumption to affect the marginal utility of consumption in studying consumption choices (Maurer and Meier (2008), Dynan (2000), Alvarez-Cuadrado, Casado, and Labeaga (2016)). For instance, Alvarez-Cuadrado, Casado, and Labeaga (2016) estimate significant weights on both the consumption of a reference group and past consumption in explaining inter-temporal consumption patterns in panel data.

4. SOCIAL AND PERSONAL CONTROL OVER ASPIRATIONS

We’ve black-boxed the determinants of aspirations to some degree, by asserting that they depend mechanically on current individual state variables, past aspirations, and the

social distribution. For some questions of interest, it may be important to look inside the box. This Section describes a number of factors that we believe to be important in shaping aspirations. Some are purely involuntary, while others are external factors that policies can affect. Finally, aspirations can also be willfully shaped by an individual's own deliberate attempts.

4.1. Involuntary. To some extent, individuals may not be able to choose their aspirations. Individuals live irrevocably in a social world. They see the lives of others, and by imagining those lives for their own selves, cannot help but make comparisons, thereby defining their own reference points. And it is certainly true that lives that are on display are more likely to affect aspirations than hidden lives: for instance, Janzen et al. (2017) find that aspirations levels in rural Nepal increase with the observable wealth of richer individuals. This could well happen despite the obvious cost of higher aspirations in terms of intrinsic payoffs, as discussed in Section 3.1.

In his essay on “The Capacity to Aspire,” Appadurai (2004) laments the inability of the poor to aspire to a better life, thereby not taking productive decisions that they might otherwise have considered. In the approach here, the poor are stymied and frustrated by the impossibilities of the thresholds that cinema, television, social media — or simply the everyday evidence of their own eyes — mercilessly array before them. Their reference points or thresholds are high relative to what they can achieve, and these thresholds may not be controllable. In this sense it is not the *capacity* to aspire that has failed them, but the insufficiency of their reactions to their circumstances. Now, some of this discussion is purely semantic: a failure of the “capacity to aspire” could stand for a failure to mount a convincing answer to the circumstances of one's poverty, especially when faced with enormous inequalities. But if one takes the conversation further, there could also be differences of substance. If one posits a literal failure to imagine high thresholds or reference points, then behavior under poverty would remain unchanged were the more affluent sections of society to be somehow removed. If, on the other hand, an aspirational failure is a despairing reaction to the demanding reference points that an unequal society can impose, then the ambient environment over and above the poverty itself *would* matter. The latter is the position we take here.

Shifting gears to the non-poor — if Jane, an investor, had high aspirations as a result of high wealth, and suddenly lost 50% of it on the stock market, then she might feel a lot worse than someone who had 50% of her pre-crash wealth to start with, and lost none of it. It is all very well for Jane's therapist to advise her to re-calibrate her goals, and to some extent this may be successful (we hope for Jane's sake that it will be), but it is also the case that some of her psychological reaction cannot be controlled. For a while, Jane's

aspirations will remain high and she might take very high risks, such as doubling-down on her lost bets, in a bid to regain her wealth. Likewise, John, a moderately successful academic, may be unhappy because his more successful peers are publishing in good journals or winning various awards (and making no secret of it). It is easy to tell John to recalibrate his own aspirations, but it is not easy for him to fully internalize that advice.

The shape of the ambient distribution will also matter. A “connected distribution” — on in which there is always someone a small step ahead of you — may create achievable role models for every individual. Because there are always people just ahead of you, even moderate investments can bring a sense of achievement. A polarized distribution, on the other hand, is deeply conducive to a sense of hopelessness, as the lives of those who are better off do little by way of inspiration. Once again, unless you can stop the world and let yourself off, these factors are hard to control — and their impact, both intrinsic and instrumental, is involuntary.

Three other remarks are also relevant to this discussion. First, the fact that my individual achievements affect aspirations generates an externality for others or for my children or *even* my future self, one that I may not adequately internalize. (Judging from the number of self-congratulatory posts on social media, it may even be internalized in the wrong direction.) The possible failure to even internalize the effect of my actions on my own subsequent aspirations is a central theme in Dalton, Ghosal, and Mani (2016). “Consistent” pairs of effort and aspirations can be sub-optimal and generate an aspirations failure, albeit of a different kind from the failure described earlier.

Second, one’s own living standard can affect one’s aspirations through different channels. Some are direct: having experienced a higher income a person may wish more of the same for themselves or their children. But a higher income can also raise aspirations indirectly, by affecting an individual’s social perspectives or *aspirations windows* (Ray 2006). For instance, she might *only* place weight on richer individuals when forming her aspirations, which means that the set of individuals she becomes “exposed to” as she becomes richer systematically changes.⁶ As societies tend to be geographically and socially segregated, her exposure is also likely to be affected: individuals are more likely to interact with others of similar income level. In the context of education, La Ferrara (2019) finds that on average children have higher aspirations in countries where there is more “educational tracking,” and children are sorted by academic achievement.

⁶We study such “upward aspirations” in Genicot and Ray (2017), setting aspirations equal to the the conditional mean among all richer individuals.

Third, extending this idea, a broader or narrow cognitive window can have decisive effects on aspirations, as in Ray (2006) or Mookherjee, Napel, and Ray (2010). In particular, social identity — caste, ethnicity, religion, or the length of stay in a country — is likely to affect one's reference set. This is a channel through which identity enters individuals' utility (Akerlof and Kranton 2000). There is supportive evidence that ethnicity plays an important role in aspirations (Gutman and Akerman 2008, Carlana, Ferrara, and Pinotti 2018). And even within an experimental context, McBride (2010) found that subjects choose to compare themselves with similar subjects: their reported satisfaction decreased with the earnings of other subjects most similar to themselves.

4.2. External but Manipulable. The process of aspirations formation in equation (2) is exogenous, but we could imagine that a number of external factors or policies could affect the inputs to the aspiration formation process, or the function itself. The rise of social media, and even traditional media such as television can shape aspirations by bringing particular socioeconomic groups or lifestyles into sharper focus. For instance, Jensen and Oster (2009) argue that cable television significantly changed gender attitudes in rural India — and for the better. Ferrara, Chong, and Duryea (2012) study the impact of television soap operas on fertility in Brazil, by exploiting differences in the timing of entry into different regional markets of Globo, the main novela producer. Women living in covered areas have lower fertility. Hyll and Schneider (2013) similarly exploit spatial variations in coverage of TV programs (from the Federal Republic of Germany) over the German Democratic Republic. They show that exposure to West German television broadcasts affected material aspirations and consumption.

Role models represent a specific pathway through which social media can have aspirational effects. Bernard et al. (2014), Lybbert and Wydick (2018) and Riley et al. (2017) make explicit use of films featuring role models to increase aspirations. But of course, social media is not the only way of creating role models. Material interventions can do so as well. Macours and Vakis (2014) found complementarities between transfers to households in Nicaragua and the presence of local role models, also created by a separate intervention that designated some women to be leaders (in addition to receiving a benefit package). The simple ability to experience neighborhood success stories can therefore raise household aspirations and investment behavior, and that ability is compounded when resources are available to convert aspirations into productive investment. More broadly, social programs that give resources to families have been found to have an impact on aspirations; see Chiapa, Garrido, and Prina (2012) and Garcia, Harker,

and Cuartas Ricaurte (2016) for conditional cash transfers, Galiani, Gertler, and Undurraga (2018a) and Galiani, Gertler, and Undurraga (2018b) for housing interventions, and Wydick, Glewwe, and Rutledge (2013) for child sponsorship.

Aspirations can also respond to policies that increase the representations of minorities in politics. For instance, using the introduction of female local council members, Beaman et al. (2012) show that exposure to female political leaders raises the aspirations of young girls and their families.

Finally, politicians also often try to manipulate voters' aspirations, both on economic and non-economic fronts. Specifically, there are concerns that such attempts are often carried out by sharpening the salience of ethnicity and playing identity politics (Akerlof and Kranton 2000).

4.3. Deliberate. So far the aspirations process has left no room for the individual control of aspirations. We believe there is much truth to this viewpoint. If some mysterious alchemy for complete control of one's goals were to exist, the world would be a happier, if less interesting place. However, faced with utility-reducing invidious comparisons, individuals do try to affect their own aspirations. Managing one's aspirations could involve meditation, therapy, self-help, and "stopping the world and getting off" – all familiar phrases in developed countries– but it could also involve a number of conscious decision to change one's exposure to the most affluent lifestyles. Bottan and Perez-Truglia (2017) for instance, find experimental evidence of this among graduating medical students who are less likely to apply to a location where their relative earnings would be lower. In Section 5.5, we present a simple model of aspiration management.

The above arguments have to do with the intrinsic effects of aspirations. Another reason why individuals may want to modify their aspirations, is because they want these to have instrumental effects on their own incentives, or on the incentives of their progeny. These effects can be captured in models in which individuals have different preferences from those of their future selves or their children, and would like to twist those preferences, although this might come at a cost in immediate intrinsic happiness. Schwenkenberg (2010), Besley (2015) study these issues in a setting in which parents can deliberately affect the aspirations of their offspring in order to motivate them. This approach is connected to Bisin and Verdier (2001) where the parent-child relationship provides a transmission of the family cultural values and norms to children. It shapes the child's aspirations, career choices and their propensity to pursue additional education or other achievements.

4.4. The Problem of Identifying Aspirations. There is a growing literature in education that attempts to measure aspirations through survey questions. However, it is unclear what people report when asked about their aspirations. Reported aspirations have been shown to contain a strong element of expectations or beliefs about one's own future prospects (e.g. Bernard et al. 2014, Azmat, Cunaty, and Henry 2019). As a result, these studies often first ask someone about their expectations regarding a particular outcome, and then ask about that person's aspirations for the same outcome or some proxy thereof. For instance, Stutzer (2004) uses questions on the income considered sufficient by a household, as opposed to the absolute minimum needed. According to Reynolds and Pemberton (2001), (educational) expectations and aspirations reflect a fundamental difference between what one realistically expects to achieve and what one wishes to achieve. These studies then compare reported aspirations with educational outcomes, or study the potential determinants that correlate with reported aspirations; see, among others, Stutzer (2004) or Gutman and Akerman (2008). Still, reported aspirations could represent a number of things and mean different things to different people.

These issues are likely to be compounded when aspirations are endogenous, a phenomenon well recognized in the psychology literature (Frank 1941, Lewin et al. 1994, Michalos 1985) that we explicitly allow for in the theory. Aspirations can be managed to be achievable, as discussed in Sections 4.3 and 5.5, or people may adjust their aspirations downward when they have failed to reach their initial level of aspirations, as discussed in Section 2. Dalton, Ruschenpohler, and Zia (2018) show that urban retail shops owner in Jakarta, Indonesia, lower their aspirations to more realistic levels after failing to meet them (see also Haller 1968). Another example is Azmat, Cunaty, and Henry (2019) who show that female lawyers who experienced discrimination early in their career tend to have lower aspirations and be less likely to be promoted.

In an experimental setting in which subjects are asked their aspirations in a novel context, these considerations may represent less of a concern. Interestingly, there may be ways to experimentally affect aspirations without changing expectations. Mukherjee (2017) mentioned earlier observes that reported aspirations responds to priming. She finds that subjects who are asked about expectations prior to being asked about aspirations (a random treatment) report significantly higher test score aspirations than subjects who are asked about aspirations prior to being asked about expectations. This reporting of higher or lower aspirations actually appears to have an incentive effect. Specifically, high aspirations may lead to lower test scores.

5. SOME IMPLICATIONS OF THE THEORY

We will now illustrate how our framework has implications for a number of topics in economics: growth, inequality, conflict, fertility, aspiration management and risk taking.

For this purpose, we will often consider a special case of our model that we call the *constant elasticity model*. It has the following two components. First, every production function that maps investments \mathbf{x} into outputs \mathbf{z} is linear. Second, we assume that all utility terms (u and w_l) are constant-elasticity, with the same elasticity $\sigma < 1$ for each utility indicator.

5.1. Growth and Inequality. Genicot and Ray (2017) show that socially determined aspirations have important implications for growth and inequality. Their setup has dynasties of single-parent families with parental aspirations defined over a single variable, the wealth of their child's wealth z (as described in Section 2.1). These aspirations are determined by a person's income and the ambient distribution (a simple case of the process described in Section 2.2):

$$a = \Psi(y, F).$$

Now recall that Assumption A.2 implies that holding an individual's income fixed, if all other incomes are increased, then the individual's aspirations must rise. To study the dynamics of growth and inequality, Genicot and Ray (2017) impose an additional condition on the (economic) aspirations formation process:

[A.3] (Linear homogeneity): If all incomes go up by the same proportion, then aspirations rise by the same proportion.

Assumptions A.2 and A.3 can be combined to show that the *aspiration ratio* $r = a/y$ declines monotonically over the income cross-section, so that aspirations are more likely to be frustrated at the lower end of the income distribution, and more likely to be satisfied at the upper end.⁷ This observation can be put to good use in a constant-elasticity version of the aspirations model with linear accumulation technology. In this setting, a parent with starting wealth y and aspirations a chooses continuation wealth z to maximize

$$(3) \quad \left(y - \frac{z}{\rho}\right)^{1-\sigma} + \delta [z^{1-\sigma} + \pi (\max\{z - a, 0\})^{1-\sigma}]$$

where $\rho > 1$ is some constant return on capital holdings.

⁷There are notable exceptions to this observation, stemming from a possible failure of (A.2), but we refrain from a discussion here; see Genicot and Ray (2017) for more details.

Dividing (3) throughout by y shows that parents can be viewed as effectively choosing a growth factor $g \equiv z/y$ that maximizes

$$(4) \quad \left(1 - \frac{g}{\rho}\right)^{1-\sigma} + \delta [g^{1-\sigma} + \pi (\max\{g - r, 0\})^{1-\sigma}]$$

given their aspirations ratio $r = a/y$.

It is then easy to show that there is a unique $r^* > 1$ above which individuals are frustrated and grow at a low rate \underline{g} . Conversely, if an individual's aspirations ratio is below this threshold, aspirations are satisfied and continuation wealth accumulates at a strictly higher growth rate $g(r)$. Individuals closest to r^* (from “below”) grow the fastest, but even the most complacent individuals with low aspirations ratios grow faster than they would were they to be frustrated:

$$(5) \quad g(r^*) > g(r) > g(0) > \underline{g} \text{ for all } r \in (0, r^*).$$

Now combine inequality (5) with the earlier observation that aspirations ratios monotonically decline with wealth over the cross-section. We can then conclude that, along a cross-section of wealth levels, the following phenomena must be observed:

(i) There is an initial segment of poor people (possibly empty) for whom growth rates are at the lowest level \underline{g} .

(ii) As wealths cross over the vital — but relativistically determined — threshold that brings aspirations ratios down below r^* , the growth rate jumps upwards to $g(r^*)$. This middle group exhibits the highest growth rates.

(iii) For still higher wealths, aspirations ratios are lower and so, by (5), the growth rate falls with wealth, yet always remaining higher than \underline{g} .

This corresponds to the lowest segment of the population. Richer individuals, with lower aspirations ratio r , satisfy their aspirations. Their continuation wealth grows by a strictly higher growth rate $g(r)$ with individuals the closest to r^* growing the fastest.

In the textbook version of this model without aspirations, balanced growth would result, and as a result the inequality would remain constant. In contrast, Proposition 7 in Genicot and Ray (2017) shows that if aspirations respond positively to an increase in society-wide incomes and investments are profitable, there are only two outcomes possible: either convergence to an equal distribution with growth (when the initial income distribution is equal enough) or ever-expanding inequality (when the initial distribution is unequal).

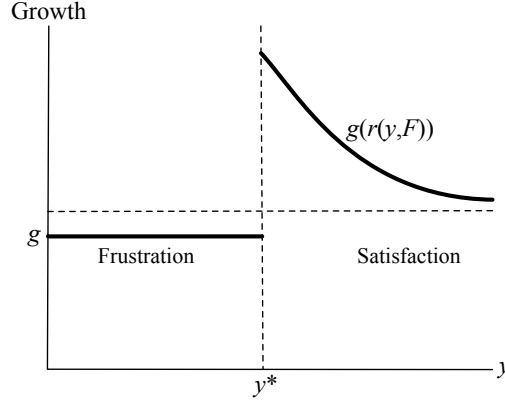


Figure 6. GROWTH FACTORS AS A FUNCTION OF INITIAL WEALTH.

5.2. Consolation Prizes: Orthogonal Responses to Economic Inequality. As we saw in Section 5.1, economic inequality brings the possibility of frustration. By raising the economic aspirations of the poorest, an increase in inequality may lead to frustration, and reduce their economic investment. By introducing other dimensions in which people can invest their time or resources, our multidimensional model naturally generates “orthogonal movements” in behavior as the proximate disparities worsen. Instead of trying to narrow those disparities, individuals might try to salvage a second-best source of satisfaction. Think of such sources as “consolation prizes” when the grand prize of economic achievement is not to be had.

The aspirations-based model, extended to the multi-dimensional case, yields such predictions in a natural way. Suppose that there are two separate sources of goal-fulfillment. The first is economic, driven by aspirations just as we have done so far in this text. The second corresponds to achievement in another dimension. This second dimension, that we shall call superiority, could represent satisfaction from harmless activities, say sports or activism, but could also capture darker activities such as cultural, religious, nationalistic dominance (see Ray 2006). This second dimension is possibly *also* aspiration-driven but assume that aspiration levels in that dimension do not vary with income.

For concreteness, let the achievements along the economic and the superiority dimensions be denoted by z and s , where z is a monetary investment while s is denotes some fraction of potentially productive time, and therefore can also be thought of as a fraction of income lost by engaging in the non-economic activity. Denote the corresponding aspiration levels by a_z and a_s . Our individual chooses $g_z = \frac{z}{y}$ and $g_s = \frac{s}{y}$ to maximize:

$$(6) \quad \frac{1}{1-\sigma} (1 - g_z - s)^{1-\sigma} + \sum_{k \in \{z,s\}} \frac{\lambda_k}{1-\sigma} [(g_k)^{1-\sigma} + (\max\{g_k - a_k, 0\})^{1-\sigma}]$$

where $r_z = a_z/y$ and $r_s = a_s/y$ are aspirations ratios and $\lambda_z, \lambda_s \geq 0$ are the weights on the two dimensions. This sort of model naturally provokes the following question:

Can high and rising economic inequality direct investments in “orthogonal directions”?

To address this, we’d like you to think of a situation in which economic inequality is on the rise, so that aspirations increase — at least for those at the lower end of the income distribution. Just as in the previous analysis, an initial response to such an increase is a rise in economic investment g_z , as individuals fight to meet or maintain their goals in an increasingly unequal world. But then things can go sour, if aspirations rise so much that they cannot be met, or are too costly to achieve. The familiar discontinuous drop in economic investment then occurs. But this time, with an additional dimension, this is tantamount to a sudden freeing-up of resources for orthogonal ends — for investment into the “consolation prize.” Figure 7 summarizes the situation.

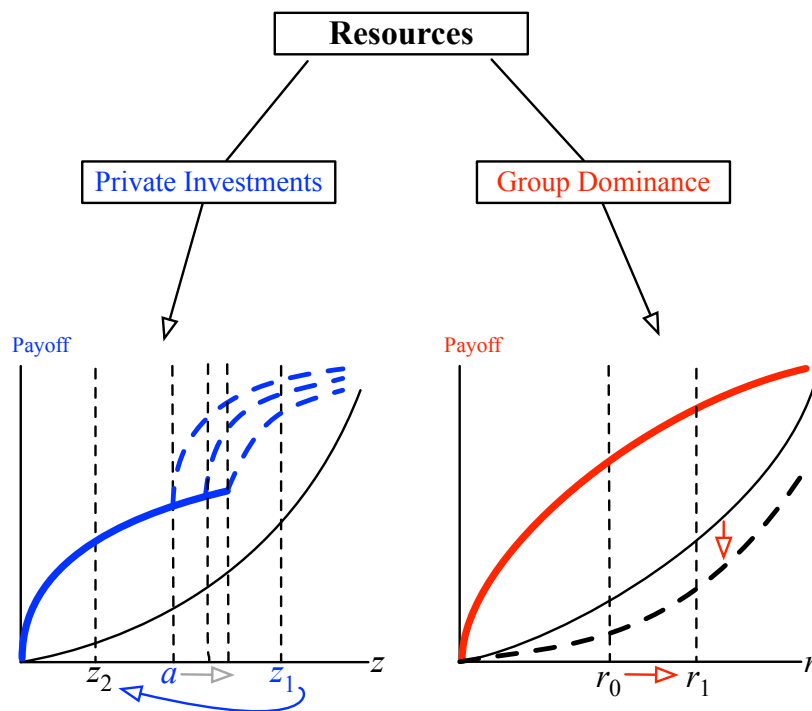


Figure 7. Orthogonal Responses to High Inequality

Notice that although these secondary goals could consist in many activities, it may not be a coincidence that racism and nationalism are on the rise as inequality reaches ever higher level. The availability of another dimension such as group-based esteem, recognition or even dominance (on cultural or religious grounds). Hence, when inequality and frustration increase, the need for another source of dominance could certainly be exploited by a clever politician (think about it as raising λ_s). This might explain why

very high inequality — instead of drawing attention to the problem of inequality itself — tend to spark nationalistic sentiments.

Recall that under our assumptions, aspirations ratio are decreasing in income. What does this imply for behavior along the *cross-section* of the income or wealth distributions? Let's consider a specific example with incomes uniformly distributed between 20 and 500 and economic aspirations set at the mean income. First, consider the culturally dominant group and assume that their “superiority aspiration” a_s is extremely easy to achieve. For instance, assume that $a_s = 0.2$, so that spending 20% of one's time on superiority activities (attending rallies, parades, religious events . . .) achieves satisfaction on that dimension. We see in Figure 8 that over the income cross-section, superiority investments — shown in red — initially fall, dropping discontinuously as aspirations switch from failure to success; then begin to rise again. The blue line shows economic investments, which display the opposite pattern.

This argument is consistent with evidence that individuals are more likely to contribute to group-dominance causes as their incomes go down. For instance, Dal et al. (2018) argues that it is the worsening in *relative* economic standing of large segments of the population that paved the way for the rise of the radical right in Sweden. Fetzer (2018) also argues that “economic losers” were more likely to vote in favor of Brexit. While their lower incomes or wealth make it less likely that the poor can do so in monetary form, they might expend time and effort on such pursuits. On the other end are individuals with satisfied economic aspirations — they will have the financial resources to meet secondary goals, not out of frustration, but actually from satisfaction.

Now flip the attention from the dominant group to “outsiders.” If outsiders are entirely shunned, then there is an aspirations failure on the non-economic front as far as they are concerned. Rather than supply resources for cultural parity, they will switch resources, *ceteris paribus*, to *economic* investments. From this switched perspective, economics is now the orthogonal channel. Therefore the very same model contains, as a by-product, the seeds of a theory that explains the economic success of outsiders in many communities, such as homosexuals in the US (Black, Sanders, and Taylor 2007), women and lower castes in India (Luke and Munshi 2011; Munshi and Rosenzweig 2006), or Indians in East Africa (Adam 2009).

5.3. Instrumental Motives: Scapegoating. Theories of frustration and aggression (Dollard et al. (1939)) suggest that one group unable to achieve its goals can redirect its frustration and aggression at another group that is not the causal agent of the frustration. It is believed that groups that scapegoat others tend to occupy a low socio-economic status in

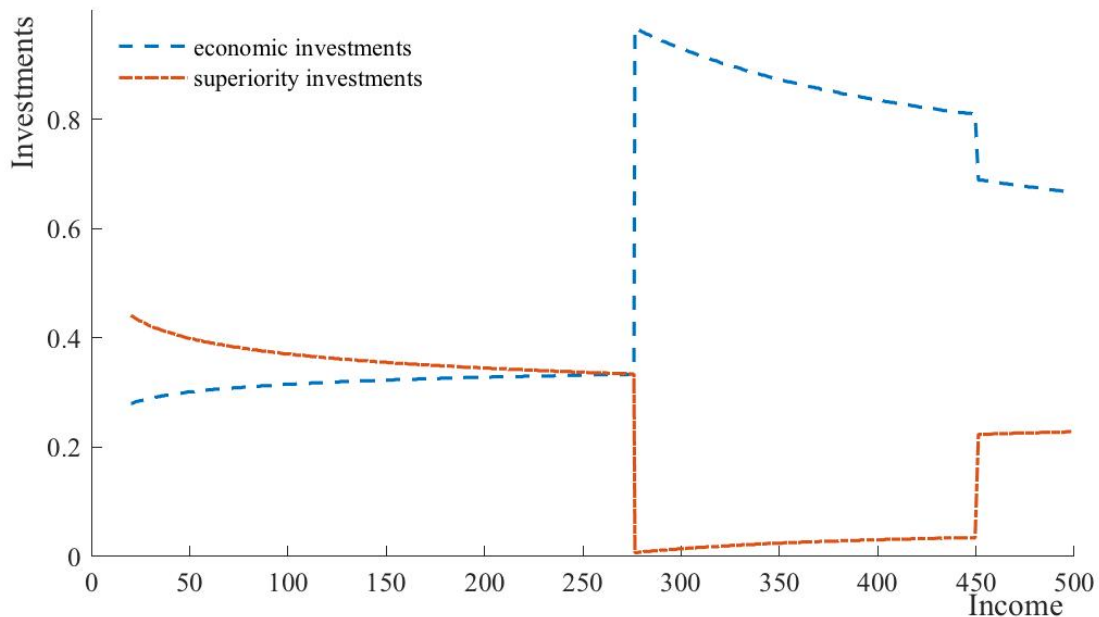


Figure 8. Orthogonal Investments Over the Cross-Section.

society and have little access to wealth and power. They are likely to be under prolonged economic insecurity or poverty, and come to adopt shared outlooks and beliefs that are documented to lead to prejudice and violence toward minority groups. The philosopher René Girard sees envy gradually building up in a society until it leads to rivalry and violence. At this point society's salvation often comes from finding a scapegoat. The scapegoat allows the group to unite against a victim and can quell conflict within the group (Fleming (2004)).

There is a small literature on scapegoating in economics. Theoretical work includes Bramoulle and Morault (2017) and Glaeser (2005), while empirical research documents the importance of negative shocks on persecution. In particular, there are several studies that employ weather shocks as an exogenous proxy for bad economic outcomes, and study their consequences: on the persecution of the Jews in Medieval Europe (Andrews and Leigh 2009), in Russia (Grosfeld, Sakalli, and Zhuravskaya 2019), or on witch killings in Tanzania (Miguel 2005).

In the previous section, superiority represented another and — to some degree — substitutable source of dominance. Alternatively, group-based collective action may all be carried out for economic gain, so that aspirations could continue to dwell in the relatively narrow zone of material achievement, eschewing the need for a multidimensional

approach. The jury is out on which of these two approaches to violence — the “primordial,” driven by an entirely non-economic notion of gain or achievement, or the “instrumental,” motivated ultimately by a desire for material gain — is the more relevant. It isn’t particularly insightful to claim the obvious: that both considerations possibly matter to some degree. So in this section, we briefly explore the second approach.

Aspirations remain uni-dimensional, but violence can be used as a tool to reduce the fortunes of a rival group, thereby seeking to assuage a sense of resentment — or perhaps to systematically manage aspirations for the own group (see Section 5.5 for more on aspirations management). As an example, consider two groups, h and m . For any person with own characteristics y in group $j \in \{h, m\}$, write

$$a_h = \Psi_j(y, \mu_j, \mu_{-j})$$

where μ_j and μ_{-j} are the mean incomes for group j and the other group respectively. This is a particularly simple (perhaps simplistic!) story of aspirations formation, in which we take as a principal driver of aspirations the average incomes of different groups. But it will do for our purposes.

Notice how special cases of even this special formulation can take us in interesting directions. For instance, in the case of peer effects, one might posit that *only* μ_j matters for a person in group j . This appears to be the case with certain types of aspirational thresholds, such as fertility. For instance, Munshi and Myaux (2006) show — in the context of rural Bangladesh — that own-(religious) group fertility has a large effect on the fertility decisions on an individual couple, but that cross-(religious) group fertility norms have little or no effect.

In contrast, cross-group rivalry might suggest that the average income of the *other* group might principally matter for a person in any group. In short, μ_{-j} could be the principal determinant of a_j . That does not require that the cross-group needs to be richer on average than the own group. For instance, as a member of group h , I might want to be, say, 80% richer than the average member of group m , so that when the cross-group average changes, I could react to it even if that average is significantly lower than my income.

Return to a single-dimensional model of aspirations, writing it for a member of group h :

$$(7) \quad \frac{1}{1-\sigma} \left(1 - t - \frac{g}{\rho}\right)^{1-\sigma} + \frac{1}{1-\sigma} (g)^{1-\sigma} + \frac{1}{1-\sigma} (\max\{g - r_h, 0\})^{1-\sigma}$$

where as usual $r_h = \frac{a_h}{y}$ denote the aspiration ratio but is now endogenous. Notice that while dispensing with multidimensional aspirations, we have retained two dimensions

of investment (x, t) , analogous to the model of the previous section. Think of t as the fraction of time spent in inter-group violence, perhaps by participating in collective action. A group leader could choose or suggest t to his group members. One effect of such collective action is that it might reduce per-capita group incomes μ_m for the rival group, and in so doing, make the returns to economic investment more worthwhile for h -group members. Or by conferring direct satisfaction by engaging in cross-group violence, it could directly lower the aspirational threshold and increase utility for h -group members. Either specification can be captured by presuming that $a_h = \Psi(\mu_m, t)$, where t is the declared time investment by a group leader for each member of his community, and Ψ is an increasing function of μ_m but a declining function of t . The implications of such a model are simple, yet quite rich and instructive:

(i) Begin by thinking of the h -group as very poor, with failed aspirations. Then time spent in bringing the other group down will do little to alter the state of aspirations failure. So for group poverty above a particular threshold, there will be an aspirations failure with low economic investment, and in addition little or no collective action for instrumentalist purposes.

(ii) Relatively richer groups may still be in a state of aspirational failure — recall that for this to happen, it is in no way necessary that the rival group be richer than they are. Now, with collective action that could tip aspirations from one zone to another, they will engage in violence, and indeed, as long as that violence is effective, it will continue to increase with increases in rival income. At the same time:

(iii) For relatively richer groups, an increase in own income will reduce violence directed against a rival group.

This model establishes a strong instrumental basis for scapegoating, one grounded in economic circumstances. The implications of this theoretical work are not merely speculative or unobservable, and with more structure can be taken profitably to the data. Mitra and Ray (2014) empirically examine the connections between Hindu and Muslim incomes (hence the indices h and m in this section) and subsequent episodes of religious violence. They exploit implications such as those in (i)–(iii) above to draw implications for the group identity of perpetrator and victim in religious conflict in India.

5.4. Fertility. Becker (1960) conjectured that parents derive utility from both the quantity and the “quality” of children that they have, and formalized this idea in Becker and Lewis (1973). From this seminal paper has emerged a large literature studying the effect of income and prices on fertility and human capital investment (see, e.g., de la Croix and Doepke (2003), Jones, Schoonbroodt, and Tertilt (2010), Mookherjee, Prina, and Ray

2012, and Doepke 2015). However, this literature largely misses the effect of relative income and aspirations on fertility. Richard Easterlin (1978) stressed the importance of the ratio between achieved income and aspirations for determining fertility, which spurred a large empirical literature in sociology (Macunovich 1998). This section uses our framework to incorporate aspirational considerations into the determination of fertility.

As Jones, Schoonbroodt, and Tertilt (2010), de la Croix and Doepke (2003) and others have observed, it turns out that even in the absence of aspirations the relationship between fertility and income very much depends on the assumptions made on the preferences and the nature of the costs of children (time versus money, fixed versus variable costs). Since our objective is to highlight the effect of aspirations per se, we superimpose our linear model of aspirations onto a deliberately simple specification of parental preferences.

Assume that, for a given wealth y and aspirations a , parents choose the quantity of children n and human capital z for each to maximize

$$(8) \quad \frac{1}{1-\sigma} \left(y[1-kn] - n\frac{z}{\rho} \right)^{1-\sigma} + \frac{n}{1-\sigma} [z^{1-\sigma} + (\max\{z-a, 0\})^{1-\sigma}]$$

where k is a time cost and z/ρ is the monetary cost of human capital z , both expressed per child. In principle, the investment in each child could be asymmetric — some with high z and some with low z — and in fact this could well be the case when fertility is exogenous, because of the non-concave nature of parental payoffs. But it is possible to show that in general, *once* fertility choices are taken into account, parents will treat all children equally. We omit the details here. With this in mind, we can divide through by y in (8) and equivalently have parents choose the *ratio* $g \equiv z/y$ as well as the fertility rate n , for each given value of the aspirations ratio $r \equiv a/y$:

$$(9) \quad \frac{1}{1-\sigma} \left([1-kn] - n\frac{g}{\rho} \right)^{1-\sigma} + \frac{n}{1-\sigma} [g^{1-\sigma} + (\max\{g-r, 0\})^{1-\sigma}].$$

The first-order conditions to this maximization problem are given by

$$(10) \quad (1 - n[k + g/\rho])^{-\sigma} [k + g/\rho] = \frac{1}{1-\sigma} [g^{1-\sigma} + \max(g-r, 0)^{1-\sigma}]$$

$$(11) \quad (1 - n(k + g/\rho))^{-\sigma} \frac{1}{\rho} = \frac{1}{1-\sigma} [g^{-\sigma} + \max(g-r, 0)^{-\sigma}],$$

where the first of these is the condition with respect to the fertility rate and the second is the condition corresponding to the choice of g .

There are therefore up to two candidate solutions: a pair $(\underline{n}, \underline{g})$ that solves the first order conditions (10) and (11) when aspirations are frustrated and a pair $(n(r), g(r))$ that solves these conditions when they are satisfied. As r increases, the benefit of a satisfied child decreases while the marginal benefit from investing in education beyond r increases. Hence, $n(r)$ and $g(r)$ are respectively decreasing and increasing in r .

For sufficiently high aspirations ratio r , aspirations are necessarily frustrated. In this case, income does not matter and individuals choose a constant number of children:

$$\underline{n} = \frac{\sigma}{k} - (1 - \sigma)\rho^{\frac{-(1-\sigma)}{\sigma}};$$

and invest a constant share of income on each child:

$$\underline{g} = \frac{1 - \sigma}{\sigma}\rho k.$$

There is a threshold aspiration ratio r^* below which aspirations are satisfied. As we cross this threshold, the investment per child increases while the number of children decreases. As we further lower r , fertility increases while the share of income invested per child (but not absolute investment) decreases.

Recall our earlier observation that under assumptions (A.1)–(A.3), the aspirations ratio declines as we move up the cross-section of incomes. This observation can be invoked along with the specific analysis here to yield the following proposition:

There is a threshold level of income y^ below which aspirations are frustrated and above which they are satisfied. Aspirational effects results in a sharp decrease in fertility around y^* followed by a gradual increase in fertility for incomes above y^* .*

Frustrated individuals constitute the poorest segment of the society and aspirational effects are negligible. However, parents for which aspirations are within reach reduce their number of children in order to invest more in “quality per child.” Richer parents, for whom aspirations are easier to reach, can indulge in the benefit of additional aspirational utility from the number of children that they have. Hence, both the quantity and the quality of children are then increasing in income. This is consistent with recent evidence of a positive effect of income on fertility (see, for instance, Black et al. 2013 and Lovenheim and Mumford 2013). The following example illustrates our findings:

Example. Assume a uniform distribution of income over $[20, 800]$ and common aspirations set at the mean. Let the fixed cost of children in time be $k = 0.3$ and the return on z be $\rho = 1.6$. The ces utility parameter is $\sigma = 0.8$.

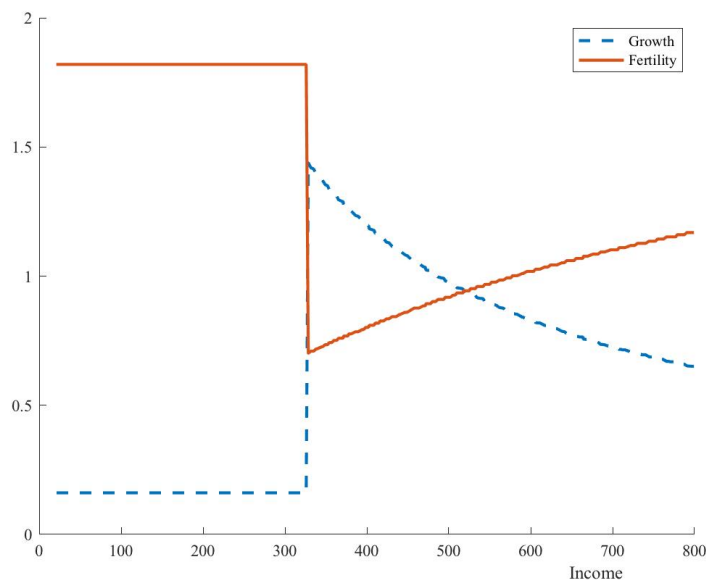


Figure 9. Fertility and Income

We see in Figure 9 that the poorest segment of the population is frustrated, invest little and has around 1.8 children. In the middle of the distribution, individuals whose income reaches a bit more than 300 sharply reduce their fertility and invest much more in human capital for their children. Considering even richer individuals, we see that the fertility increase and investment in human capital come down with income but will remain lower and higher respectively than the quantity and quality of the poorest segment of the population.

This model makes testable predictions about the overall distribution of income and fertility patterns along the cross-section. For years, a negative cross-sectional relationship between income and fertility has been documented (see Jones and Tertilt 2008), but this has changed in recent years. Bar et al. (2018) document a flat, or even a somewhat U-shaped relationship between income and fertility between 1980 and 2010 in the US, a time of increasing inequality, as the rich increased their fertility. They argue that, with the marketization of child care, rising inequality allows parents to substitute for parental time costs. That can explain the changing relationship between income and fertility. It is an open question as to how much of this changing relationship between inequality and fertility can be explained using aspirational considerations instead.⁸

⁸In Korea, fertility is positively related to family income, especially in recent cohorts. Kim, Tertilt, and Yum (2019) argue that status concerns leads parents to under-invest in quantity and over-invest in education simultaneously.

5.5. Aspirations Management. In the standard model of Section 5.1, an individual's aspirations are determined by the society he lives in and his position in it. However, as discussed in Section 4.3, people do engage in aspiration management in various ways. Some strategies take the form of self-help such as meditation or therapy sessions to lower one's aspirations. Other strategies consist in consciously reducing one's exposure to affluent lifestyles by changing one's media consumption, location, or social network. This section extends our framework to capture this possibility by allowing individuals, who would otherwise have level a level of aspiration as described in Section 2.2, to take costly actions to lower their aspirations.

In particular, assume that aspirations management requires resources that are proportional to one's income (e.g. taking time off). In this case, an individual who would otherwise have an aspirations ratio of $r = a/y$ would choose both his investments in aspirations management t and in economic achievement $g = z/y$ to maximize

$$\frac{1}{1-\sigma} \left(1 - \frac{t}{\alpha} - \frac{g}{\rho}\right)^{1-\sigma} + \frac{1}{1-\sigma} g^{1-\sigma} + \frac{1}{1-\sigma} (\max\{g - r(1-t), 0\})^{1-\sigma}.$$

Naturally, individuals who anyway end up frustrated in this framework would not "waste" resources in aspirations management. Only individuals who can satisfy their reduced aspirations would invest in aspirations management. It is also easy to show that:

If a satisfied individual with income y does not invest in aspiration management then any individual with a higher income $y' > y$ will not as well.

It implies that the cross-section can be divided in three segments (some potentially empty). First, there is the poorest segment of the population who is frustrated and does not invest in management, then a segment that invests in aspirations management and satisfies their reduced aspirations; and finally a richest segment which is satisfied without managing their aspirations. This is illustrated in the following example:

Example. Assume a uniform distribution of income over $[20, 800]$ and aspirations set at the average between one's own income and the mean income in society. Let $\rho = \alpha = 1.1$. The ces utility parameter is $\sigma = 0.8$.

5.6. Risk-Taking. As already discussed in some detail, the possibility of a sudden jump from satisfied to frustrated aspirations stems from the non-concavity of payoffs that are naturally induced by aspirational thresholds. Such payoffs can also be used to develop a theory of risk-taking with testable predictions. The fact that non-concavities in payoffs can lead to risk-taking is, of course, a textbook observation, but the more important point is that such non-concavities are often the consequence of relativistic comparisons. For

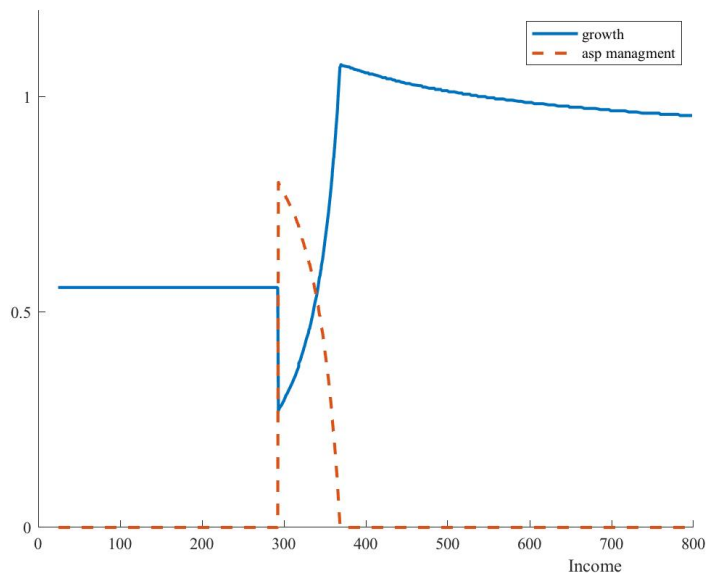


Figure 10. Aspirations Management

instance, Robson (1992) and Ray and Robson (2012) explore the implications of rank-dependent status comparisons for risk-taking. When preferences for status are induced in this way, any bunching of the population at particular points on the wealth or income distribution can lead to large gains for those who manage to leapfrog them, if only by very little. Consequently, as Ray and Robson (2012, p. 1506, 1518) write:

“Friedman and Savage (1948) reconciled the simultaneous demand for insurance and lotteries by arguing that the former alleviates downside risk and the latter exploits upside risk. They studied a von Neumann-Morgenstern utility function that is first concave, then convex, and finally again concave. . . Our main result delivers the Friedman-Savage findings with no assumption at all on the curvature of utility in status. Moreover, the concern with *relative* consumption creates similar patterns of risk-taking and risk-avoidance across environments with varying wealth levels. . . It is of interest is that this phenomenon — risk-aversion at the extreme ends of the distribution coupled with risk-taking elsewhere — arises ‘naturally’ in an environment where utility depends on status. There is no need to depend on an *ad hoc* exogenous description of preferences and distributions for an explanation.”

It is evident from this quote that Ray and Robson (2012) were concerned specifically with the cross-sectional variation in risk-taking over the wealth distribution. But the theory of aspirations is well-suited to addressing other empirical aspects of risk-taking as

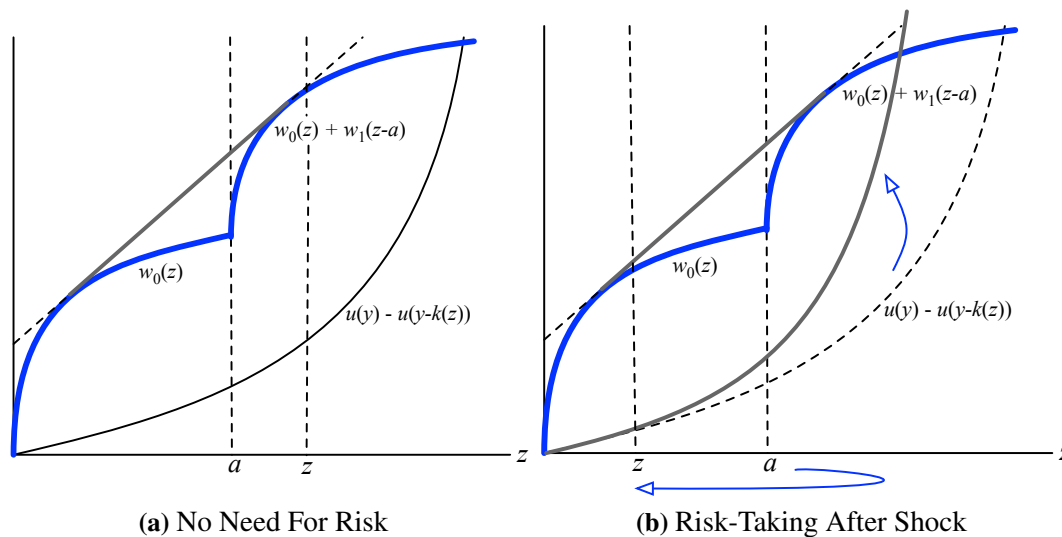


Figure 11. Risk-Taking with Sticky Aspirations.

well. Figure 11 displays the consequences of a sudden loss to income or wealth, say, on the stock market. In panel A, wealth is high enough so that the choice of “continuation wealth” z satisfies aspirations. Moreover, it is large enough so that concavifications of payoff induced by lotteries confers no additional benefits. (Lotteries allow the attainment of expected payoffs on the line segment joining the two humps of the payoff function.) Thus risk-taking is low — it is zero in this example.

Now, if there is a sudden loss in wealth, it is tantamount to the upward and leftward shift of the cost function, because the same amount of current consumption now entails a larger utility loss. If aspirations do not adjust immediately — perhaps because of the echoing weight of past aspirations — then, *assuming* no risk-taking, there will be a downward drop in continuation wealth as in panel B, just as we discussed in Section 3.2. But now the set of available lotteries does make a difference. The resulting concavification they induce to the right of z — see panel B again — can induce the agent to continue investing, but that investment will be only attractive to her (ex-ante) if it involves an upsurge in risk-taking. If, as time goes by, aspirations also adjust downward, it is possible that this surge in risk-taking will subside, as the higher cost of investing is now balanced by more reasonable aspirations regarding future wealth.

We observe that our predictions are consistent with Fafchamps, Kebede, and Zizzo (2015), who find in an experiment that, controlling for their past earnings, subjects take more risk when they currently receive a low amount (and when others win more).

Another sort of exercise that can be performed in this context has to do with the types of lotteries that individuals will want to take up.⁹ The classic lottery has a large prize that pays off with small probability: these are the typical lotteries that are run by governments. In contrast, a lottery that was in vogue in India at some point could be referred to as a single digit lottery. A number is drawn from the digits 1–10. In 9 cases out of 10 you win (the gain is small but positive). If the tenth, pre-assigned digit appears, you lose the entire principal. These lotteries are smaller, and you could buy into them in many Indian towns or villages. Because of the high probability of a small win — and the attendant low probability of a bad loss — individuals are known to deeply leverage themselves for such low-digit lotteries. The vast majority would come through with wins, thereby fueling the popularity of the lottery. The small minority who lost, did so very badly. These lotteries, often run by local governments to raise cash, have largely been declared illegal. In 1995, the *Washington Post* described the situation thus:

“The lottery games, usually named for Hindu gods and goddesses, have become a \$16 billion business, feeding cash-starved local governments and holding out promises of riches to poor and low-caste people who, in Indian society, have little hope of ever earning more than a few dollars a day. But social workers and a growing number of politicians say the explosion in government-run lotteries in recent years has dramatically increased social problems among the country’s poorest inhabitants, thousands of whom are risking jobs, families and – in some cases – their lives in the quest for wealth . . . While ticket-buying frenzies generally occur in the United States only when multimillion-dollar pots are at stake, frenetic buying binges are a daily occurrence on the street corners of most major Indian cities and towns. Often the crowds at the rows of lottery vendors are large enough to cause major traffic jams.”

In small communities with relative equality among the relevant groups, incomes are clustered and so are aspirations. Therefore getting ahead with a small win is akin to getting ahead by a lot, because it does not take much to cross the aspiration threshold. Therefore the focus is on relatively small wins with relatively large probability: the probability of a win gathers precedence over the size of the win. In larger communities with substantial inequality, aspirations can significantly exceed current economic circumstances. Now the focus is on the size of the win, rather than the magnitude of the probability, because small wins have no aspirational significance at all. It is therefore easy to construct an aspirations-based model in which the usual low-probability

⁹The discussion that follows is based on work in progress by Tommaso Bondi and Debraj Ray.

lottery emerges as an equilibrium under high inequality, while high-probability low-win lotteries emerge in smaller, relatively more homogeneous communities.

Schwerter (2019) provides some experimental evidence for this conjecture. Subjects are given the earnings of a peer subject and asked to make a binary risky choice, with low payoff equal to zero and high payoff a declining function of the chosen win probability. Thus subjects can choose across lotteries that approximate single-digit lotteries or standard lotteries, and others in between. Schwerter finds that subjects exposed to lower peer earnings choose lotteries with small upsides — but a higher win probability.

6. CONCLUSION

The goal of this paper has been to review the literature on aspirations in economics and in doing so, to describe promising directions for future research.

We began by developing a multi-dimensional version of Genicot and Ray (2017). In this theory, socially determined *aspirations* act as a reference point for individual investments, and, ambient society affects individual preferences through the determination of goals. Those goals serve as dividing lines between achievement and failure. Individuals are inspired to cross those lines, but failure to do so leads to frustration. This dual nature of aspirations — that they can inspire, but with a large enough gap, they serve to frustrate — lies at the heart of the theory we develop. We apply our framework to a variety of other phenomena: the evolution of inequality and growth, aspirations with multiple dimensions, scapegoating, cross-group conflict, fertility choices, aspirations management and risk taking. We hope that this paper will spur many more applications of this simple but rich framework.

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APPENDIX