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Aspirations and Economic Behavior

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Abstract

This article 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. 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.

1. INTRODUCTION

The purpose of this article is not only 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* 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. (Frank 2005, p. C2)

Fortunately, this attitude has begun to change as economists have increasingly come to realize that preferences are deeply molded by the society in which individuals reside. The subliterature on aspirations posits that the distribution of characteristics in the "cognitive neighborhood" of an individual shapes their ambitions and goals, which in turn affect the evaluation of their 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 their reluctance to put in the utility function 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. We have

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, e.g., Veblen 1899, Bernheim 1994, Bagwell & Bernheim 1996, Fryer & Austen-Smith 2005, Moav & Neeman 2010, 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, e.g., Akerlof & Kranton 2000, 2011; Esteban & Ray 2008; Currarini et al. 2009; Mitra & Ray 2014); and
3. theories that emphasize the relativistic foundations of happiness or individual welfare (see, e.g., Duesenberry 1949; Van Praag & Kapteyn 1973; Easterlin 1974; Frank 1985, 1989; Cole et al. 1992; Clark & Oswald 1996; Corneo & Jeanne 1997, 1999; Frey & Stutzer 2002; Stutzer 2004; Luttmer 2005; Hopkins & Kornienko 2006; Ray & Robson 2012).

The theory of aspirations belongs squarely to this third class. Relativism enters the model 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 initially be fueled 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 influences individual outcomes via aspirations, and the latter give rise to the former simply by virtue of aggregation over all individuals in society. Such interaction has been highlighted, though from somewhat different perspectives, by Ray (1998, 2006) and Appadurai (2004) and analyzed in depth by Genicot & Ray (2017). Section 2 generalizes the framework of Genicot & Ray (2017) to propose a multidimensional 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 individuals themselves. 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, which denotes 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, affects one's aspirations. In addition, role-model programs or other interventions sometimes deliberately attempt to shape individual aspirations. Finally, aspirations can also to some extent be self-determined with the objective of motivating oneself by deliberately managing one's goals.

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 (see Ray 1998, 2006; Appadurai 2004; Dalton et al. 2016). The framework can also be brought to bear on the connections between economic growth and evolving economic inequality (Genicot & Ray 2009, 2017; Bogliacino & Ortoleva 2015); it can be deployed to think about socioeconomic mobility (Esteban et al. 2016); it can inform studies of violent conflict (Mitra & Ray 2014); or it can be used to think about appropriate goal setting (Schwenkenberg 2010, Besley 2015, Kearney & Levine 2016, Goux et al. 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 choices, 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.[1] 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, for example, the prospect theory approach developed by Kahneman & Tversky (1979), the personal equilibrium concept proposed by Kőszegi & Rabin (2006, 2007), or the habit formation models studied by Carroll & Weil (1994) and Overland et al. (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.[2] The concept probably goes back to Hoppe (1930) (see Frank 1941) and has spurred many developments (see, e.g., Michalos 1985, Lewin et al. 1994). Some of this

[1]Some 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.

[2]The 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" (Am. Psychol. Assoc. 2018). This is certainly in line with what we do here, though we emphasize a different set of determinants and outcomes.

literature is surveyed in the encyclopedia entry by Henne & 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 and their future-oriented investments—broadly conceived—will surely be affected.

To be more concrete, suppose that $\mathbf{y} = (y_1, y_2, \ldots, y_K)$ represents a vector of state variables for an individual (such as wealth, education levels, and health status), and $\mathbf{x} = (x_1, x_2, \ldots, x_L)$ is a vector of investments that can be deployed to achieve future values of the state variables $\mathbf{z} = (z_1, z_2, \ldots, z_K)$. An aspiration is a collection of thresholds $\mathbf{a} = (a_0, a_1, \ldots, a_K)$, to be thought of as levels of the state variables 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

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

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 $T(\mathbf{y})$ that 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 & 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, 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 defined on the excess e of that wealth over parental aspirations (see **Figure 1**). This is possibly the simplest model of aspirations that can be written down.

This simplest one-dimensional model can be extended without much harm. **Figure 2*a*,*b*** outlines a variant in which there is not only satisfaction when aspirations are met but also an active sense of disappointment (rather than a mere flat) when they are not. That imparts a more complex shape to the combined function (**Figure 2*b***), but, as we shall see, it does not substantially alter the central insight of this model. **Figure 2*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

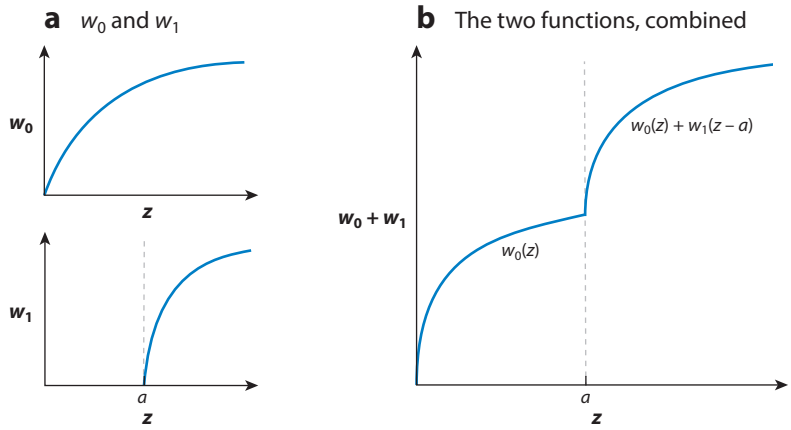

Figure 1

Aspirations along a single dimension. This figure describes aspirations and utility functions based on those aspirations. Panel *a* shows two components of utility, one defined on all values of wealth and the other defined only on those values that exceed aspirations. Panel *b* combines the two components. Figure adapted with permission from Genicot & Ray (2017); copyright 2017 Econometric Society.

thresholds, such as various education levels. We return briefly to this variant below (see also Ray 2016 for more discussion).

The multidimensional framework presented in this section has additional implications. Possibly the most important of these variations comes from the possibility that an individual may harbor not only 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 we can extend this framework to think about fertility choices in an aspiration-based

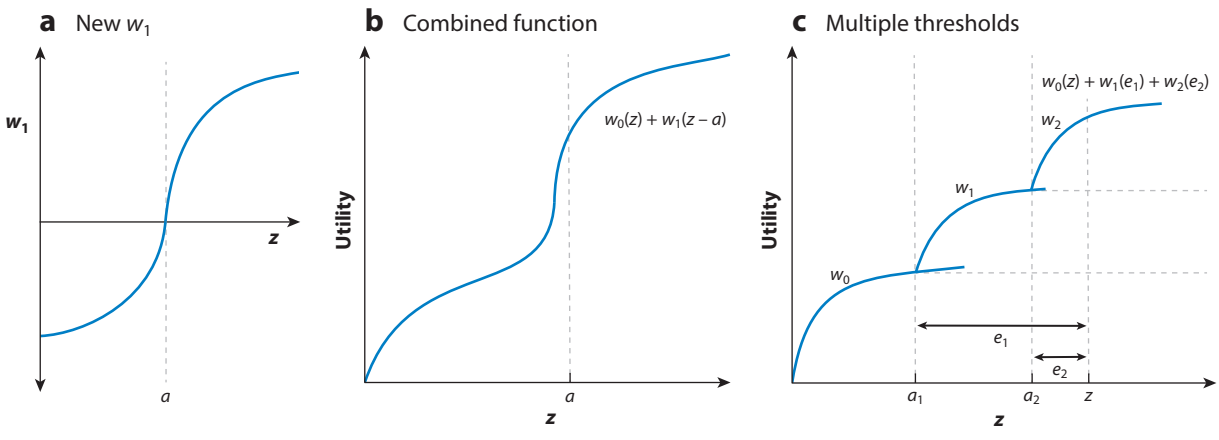

Figure 2

Variations on the baseline model. Panel *a* modifies the aspirational component of utility so that it declines with the extent of aspirational failure. Panel *b* combines the two components in panel *a*. Panel *c* depicts a variation with multiple aspirational thresholds.

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, e.g., Kahneman & Tversky 1979; Carroll & Weil 1994; Overland et al. 2000; Shalev 2000; Croix & Michel 2001; Kőszegi & Rabin 2006, 2007; Alonso-Carrera et al. 2007; Dalton et al. 2016). But the particular defining feature of the theory we describe here places the social determinants of aspirations on center stage.

Specifically, extending work by Genicot & Ray (2017), we assume aspirations to be given by

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

where $\mathbf{a}_{-1}$ stands for past aspirations and F for 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 also 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 them. Or $\mathbf{y}$ might define both the 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 & Ray 2017).

Assumption 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 $\Psi(\mathbf{y}', \mathbf{a}'_{-1}, F) \geq \Psi(\mathbf{y}, \mathbf{a}_{-1}, F)$.

Assumption 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 $\Psi(\mathbf{y}, \mathbf{a}_{-1}, F') \geq \Psi(\mathbf{y}, \mathbf{a}_{-1}, F)$.

Assumption 1 asserts that if our own circumstances improve (or if past aspirations are higher for the same current circumstances), then current aspirations are not lower. Assumption 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 & Ray (2009) and Bogliacino & Ortoleva (2015) model aspirations based on the expected future distribution of income. The use of the ongoing distribution has the advantage of allowing us to define an equilibrium in a recursive way, so that societal evolution is fully pinned down (see, e.g., Section 5.1); by contrast, the use of anticipated distributions will require taking some stand on how those expectations are determined. Such a story, if pursued seriously, could give rise to a rich description of equilibrium multiplicity and poverty traps.

The inclusion of past aspirations $\mathbf{a}_{-1}$ 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 the individual's current value of wealth or income to determine current aspirations. For instance, someone who has suffered a sudden loss in income on the stock market could still be hung up on their old aspirational levels. This could lead to excessive effort or risk taking in a bid to regain those past levels (see Section 5.6). Additionally, and now interpreting Equation 2 as

an updating rule for aspirations, $\mathbf{a}_{-1}$ could summarize one's past experience of failure or success at meeting even earlier aspirations.

The one-dimensional model, with $\mathbf{y}$ 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 $\mathbf{y}$ 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 the individual's income and group identity, as well as separate distributions (induced by F) over the incomes of each of the groups (we 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 Assumptions 1 and 2 yields the following testable implication: Happiness should decrease when the economic circumstances of others improve. This is a prediction shared by much of the literature on social status (see, e.g., Veblen 1899; Duesenberry 1949; Scitovsky 1976; Frank 1985; Cole et al. 1992; Robson 1992; Schor 1992; Clark & Oswald 1996; Corneo & Jeanne 1997, 1999; Hopkins & Kornienko 2006; Ray & Robson 2012).

A body of evidence confirms that higher society-wide incomes have a negative effect on individual reports of well-being, controlling for individual income. In the United States, 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 & Perez-Truglia (2017) show that an individual's expectation of their rank in society affects their location choice. Experimentally increasing the rank expectations associated with their earnings in a location (by citing the expected rank according to different surveys) makes graduating medical students more likely to apply for residency there.[3] In a lab experiment setting, McBride (2010) finds that social comparisons significantly affect reported satisfaction.

Researchers have found evidence of a preference for status using a variety of comparison groups, including coworkers (Clark & Oswald 1996, Clark & Senik 2010, Brown et al. 2012), siblings (Kuegler 2009), others sharing the same race and ethnicity (Davis & 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 & Oswald 2004), or others in the country (D'Ambrosio & Frick 2007, Di Tella & MacCulloch 2008a, Clark & Senik 2010). Clark et al. (2008) and Heffetz & Frank (2011) review this literature.

At the same time, aspirations formed according to Equation 2 also increase with one's living standards. This results in happiness adaptation, thereby attenuating the otherwise positive effect of an increase in one's own income. Stutzer (2004), Clark et al. (2008), and Di Tella & MacCulloch (2008a) hypothesize that happiness adaptation to income changes and social income comparisons is the main explanation 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, Frey & Stutzer 2002). Though Stevenson & Wolfers (2013) reassess this paradox and find that economic growth is associated

[3]Keeping everything else constant, Bottan & 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.

with rising happiness both across countries and over time within countries, this by no means contradicts the notion of happiness adaptation.

Direct support for such adaptation is offered by Di Tella & MacCulloch (2008b) and Di Tella et al. (2010), who observe a significant adaptation to income using German panel data. Knight et al. (2009) find 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 2012). Stutzer (2004) finds that higher aspirations are associated with lower happiness and that aspirations adapt in time to higher income for the person (see also Van Praag & Kapteyn 1973) or for their community. Studying the impact of a multicountry program providing housing improvements to extremely poor populations, Galiani et al. (2018b) find that the increase in subjective perceptions of well-being generated by the program dissipated quickly.[4] In a companion paper, Galiani et al. (2018a) also report that the program had raised aspirations among the nonrecipients of housing improvements, 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: that is, 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

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

Figure 3*a* 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 increasing and concave shape. The presence of some positive a ensures that w_1 begins after w_0, so that their sum inherits a double hump.

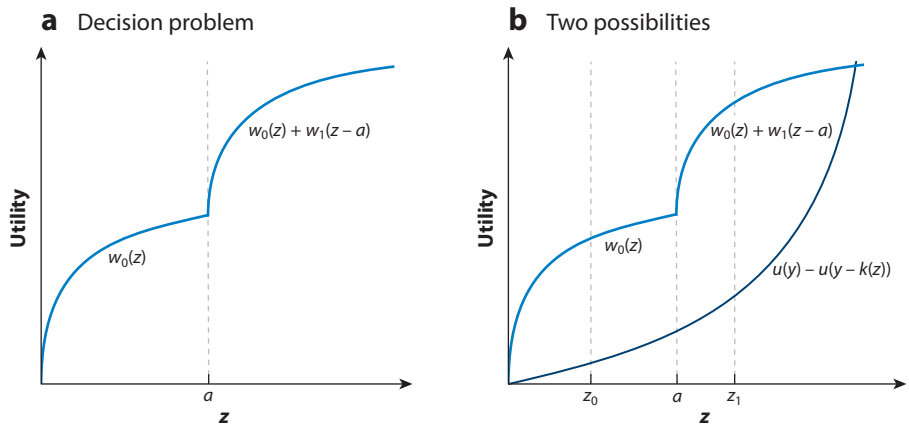

Figure 3

The instrumental role of aspirations. This figure depicts how an individual solves their decision problem. Panel *a* reproduces the utility function. Panel *b* shows the two possible candidates for an optimum. Figure adapted with permission from Genicot & Ray (2017); copyright 2017 Econometric Society.

[4]They find large increases in reported well-being 16 months after the receipt of improved housing, but 60% of that gain had dissipated 8 months later.

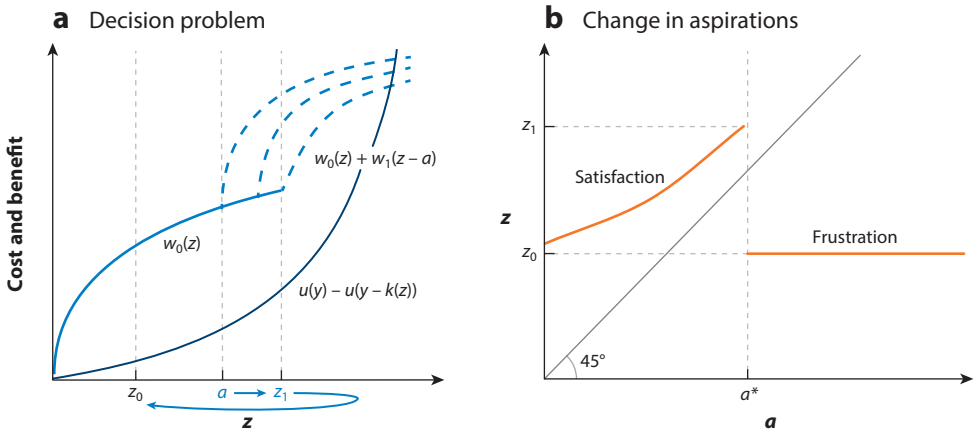

Figure 4

From satisfied to frustrated aspirations. Panel *a* shows how an increase in aspirations can initially raise investments whenever the upper candidate for an optimum is relevant, with a sudden drop to the lower candidate once aspirations cross a critical threshold (*blue arrows*). Panel *b* makes explicit the corresponding movement in continuation wealth as a function of aspirations. Panel *b* adapted with permission from Genicot & Ray (2017); copyright 2017 Econometric Society.

Figure 3*b* shows 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.

The solution to this nonconcave 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. In **Figure 4*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. **Figure 4*a*** summarizes this sequence, and **Figure 4*b*** charts the course of investment as aspirations climb. This transition is a fundamental starting point for the theory developed by Ray (2006) and Genicot & Ray (2017).

Augmenting the model by an additional sense of despair if aspirations are not attained will not change the basic nonconcave structure, and while the solution might be more complicated, it essentially has the same features. **Figure 5*a*** replicates the observation in **Figure 4**, while **Figure 5*b*,*c*** describes two extensions introduced in **Figure 2**. **Figure 5*b*** incorporates despair if aspirations are frustrated and shows how investment can then react negatively to increased aspirations. In **Figure 5*c*** there are several aspirational milestones. We see that phases in which increased aspirations continue to inspire are interrupted by drops in investment when an aspirational threshold cannot be reached. Extending the model matters, but it does not detract from the potential transition from inspiration to frustration.

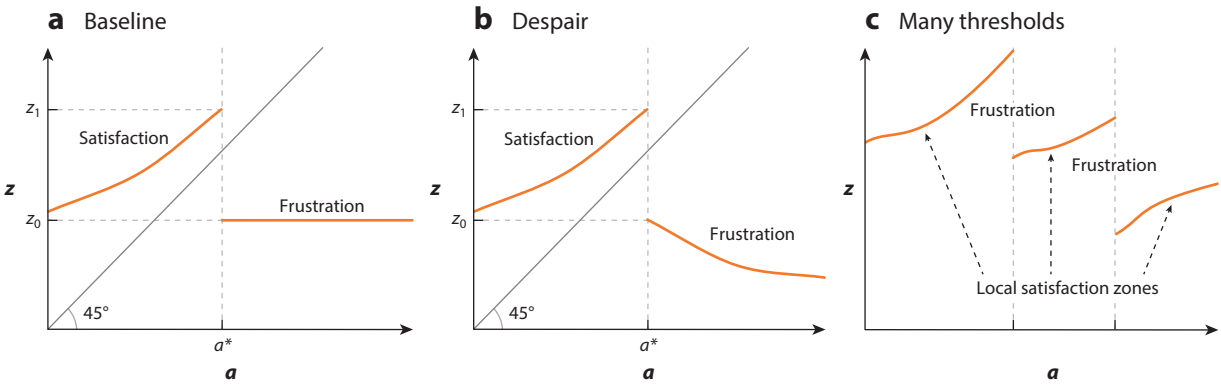

Figure 5

From inspiration to frustration: extensions. Panel *a* reproduces the baseline case. Panel *b* extends this to the aspirations model in **Figure 2*b***. Panel *c* extends this to the aspirations model in **Figure 2*c***. Figure adapted from Ray (2016).

Evaluating the effect of aspirations on incentives is a challenging and extremely interesting line for empirical research. Our observations on the nonmonotonic response of incentives to aspirations find an immediate parallel in the education literature. On one side of the inverted-U curve, Carlana et al. (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 targets high-achieving immigrant students by 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 by affecting teachers' recommendations. On the other side of the predicted curve, Goux et al. (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 the aspirations of low-achieving students 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 be 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.

In a similar vein, it has been observed that some students (in particular, working-class students) tend to hold high aspirations that are beyond what the labor market can support. This has led researchers to question the assumption among politicians and policy makers that raising aspirations necessarily enhances educational achievement (Clair & Benjamin 2011, Carter-Wall & Whitfield 2012, Gorard et al. 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., Lockwood & Kunda 1997, Heath et al. 1999, Berger & Pope 2011). Children who age into the next competitive bracket in swimming are discouraged (i.e., they swim slower) when facing faster competition (Bernhardt & Bottan 2019). To cite just one example from social psychology, LeBoeuf & 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; conversely, 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 inverted-U 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 age 19: human capital levels, household expenditure on education in total, and household expenditure on the child in question. Similarly, Janzen et al. (2017) find 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 (see 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 the government or NGOs. They find that their intervention had a motivating effect on savings, the use of credit, school enrollment, and parental spending on the schooling of children. Similarly, Riley (2017) finds that viewing a film featuring a potential role model has a motivational effect. 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 notions of beliefs and aspirations is made by Mukherjee (2017), who reports on a field experiment in India to identify the causal effects of having high or low aspirations on actual outcomes. Subjects were asked about both educational aspirations and beliefs regarding performance, but the order in which these questions were asked was randomized across subjects. Aspirational questions that were asked prior to belief questions received 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 the housing improvement program mentioned earlier, Galiani et al. (2018a) find that the program raised aspirations, but not expectations, among the nonrecipients, and they report no investment effect on their part.

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

4. SOCIAL AND PERSONAL CONTROL OVER ASPIRATIONS

To some degree we have placed the determinants of aspirations into a black box, by asserting that they depend mechanically on current individual state variables, past aspirations, and the social distribution. For some questions of interest, however, 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 deliberate attempts.

4.1. Involuntary Factors

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 themselves, they 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 consider. In this approach, the poor are stymied and frustrated by the impossible thresholds that cinema, television, and social media—or simply the everyday evidence in front of their eyes—mercilessly array before them. These thresholds are high relative to what they can achieve, and they may not be controllable. In this sense it is not the capacity to aspire that has failed them, but rather the capacity to react 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 even if the more affluent sections of society were somehow removed. If, on the other hand, an aspirational failure is a despairing reaction to the demanding standards that an unequal society can impose, then the environment over and above poverty itself would indeed matter. The latter is the position we take here.

With respect to the nonpoor, consider the following examples. If Jane, an investor, had high aspirations as a result of high wealth, and suddenly lost 50% of it on the stock market, 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 recalibrate her goals, and to some extent this may be successful, but it is also the case that some of her psychological reactions 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—one in which there is a small distance between individuals—may create achievable role models: Because the next person is just one step ahead, even moderate investments can bridge that distance and bring a sense of achievement. A polarized distribution, on the contrary, is deeply conducive to a sense of hopelessness, as the lives of those who are better off do little by way of inspiration. 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 one's individual achievements affect aspirations generates an externality for others, for that person's children, or even for their future self, which the person 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 one's actions on one's subsequent aspirations is a central theme explored by Dalton et al. (2016). Consistent pairs of efforts and aspirations can be suboptimal 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 of these channels 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, they might only place weight on richer individuals when forming their aspirations, which means that the set of individuals they become exposed to as they become richer changes systematically.[5] As societies tend to be geographically and socially segregated, such 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.

Third, extending this idea, a broader or narrower cognitive window can have decisive effects on aspirations, as discussed by Ray (2006) and Mookherjee et al. (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 & Kranton 2000). There is supportive evidence that ethnicity plays an important role in aspirations (Gutman & Akerman 2008, Carlana et al. 2018). In an experimental context, McBride (2010) similarly finds that subjects choose to compare themselves with similar subjects: Their reported satisfaction decreases with the earnings of other subjects most similar to themselves.

4.2. External but Manipulable Factors

The process of aspirations formation in Equation 2 is exogenous, but we can imagine that a number of external factors or policies could affect the inputs to the aspirations formation process or the function itself. 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 & Oster (2009) argue that cable television significantly changed gender attitudes in rural India—and for the better. La Ferrara et al. (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. They find that women living in covered areas have lower fertility. Hyll & Schneider (2013) similarly exploit spatial variations in coverage of TV programs between the Federal Republic of Germany and 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), Riley (2017), and Lybbert & Wydick (2018) make explicit use of films featuring role models to increase aspirations. But of course, social or mass media are not the only way of creating role models. Material interventions can do so as well. Macours & Vakis (2014) find complementarities between transfers to households in Nicaragua and the presence of local

[5] Genicot & Ray (2017) study such upward aspirations by setting aspirations as equal to the conditional mean among all richer individuals.

role models, who had been 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 et al. 2012, Garcia et al. 2016 for conditional cash transfers; Galiani et al. 2018a, 2018b for housing interventions; and Wydick et al. 2013 for child sponsorships).

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, on both economic and noneconomic fronts. Specifically, there are concerns that such attempts are often carried out by sharpening the salience of ethnicity and playing identity politics (Akerlof & Kranton 2000).

4.3. Deliberate Factors

So far the aspirations process has left no room for individual control. 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 some degree of social withdrawal—all familiar endeavors in developed countries—but it could also involve a number of conscious decisions to change one's exposure to the most affluent lifestyles. Bottan & 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 aspirations management.

The above arguments have to do with the intrinsic effects of aspirations. Another reason individuals may want to modify their aspirations is that they want these to have instrumental effects on their own incentives or on the incentives of their progeny. These effects can be captured by 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) and 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 the one advanced by Bisin & Verdier (2001), where the parent-child relationship provides a transmission of the family cultural values and norms to children. This shapes the child's aspirations, career choices, and propensity to pursue additional education or other achievements.

4.4. The Problem of Identifying Aspirations

A growing literature in education 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 et al. 2020). As a result, these studies often first ask someone about their expectations regarding a particular outcome, and then they ask about that person's aspirations for the same outcome or some proxy thereof. For instance, Stutzer (2004) uses questions about the income considered sufficient by a household, as opposed to the absolute minimum needed.

According to Reynolds & 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, e.g., Stutzer 2004, Gutman & 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, Michalos 1985, Lewin et al. 1994) that we explicitly allow for in our framework. 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 et al. (2018) show that urban retail shop owners in Jakarta, Indonesia, lower their aspirations to more realistic levels after failing to meet them (see also Haller 1968). Another example is offered by Azmat et al. (2020), who show that female lawyers who experienced discrimination early in their career tend to have lower aspirations and to 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), in the study mentioned above, observes that reported aspirations respond to priming. She finds that subjects who are asked about expectations prior to being asked about aspirations 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, higher aspirations may lead to lower test scores.

5. SOME IMPLICATIONS OF THE THEORY

We 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 often consider a special case of our model that we call the constant elasticity model and has the following two components: (*a*) The production function that maps investments $\mathbf{x}$ into outputs $\mathbf{z}$ is linear, and (*b*) all utility terms (u and w_l) exhibit constant elasticity, with the same elasticity $\sigma < 1$ for each utility indicator.

5.1. Growth and Inequality

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

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

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

Assumption 3 (linear homogeneity). If all incomes go up by the same proportion, then aspirations rise by the same proportion.

Assumptions 2 and 3 can be combined to show that the aspirations 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.[6] 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

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

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

Dividing Equation 3 throughout by y, we show that parents can be viewed as effectively choosing a growth factor $g \equiv z/y$ that maximizes

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

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^* (i.e., from "below") grow the fastest, but even the most complacent individuals with low aspirations ratios grow faster than they would if they were to be frustrated:

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

Now combine the inequality in Equation 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:

1. There is an initial segment of poor people (possibly empty) for whom growth rates are at the lowest level $\underline{g}$.
2. As levels of wealth 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.
3. For still higher levels of wealth, aspirations ratios are lower, and so, by Equation 5, the growth rate falls with wealth, yet it always remains higher than $\underline{g}$.

Frustrated individuals constitute the lowest segment of the population. Richer individuals, with lower aspirations ratios r, satisfy their aspirations. Their continuation wealth grows by a strictly higher growth rate $g(r)$, with that of individuals closest to r^* growing the fastest. This is illustrated in **Figure 6**.

In the textbook version of this model without aspirations, balanced growth would result, and therefore inequality would remain constant. In contrast, Genicot & Ray (2017, proposition 7) show that if aspirations respond positively to an increase in society-wide incomes and investments are profitable, there are only two possible outcomes: convergence to an equal distribution with

[6]There are notable exceptions to this observation, stemming from a possible failure of Assumption 2, but we refrain from a discussion here (see Genicot & Ray 2017 for more details).

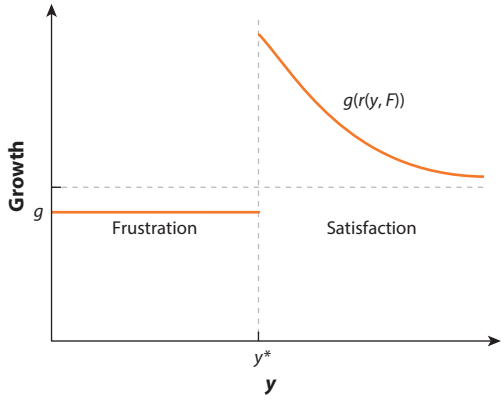

Figure 6

Growth factors as a function of initial wealth. This figure shows how rates of growth change with wealth over the cross-section of the wealth distribution. Figure adapted with permission from Genicot & Ray (2017); copyright 2017 Econometric Society.

growth (when the initial income distribution is equal enough) or ever-expanding inequality (when the initial distribution is unequal).

5.2. Consolation Prizes: Orthogonal Responses to Economic Inequality

As discussed 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 multidimensional 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 discussed so far. The second corresponds to achievement in another dimension. This second dimension, which we shall call superiority, could represent satisfaction from relatively harmless activities, such as sports or social activism, but could also capture darker pursuits such as cultural, religious, or nationalistic dominance (see Ray 2006). This second dimension is possibly also aspiration driven, but let us assume that aspiration levels in that dimension do not vary with income.

Let the achievements along the economic and the superiority dimensions be denoted by z and s, where z is a monetary investment and s denotes some fraction of potentially productive time, which therefore can also be thought of as a fraction of income lost by engaging in the noneconomic activity. Denote the corresponding aspiration levels by a_z and a_s. Our individual chooses $g_z = z/y$ and $g_s = s/y$ to maximize

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

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 raises the following question: Can high and rising economic inequality direct investments in orthogonal directions?

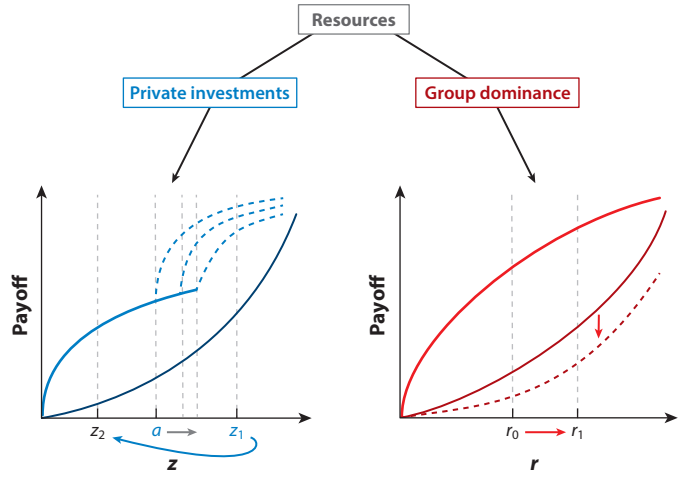

Figure 7

Orthogonal responses to high inequality. The figure shows how an increase in inequality could lead to a corresponding rise in aspirations along one dimension, triggering an aspirations failure on that dimension and generating investment flows into an orthogonal activity, such as cultural dominance.

To address this, 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. This time, however, due to the additional dimension, this is tantamount to a sudden freeing up of resources for orthogonal ends—i.e., for investment into the consolation prize. **Figure 7** summarizes this situation.

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 levels. The availability of another dimension such as group-based esteem, recognition, or even dominance (on cultural or religious grounds) could become salient precisely when inequality is high. 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, rather than drawing attention to the problem of inequality itself, tends to spark nationalistic, religious, or broadly group-based sentiments.

Recall that under our assumptions, aspirations ratios are decreasing in income. What does this imply for behavior along the cross-section of the income or wealth distribution? Consider an example with incomes uniformly distributed between values of 20 and 500 and economic aspirations set at the mean income. First, consider the culturally dominant group and assume that its 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, etc.) achieves satisfaction on that dimension. We see in **Figure 8** that over the income cross-section, superiority investments initially fall, dropping discontinuously as aspirations switch from failure to success; then they begin to rise again. Economic investments 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 Bó et al. (2018) argue that it is the worsening in relative economic standing of large segments of the population that paved

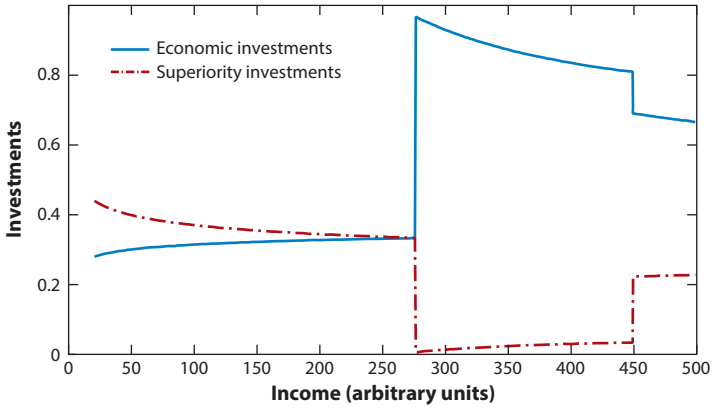

Figure 8

Orthogonal investments over the cross-section. This figure uses a numerical example to track investment in an orthogonal activity, such as cultural dominance, over the cross-section of incomes. Investment in that activity is high both at low incomes (because of an aspirations failure along the economic dimension) and at high incomes (if cultural superiority is a normal good), but low at intermediate levels of income. The blue curve shows the economic investments measured by the growth rate in income, while the red curve plots the superiority investment measured by the fraction of time spent in intergroup violence.

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 will pursue group dominance by means of monetary contributions, they might expend time and effort on such alternative 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 rather of satisfaction.

The exact same argument can be employed in reverse to show why outsider or minority groups might react to social exclusion by increasing their economic investments. If outsiders are entirely shunned, then there is an aspirations failure on the noneconomic front as far as they are concerned. Rather than supplying 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 United States (Black et al. 2007), women and lower castes in India (Munshi & Rosenzweig 2006, Luke & Munshi 2011), or Indians in East Africa (Adam 2010).

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 toward another group that is not the causal agent of the frustration. It is believed that groups that scapegoat others tend to occupy a low socioeconomic status in society and have little access to wealth and power. They are likely to be under prolonged economic insecurity or poverty, and they come to adopt shared outlooks and beliefs that can 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 (Fleming 2004). 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.

There is a small literature on scapegoating in economics. Theoretical work includes studies by Glaeser (2005) and Bramoullé & Morault (2017), 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 & Leigh 2009) and in Russia (Grosfeld et al. 2020) 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 be carried out entirely for economic gain, so that aspirations can 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 one, driven by an entirely noneconomic notion of gain or achievement, or the instrumental one, motivated ultimately by a desire for material gain—is the more relevant. It is not particularly insightful to claim the obvious, i.e., that both considerations possibly matter to some degree. So in this section we briefly explore the second approach.

Aspirations remain one-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 (and 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 particular 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 & Myaux (2006) show, in the context of rural Bangladesh, that own-religious-group fertility has a large effect on the fertility decisions of an individual couple, whereas 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 could principally matter for a person in any group. In short, μ_{-j} could be the principal determinant of a_j. This does not require the cross-group to be richer on average than the own group. For instance, as a member of group h, an individual might want to be 80% richer than the average member of group m, so that when the cross-group average changes, they could react to it even if that average is significantly lower than their income.

Let us return to a one-dimensional model of aspirations; writing it for a member of group h, we obtain

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

where as usual $r_h = a_h/y$ denotes 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 in the previous section. Think of t as the fraction of time spent in

intergroup violence, perhaps by participating in collective action. A group leader could choose or suggest t to their group members. One effect of such collective action is that it could reduce per-capita group incomes μ_m for the rival group, and in so doing, it could make the returns to economic investment more worthwhile for members of group h. Or, by conferring direct satisfaction for engaging in cross-group violence, it could directly lower the aspirational threshold and increase utility for members of that same group. 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 their community, and Ψ is an increasing function of μ_m but a declining function of t. The implications of such a model are quite rich and instructive.

1. Think 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, as well as little or no collective action for instrumentalist purposes.
2. Relatively richer groups may still be in a state of aspirational failure without violence—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 it is effective, that violence will continue to increase with increases in rival income.
3. At the same time, for even richer groups, an increase in own income will reduce violence 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 they can be taken profitably to the data. Mitra & 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 the three listed 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 he formalized this idea in a subsequent work (Becker & Lewis 1973). From Becker's 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 & Doepke 2003, Jones et al. 2011, Mookherjee et al. 2012, Doepke 2015). However, this literature largely misses the effect of relative income and aspirations on fertility. Easterlin (1978) stresses 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 de la Croix & Doepke (2003), Jones et al. (2011), 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 (e.g., 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

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

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 might have high z and some might have low z—and in fact this could well be the case when fertility is exogenous, because of the nonconcave nature of parental payoffs. It is, however, possible to show that in general, once fertility choices are taken into account, parents will treat all children equally. With this in mind, we can divide by y in Equation 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 $r \equiv a/y$. We obtain

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

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

$$\left(1-n[k+g/\rho]\right)^{-\sigma}[k+g/\rho]=\frac{1}{1-\sigma}\left[g^{1-\sigma}+\max\left(g-r,0\right)^{1-\sigma}\right] \text{ and} \qquad 10.$$

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

where Equation 10 is the condition with respect to the fertility rate n and Equation 11 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 in Equations 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 a 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 in 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 1–3, 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 result in a

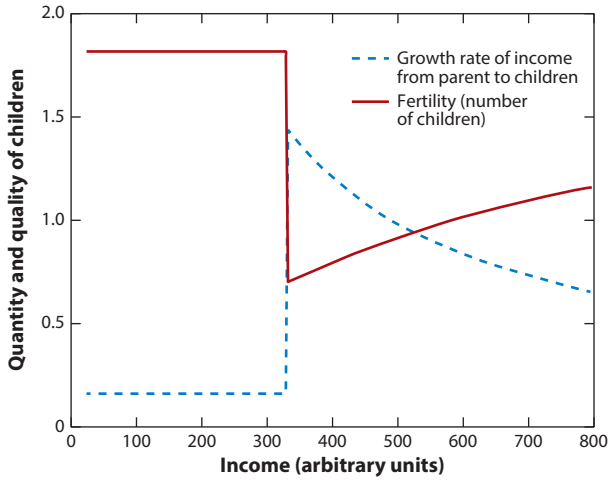

Figure 9

Fertility and income. This figure uses a numerical example to track fertility over the cross-section of incomes. With low incomes, there is an aspirations failure and fertility levels are high, with low child quality. At the point where aspirations are met, there is a sudden drop in fertility, followed by a possible rise thereafter if high-quality children are normal goods.

sharp decrease in fertility around y^*, followed by a gradual increase in fertility for incomes above y^*.

Frustrated individuals constitute the poorest segment of society, and aspirational effects are negligible. However, parents for whom aspirations are within reach reduce their number of children 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 increasing in income. This is consistent with recent evidence of a positive effect of income on fertility (see, e.g., Black et al. 2013, Lovenheim & Mumford 2013). The following example illustrates our findings.

Example 1. 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 constant elasticity of substitution (CES) utility parameter is $\sigma = 0.8$.

We see in **Figure 9** that the poorest segment of the population is frustrated, invests little, and has around 1.8 children per household. In the middle of the distribution, individuals whose income reaches a bit more than 300 sharply reduce their fertility and invest more in human capital for their children. Considering even richer individuals, fertility increases and investment in human capital comes down with income, but they remain lower and higher, respectively, than among 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, scholars have documented a negative cross-sectional relationship between income and fertility (see Jones & 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 in the United States between 1980 and 2010, 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.[7]

5.5. Aspirations Management

In the standard model presented in Section 5.1, an individual's aspirations are determined by the society they live in and their position in it. However, as discussed in Section 4.3, people do engage in aspirations management in various ways. Some strategies take the form of self-help, such as meditation or therapy sessions to moderate 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 a level of aspirations 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 their investments both in aspirations management t and in economic achievement $g = z/y$ to maximize

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

Naturally, individuals who would still 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 the following result: If a satisfied individual with income y does not invest in aspirations management then any individual with a higher income $y' > y$ will not as well—though, if Assumption 2 or 3 fails, this result could be overturned.

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

Example 2. 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 $\sigma = 0.8$.

The three segments that we described are clearly displayed in this example (see **Figure 10**).

5.6. Risk Taking

As already discussed in some detail, the possibility of a sudden jump from satisfied to frustrated aspirations stems from the nonconcavity 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 nonconcavities in payoffs can lead to risk taking is, of course, a textbook observation, but the more important point is that such nonconcavities are often the consequence of relativistic comparisons. For instance, Robson (1992) and Ray & Robson (2012) explore the implications of rank-dependent status comparisons for risk taking. When preferences for status are induced in

[7] In Korea, fertility is positively related to family income, especially in recent cohorts. Kim et al. (2019) argue that status concerns lead parents to underinvest in quantity and overinvest in education simultaneously.

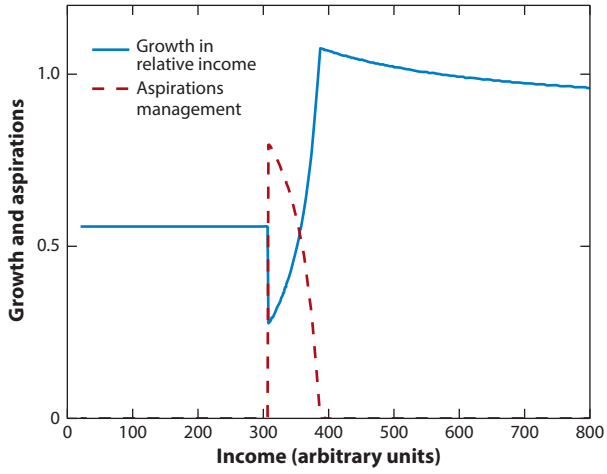

Figure 10

Aspirations management. This figure uses a numerical example to track the growth rate of income and time spent on aspirations management over the cross-section of incomes. There is no aspirations management effort at both low incomes (where aspirations are frustrated) and high incomes (where aspirations are easily satisfied). Individuals at intermediate income levels invest in aspirations management and satisfy their reduced aspirations.

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 & Robson (2012, pp. 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 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 & Robson (2012) are concerned specifically with the cross-sectional variation in risk taking over the wealth distribution. However, the theory of aspirations is well suited to addressing other empirical aspects of risk taking as well. **Figure 11** displays the consequences of a sudden loss in income or wealth, for example, on the stock market. In **Figure 11*a***, wealth is high enough that the choice of continuation wealth z satisfies aspirations. Moreover, it is large enough that concavifications of payofsf induced by lotteries confer 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 shown in **Figure 11*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 **Figure 11*b***

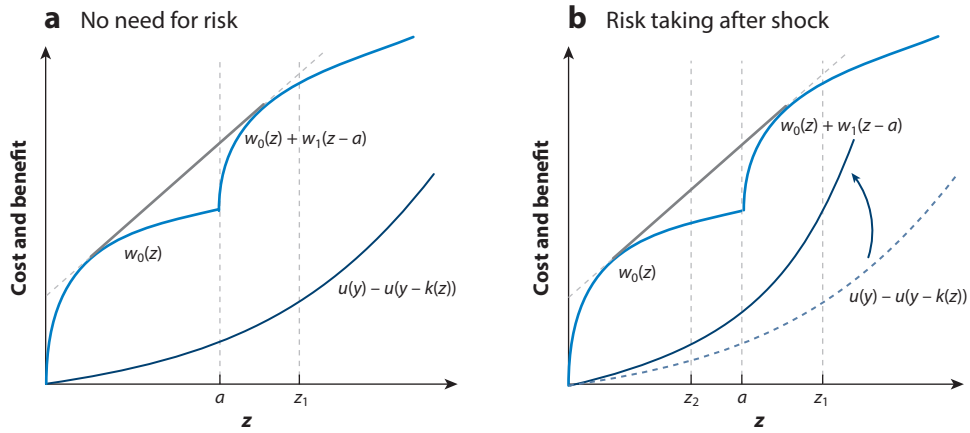

Figure 11

Risk taking with sticky aspirations. Panel *a* depicts a situation in which, despite the ability to take risks, an individual chooses a deterministic level of continuation wealth. Panel *b* shows that with a fall in current wealth, an individual might find it strictly optimal to take on risk.

again) can induce the agent to continue investing, but that investment will only be attractive to them (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 those of Fafchamps et al. (2015), who find in an experiment that, controlling for past earnings, subjects take more risk when they currently receive a low amount of income (and when others win more).

Another exercise that can be performed in this context has to do with the types of lotteries that individuals will want to take up.[8] 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, consider a lottery that was in vogue in India at some point, which could be referred to as a single-digit lottery. A number is drawn from the digits 1 to 10. In 9 cases out of 10, the bidder wins (the gain is small but positive). If the tenth preassigned digit appears, the bidder loses the entire principal. These lotteries are small, and one can 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—participation to such low-digit lotteries is very high. The vast majority of individuals come through with wins, thereby fueling the popularity of the lottery; the small minority who lose, do 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 as follows:

> 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. (Moore 1995)

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

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 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 equal to a declining function of the chosen win probability. Thus subjects can choose across lotteries that approximate single-digit lotteries, 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 article 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 multidimensional version of previous work by Genicot & 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—the fact that they can inspire, but with a large enough gap they serve to frustrate—lies at the heart of our theory. We have applied 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 review will spur many more applications of this simple but rich framework.

DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

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