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Behavioral Economics In Context

Applications for Development, Inequality & Discrimination, Finance, and Environment

By Anastasia C. Wilson

An ECI Teaching Module on Social and Environmental Issues in Economics

Global Development Policy Center
Boston University
53 Bay State Road
Boston, MA 02155
bu.edu/gdp

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Economics in Context Initiative
Global Development Policy Center
Boston University
53 Bay State Road
Boston, MA 02215
http://www.bu.edu/eci/

Email: eci@bu.edu

NOTE – terms denoted in **bold face** are defined in the **KEY TERMS AND CONCEPTS** section at the end of the module.

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1. INTRODUCTION

The field of behavioral economics applies psychological insights to understanding economic decision-making. Many of these insights go beyond mainstream economic models based on rationality to show how human psychological tendencies influence economic life, and may not always lead to perfectly rational choices. Further, social psychology shows how collective group dynamics and social contexts influence economic decisions. These insights have applications not only for individuals, but also for effective policy design and implementation. This module explores the applications of behavioral economics to four policy issues:

1. ***Economic Development***: For developing countries, understanding human psychology is crucial for effective policy design. Behavioral economics can help policy-makers understand the cultural and psychological contexts of issues such as poverty, use of public goods, implementation of new programs, and so on. Policies that are mindful of psychological and social contexts can be more effective both in terms of successful adoption and in overall costs. This module will look at several cases where psychological insights can produce cost-effective policies.

2. ***Inequality and Discrimination by Race and Gender***: Economic inequality is an issue of increasing concern to economists. Inequality exists both on the macroeconomic scale, in terms of broad income and wealth inequality, as well as in terms of race, ethnicity, gender, and other categories. Behavioral economics allows economists to better understand these forms of inequality based on how they relate to social norms, implicit bias, and psychological predispositions to inequality. Understanding how these inequalities manifest via psychology can provide important policy insights for ameliorating these social issues.

3. ***Finance and Economic Crises***: Behavioral economics has long been relevant to the world of finance. Even from the time of John Maynard Keynes, investor and consumer psychology has been key to understanding financial markets and crises. Keynes and other pioneering economists like Hyman Minsky were early contributors to what would later become the field of behavioral finance, showing the roles of investor psychology and uncertainty in contributing to the boom and bust cycles of a capitalist economy. We will review these historical insights, and overview the modern field of behavioral finance and its applications to understanding events such as the 2008 financial crisis, and preventing future crises.

4. ***Environmental Issues and Climate Change***: As climate change and environmental degradation become ever more pressing issues, leading to conflict, resource shortages, and other economic problems, behavioral economics can offer insights into understanding the causes and policy solutions to these issues. We will delve into understanding how issues of anchoring, time preference, and cognitive dissonance have prevented sufficient action on environmental and climate issues. Then, we will examine how framing and nudges can help us build effective and efficient policies towards a greener and more sustainable economy.

1.1 The History and Development of Behavioral Economics

We begin by developing a toolkit of concepts and principles in behavioral economics. This toolkit will provide the basis for looking at economic development, environmental issues, financial markets and crises, and inequality through the lens of behavioral economics throughout the module. First, we present a brief description of the historical development of the field of behavioral economics.

In 2002, two psychologists by training, Daniel Kanheman and Amos Tversky, won the Nobel Prize in Economics for their work on the role of psychology in economics, solidifying the importance of behavioral economics and breaking the barrier between the two social sciences. Their research spanned decades, beginning in the 1960s, using insights from the field of psychology to explore the validity of the neoclassical assumption of rationality. In neoclassical economic theory, it is assumed that economic actors are perfectly rational, calculating, utility-maximizing beings with perfect foresight into the future and the potential payoffs of each economic decision; this is known as the **rationality assumption**. Is this assumption realistic? While the rationality assumption may be useful in developing abstract mathematical models, in practice economists need a more realistic model of how people actually make decisions. Kahneman and Tversky's work began to develop a more realistic picture of economic decision-making based on the psychology of human behavior.

1.2 Behavioral Economics Toolkit: Fundamental Concepts and Principles

1.2.1 Prospect Theory: Evaluating Risk and Time

Many behavioral economists use experiments as a tool to better understand people's decision-making. The use of experiments is referred to as the subfield of **experimental economics**. Based on the results of their experiments, Kahneman and Tversky developed a new model of decision-making called prospect theory. **Prospect theory** describes how people make decisions given different probabilities of outcomes and taking into account how we perceive risk. In the neoclassical model, people with perfect information regarding risk can calculate the best possible decision which maximizes utility. But, in the real world, people evaluate decisions based on what they perceive to be the most likely outcome, and respond emotionally to the risk associated with each choice.[1]

A key insight of prospect theory is that people tend to value gains and losses differently in different scenarios. **Risk aversion** describes the tendency of people to generally avoid choosing a perceived risky option. Kahneman and Tversky found that people generally tend to be risk averse in most situations. For example, most people prefer a $10 payout with 50% probability of receiving it, versus a $100 payout with only a 5% chance of receiving it. We can calculate the expected value of each scenario by multiplying the payout by the probability that the payout occurs. In this case, the expected value in both scenarios are equal: ($10*0.5) and ($100*0.05) both equal $5.

[1] Kahneman, Daniel, and Amos Tversky. 1979. Prospect Theory: An Analysis of Decision under Risk. *Econometrica* 47, no. 2:263. doi:10.2307/1914185. https://www.jstor.org/stable/1914185.

One reason for risk aversion can be **loss aversion**, which describes the tendency to be more psychologically impacted by losses than by similar gains. **Time discounting** is another prospect theory insight that describes people's preferences for the timing of payouts or benefits. Time discounting describes our general tendency to value the present more than the far out future. Time discounting can violate the rationality assumption when it becomes excessive. For example, would you prefer to receive $5 now or $10 one year from now? Many may prefer $5 now, despite the clearer larger payout of the offer one year from now. This excessive time discounting violates rationality since waiting just one year does not necessarily pose a significant cost and would result in double the payout. However, many people would prefer not to wait.

1.2.2 Self-interest vs. Fairness

One common setup for an experiment is to ask participants to play a simple game involving decisions over money or resources. The **dictator game** has two or more participants. In the simplest setup with two individuals, one player is assigned to be the dictator. The dictator is given an amount of money or resources that they control. The dictator is then asked: how much do you want to contribute to the other player (with the dictator keeping the rest)? In a simple version, there are no consequences or stipulations for the dictator's choice, and the game is anonymous. So what do dictators choose?

According to the rational economic agent in neoclassical economic theory (often referred to as *Homoeconomicus*), the optimal choice is that which maximizes one's personal payoff. If the dictator is perfectly rational, then he or she will choose to contribute $0 to the other player. This choice clearly maximizes the dictator's share. Since this choice does not impose any costs on the other player, neoclassical economics would consider this outcome Pareto efficient—that is to say, making at least one player better off while making no other player worse off. But, in actual experiments, what do dictators tend to really choose?

To a neoclassical economist, the results are surprising. Participants tend to, despite no rational incentive, allocate some portion to the other person.[2] The motivation is usually that of fairness, as well as social norms. This result violates the rationality assumption of neoclassical economic models, but gives us a clearer picture of how people operate in reality. There are many other experiments that compare the predictions of neoclassical economics with actual results.

The **ultimatum game** similarly involves two or more players. Player 1 is given an initial endowment to split with Player 2, however Player 2 must agree to the split offer in order for both players to receive the payout, hence the name ultimatum. For example, Player 1 might decide how to allocate $50 between herself and Player 2. If Player 2 rejects the proposal, they both get nothing. A perfectly calculating, rational actor would offer the smallest amount, say $1 or even less, but evidence shows that many participants tends to offer something closer to half of the initial endowment.[3] Further, participants tend to reject offers that are highly unequal, even though this means they get nothing. This shows that many people have a preference for fairness. These simple games allow behavioral economists to better understand the social context of economic behavior.

[2] Forsythe, Robert. 1994. Fairness in Simple Bargaining Experiments. *Games and Economic Behavior* 6, no. 3:347-369.
[3] Ibid.

In addition to the general results above, some experiments have specifically compared the choices economics students make in these games to other people. The results suggest that economics students may behave more selfish than others. (See Box 1.)

BOX 1: DOES STUDYING ECONOMICS MAKE YOU MORE SELFISH?

Free Rider Experiment/Public Goods Game

One example of a game used in experimental economics is the Public Goods Game, also known as the free-rider experiment. In this game, players are given an endowment of money and are asked to allocate between: 1) a private account with a dollar-for-dollar return; and 2) a public account to be pooled then split amongst contributors with higher return. What would *homo economicus* do? A strictly self-interested strategy would be to only contribute to the private fund, assuming that all other players do the same. But, a more cooperative strategy would be to contribute all funds to the public account for a higher return. What happens in reality? "[Researchers] found that economics student contributed an average of only 20 percent of their endowments to the public account, significantly less than the 49 percent average for all other subjects."

Ultimatum Game

As mentioned previously, the self-interested strategy would be to offer the bare minimum to the other player—say just $0.01 of a $10 endowment is a rational offer for Player 1 to make and Player 2 to accept. Experimental results show that economics students were more likely to choose this self-interested strategy. But what are the results generally like? Many experiments show a generally fair split, with offers of about 40% or more, and rejection rates of about 16%. However, other research focusing just on economics students found that their behaviors more closely resembled the predicted outcome of very low ultimatum offers and very low rejection rates.

Charitable Giving

In one survey, researchers compared the charitable giving of economics professor to their colleagues in other disciplines. The research question was: do economics professors tend to "free ride"? Economic theory would indicate that free-riding is an optimal short-term strategy, as one would not need to bear the cost of charitable giving. Most people would find this to be anti-social and charitable giving has important benefits. However, researches found that, "Members of every discipline, even economics, fell far short of the prediction of the strong version of the free rider hypothesis. But the proportion of pure free riders among economists (that is, those who reported giving no money to any charity) was more than double that of any of the other six areas included in the survey."

Honesty

A 1993 article in the *Journal of Economic Perspectives* questioned whether or not studying neoclassical economics makes people less honest. The authors conducted an honesty survey, asking economics students and their peers about a series of ethical dilemmas (for example, returning a lost wallet or reporting a billing error.) The results showed that students studying economics had "less honest" scores than their astronomy counterparts, a similarly mathematical field but with less emphasis of self-interest, which in turn inhibits cooperative behaviors and outlooks. It may also be the case that economics, as a discipline largely focusing on the role of

self-interest in decision-making, selects for individuals who are more likely to exhibit selfishness in the first place.

Sources: Frank, Robert H., Thomas Gilovich, and Dennis T. Regan. 1993. "Does Studying Economics Inhibit Cooperation?" *The Journal of Economic Perspectives 7*, no. 2: 159-171.

1.2.3 Heuristics, Anchoring, and Framing

Behavioral economics shows that people tend to make decisions by psychological rules of thumb, or **heuristics. Anchoring** is an example of a **heuristic** in behavioral economics. This describes the tendency for individuals to fixate on an initial reference point given to them, regardless of its relation to a particular decision. One example of this from the book *Nudge* asked people to write down the last three digits of their phone numbers, and add two hundred. Then, people are asked when a historical event occurred (when the Huns invaded Europe). People tended to respond with answers closer to their arbitrary number, than to the historic date.[4]

Framing is another heuristic describing how the context of a decision influences the decisions we make. One example from *Nudge* is the use of cash discounts in retail. Credit cards, especially when they first became popular, often charge retailers a fee when customers pay with a credit card. Many retailers responded by wanting to post higher credit versus cash prices for goods and service, or in other words, a credit surcharge. The credit industry lobbied for new rules that forbid credit surcharges, and instead preferred the language of "cash discounts". While economically the same, this shows an example of framing effects. A credit surcharge may discourage the use of credit cards, since it is describing an additional charge for using the card. But if the "credit price" is the normal, and the use of cash is discounted instead, then consumers focus less on paying for the use of credit.

1.3 Rationality and Behavior in Context

Nobel Prize winner Amartya Sen notes that the foundation of neoclassical economic models is self-interest, but this assumption is actually falsifiable. As we know from behavioral and experimental economics, rationality should not be assumed. Behavioral insights allow us to begin building more realistic models of economic decision-making that regard both our psychological tendencies and our social context. Risk aversion, loss aversion, anchoring, framing, and social norms of fairness all influence our decisions in departures from the neoclassical view of rationality.

To some extent, our "irrational" tendencies—those that are not perfectly self-interested—are generally predictable and consistent. Most people have a preference for fairness (as seen in the ultimatum game), are generally loss averse, and put much higher weight on the present than the future. Daniel Kahneman and others such as Herbert Simon pioneered the concept of **bounded rationality**, which is to say that economic agents have limits to their rationality. Knowing these limits, and the heuristics we use when faced with our cognitive limits, paints a clearer picture of our actual economic psychology. Knowing this can help economists and policy makers design

[4] Thaler, Richard H., and Sunstein, Cass R. 2008. *Nudge : improving decisions about health, wealth, and happiness.* Yale University Press.

more effective policies. Richard Thaler and Cass Sunstein emphasize **choice architecture**—the different ways in which choices are presented to economic agents. Knowing our psychological predispositions, we can use our tendency to anchor to a reference point, preference for loss aversion, and other behavioral insights to design more effective policies. In the following sections, we will apply our behavioral economics toolkit to development economics, environmental economics and climate change, finance and financial crises, and issues of inequality and discrimination.

2. PSYCHOLOGY AND ECONOMIC DEVELOPMENT: CONTEXT, INSIGHTS, AND POLICY EXAMPLES

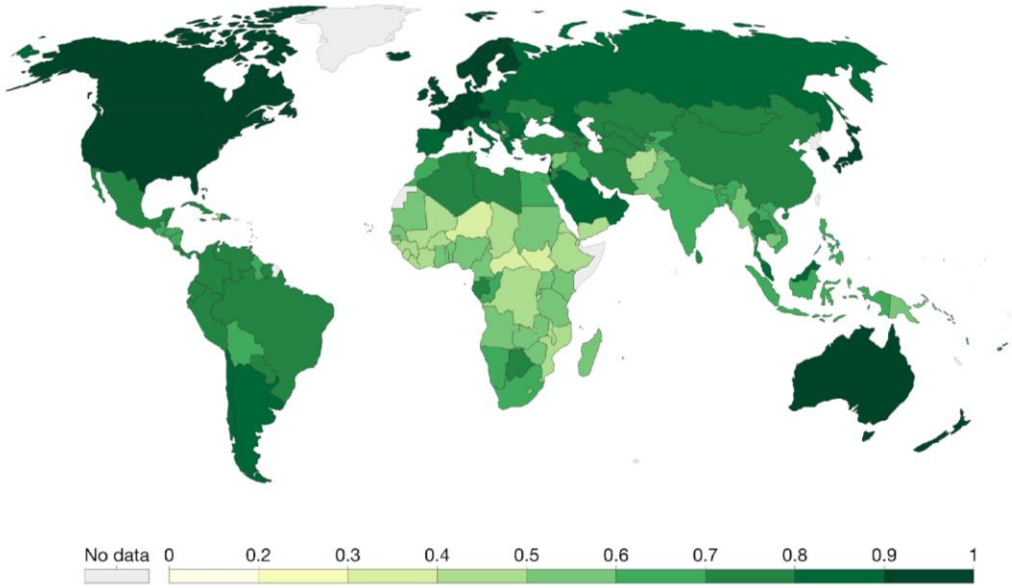
Development is the field of economics that studies regions of the world undergoing the processes of economic growth, structural change, and other changes associated with improving the economic, social, and political well-being of people. Though different classifications exist, development economists generally study those countries with economies classified as developing, less developed, or underdeveloped.[5] These categories may also overlap with low- or middle-income countries, depending on the classification.

The United Nations *World Economic Situation and Prospects* annual report presents country classifications, including developed countries, economies in transition, and developing economies. These classifications are based on calculations of Gross National Income (GNI), the composition of the economy (for example, is the economy export- or import-driven), the **Human Development Index** (HDI), and other country characteristics.[6] In general but not always, developing economies tend to have lower GDP per capita and be less industrialized than countries classified as developed. Because of this, many developing nations face economic challenges such as poverty, barriers to health and education, and limited resources.

To understand the context of development, and therefore the relevance of behavioral economics, we need to understand the economic conditions experienced by individuals in developing regions. Figure 1 shows global results for the Human Development Index, with the highest-ranking countries coded in dark green and lesser-developed areas shaded in a lighter gradient. The HDI is a statistical index that includes indicators for a long and healthy life, knowledge and education, and standard of living. As you can see, there is great variation across the globe in levels of the HDI and therefore variation in incomes, education, health and well-being.

[5] Nissanke, Machiko, and José Antonio Ocampo. 2019. The Palgrave Handbook of Development Economics : Critical Reflections on Globalisation and Development. Springer International Publishing.
[6] United Nations. "World Economic Situation and Prospects." 2019. https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf; ; United Nations Development Programme. "Human Development Index". 2019. http://hdr.undp.org/en/content/human-development-index-hdi

Figure 1. *Human Development Index, 2017*



Source: UNDP, 2018. OurWorldInData.org/human-development-index/
Note: The Human Development Index (HDI) is a summary measure of key dimensions of human development: a long and healthy life, a good education, and having a decent standard of living.

Behavioral economists have increasingly turned their attention to research that explores ways to create policies that work more efficiently in the social and psychological contexts of developing nations. In this section, we will apply behavioral concepts to economic development. We will also cover important real-world examples of how this emerging field has been applied in policy and programs.

2.1 How Can Behavioral Economics Inform Development?

The 2015 World Development Report, written by the World Bank, focused on applying behavioral concepts and research methods to developing economies. In the report, the World Bank acknowledges the importance of psychological, social, and cultural contexts when it comes to designing and implementing policies effectively, while recognizing the need to move beyond the assumptions of the rational actor model.

Its main message is that, when it comes to understanding and changing human behavior, we can do better. Many development economists and practitioners believe that the "irrational" elements of human decision-making are inscrutable or that they cancel each other out when large numbers of people interact, as in markets. Yet, we now know this is not the case. Recent research has advanced our understanding of the psychological, social, and cultural influences on decision making and human behavior and has demonstrated that they have a significant impact on development outcome."[7]

[7] *World Development Report 2015 : Mind, Society, and Behavior* 2015. Washington, D.C. : World Bank Group.

In the context of development, where many policies can make a massive difference in people's well-being, having the correct assumptions about behavior is crucially important, and those assumptions must be grounded in the social, cultural, and psychological reality. In this section, we will examine how the context of development and poverty matter for policy design, as well as some examples of policies and interventions designed with behavioral economics in mind.

So what are the actual applications? How can behavioral economics help policy-makers across the globe combat poverty, or improve health outcomes, or encourage a more sustainable economy? The idea is to wisely apply behavioral lessons and concepts to create policy that more effective and efficiently influences behaviors, decisions, and in some cases, expands knowledge. As the World Development Report puts it:

> Research also shows that it is possible to harness these influences to achieve development goals. The Report describes an impressive set of results. It shows that insights into how people make decisions can lead to new interventions that help households to save more, firms to increase productivity, communities to reduce the prevalence of diseases, parents to improve cognitive development in children, and consumers to save energy. The promise of this approach to decision making and behavior is enormous, and its scope of application is extremely wide. (Forward)[8]

While behavioral approaches will not have all of the answers for policy design or be a panacea for larger structural issues or political struggles, there are many examples of how the approach can apply to economic thinking about development and development policies.

2.2 Economic Context Matters: How Poverty Impacts Decision-Making

Different approaches to economics can provide different lenses to viewing economic problems. In the neoclassical approach, economic issues are often reduced to issues of resource scarcity, labor scarcity, or preferences. This model however leaves out other important factors when studying development, such as the cultural context, our cognitive capacities, and our underlying psychological predispositions. The rational actor framework also assumes that everyone has perfect information to make economic decisions, regardless of their level of poverty and social norms. Similarly, the model assumes that cognition is a given endowment, rather than a factor shaped by economic circumstance. But, research shows that circumstances such as poverty has a tendency to take a toll on our ability to make decisions and process information.

2.2.1 Scarcity Creates Cognitive Scarcity

Behavioral economists Saugato Datta and Sendhil Mullainathan discuss how behavioral economics can be used to better understand the psychological context of development in a paper outlining a framework for policy and program design.[9] In their work, they emphasize that people's intrinsic capacities and behaviors do not necessarily differ between developing and developed

[8] Ibid.

[9] Datta, S. and Mullainathan, S. (2014), Behavioral Design: A New Approach to Development Policy. Review of Income and Wealth, 60: 7-35. doi:10.1111/roiw.12093

economies due to any actual cognitive differences. Instead, observed differences occur because economic conditions—such as poverty and scarce resources—can limit psychological resources for individuals facing these struggles and shape how they perceive information.

Similarly, in *Scarcity: Why Having Too Little Means So Much*, Sendhil Mullainathan and Eldar Shafir expand on this more nuanced idea of scarcity, and explain how the stress of experiencing material deprivation impacts our attention, capacities, and behaviors. The authors introduce a simple analogy to understand why the stress, worries, and anxieties associated with poverty may intrude our capacities to think: imagine trying to hold a conversation with one friend, while another talks directly into your ear. Having two separate conversations overwhelms our attention, and likely means we cannot pay close attention to either.

The authors propose that conditions of not having one's needs met work very similarly. The worry of needing to make ends meet intrudes our thoughts and conversations and may distract us from focusing on tasks or overwhelm our ability to make a decision. In other words, poverty creates a **cognitive tax**, which undermines our focus and other capabilities.

Datta and Mallainathan outline four ways in which limited psychological resources vis-à-vis poverty and economic conditions impact economic behavior and decision-making. They frame these limitations and obstacles as scarcities, though we can also consider these as differences emerging out of economic and social struggles and relative deprivation. Many of these forms of scarcity are not necessarily specific to the development context—in fact many apply to any individual facing financial distress, too many responsibilities, or adjusting to new norms and culture. But due to issues of poverty, differing social and cultural norms, these scarcities become more important and apparent in the context of development:

1. **Scarcity of self-control:** Datta and Mullainathan describe scarcity of self-control as an issue faced by all humans. In general, self-control is difficult to perform and requires psychological effort. A very common example of scarcity of self-control would be when someone decides to take on a healthier diet for a given time, but eventually gives into a sweet temptation, as the psychological toll of self-control adds up and maintaining self-control proves more and more difficult. Humans across the globe face this scarcity, but in the context of development where many individuals are already very constrained, scarcity of self-control may influence things like labor productivity if difficulty with self-control interrupts the work process. One study showed this to be the case amongst farmers in India. While farmers knew that weeding their crops more regularly would substantially increase output, many farmers chose not to this.[10] Researchers found that this was because the task felt very tedious to the farmers, and required a great deal of self-control. In a situation of poverty, self-control may be limited due to the stresses of everyday life.

2. **Scarcity of attention:** Given many of the pressures of living in a developing country context, many individuals face scarcity of attention—meaning that it becomes cognitively difficult to pay full attention to details, for example, of how to adopt and use a new

[10] Banik, P., A. Midya, B.K. Sarkar, and S.S. Ghose. "Wheat and Chickpea Intercropping Systems in an Additive Series Experiment: Advantages and Weed Smothering." European Journal of Agronomy 24, no. 4 (January 1, 2006): 325–32.

technology or the details of a new government policy. There are many reasons why, including lack of nutrition or healthcare, or the mental tolls associated with economic struggles.[11] Because of this, individuals may not have enough attention to give to things, even if they are beneficial. One example from Peru, Bolivia, and the Philippines sought to address this problem.[12] Many people in this study were not saving as much as they desired to in part because savings was not a matter of focus for most of their time. To increase attention to savings, participants received regular and timely messages to remind them to save, and thereby increased rates of savings.

3. **Scarcity of cognitive capacity:** This describes how in the face of complex information, we face limits to our cognitive capacity, and in doing so we tend to "economize" our decision making, using rules of thumb or norms instead of reading into the details. In developing countries, a new technology may require learning a new way of doing a once routine task. If poverty limits cognitive capacity such that learning these new methods is too challenging, we may not correctly learn how to adopt the new technology properly.

4. **Scarcity of understanding:** Scarcity of understanding differs slightly from scarcity of cognitive capacity, as it deals with the idea that we may resist understanding new information or new "mental models" of the world that differ from our current understanding, since it is cognitively taxing to do so. In other words, people tend to be stubborn in fully understanding new information. If the new information differs greatly or contradicts social and cultural norms, then understanding the new practices may pose a challenge to individuals.

Datta and Mullainathan stress that conditions of poverty and financial distress can foster these types of scarcities. The mix of both psychological scarcities alongside economic scarcity can help economists to answer perplexing questions: Why do people sometimes not respond to incentives? Why do poor people borrow excessively, thus reinforcing poverty? Why do some free and accessible programs fail to get sufficient participation? Next, we will explore some specific examples to understand how the social and cultural contexts of different regions and cultures impact development, and can be incorporated into a behavioral development approach.

2.3 Cultural and Social Context Matters: Cultural Norms, Biases, and Mental Models

Beyond just the ways in which economic conditions impact our cognition, behavioral economics also considers how our **cultural and social norms** influence our decisions and outcomes. Cultural and social norms describe the generally accepted behaviors or beliefs within a collective group. Referring back to Figure 1, the developing world is broad and diverse, and encompasses countries with diversities of cultures, practices, religions, and other norms that are specific to each area. Sometimes those norms may contradict what economists would consider to be "rational". Given that, a more contextual understanding of cultural and social norms is necessary when considering

[11] Banerjee, A. and Mullainathan, S. 2008. "Limited Attention and Income Distribution." American Economic Review 98(2).
[12] Karlan, Dean, Margaret McConnell, Sendhil Mullainathan, and Jonathan Zinman. "Getting to the Top of Mind: How Reminders Increase Saving." NBER Working Papers, July 2010, 1.

how policies or programs are designed and implemented in these specific regions. One example mentioned in the 2015 World Development Report is that of "incorrect" mental models, with incorrect quotations to signal that across cultures, people may have different mental models of how things should and do work.

An example of an "incorrect" mental model is that of **biased beliefs**. Our beliefs may be biased based on historical, cultural and social practices, meaning that we are inclined to believe that the traditional way of doing something is the correct way. In other words, our beliefs are biased towards what we already believe and we may resist new information. One example comes from a study in India where the problem at hand was how to care for children experiencing dysentery, which kills nearly 150,000 children annually in India.[13] Within the study community, there was a long held belief that children experiencing diarrhea should not be given any fluids in order to stop the illness. Medical practice however suggests that children experiencing this illness should be given an oral rehydration solution. Use of the solution however remains very low, even with the knowledge that rehydration solution is effective in preventing deaths from diarrhea and efforts to make the solution both inexpensive and widely available. This example implies that biased beliefs then may lead to irrational results and potentially negative outcomes. Policies seeking to address this issue must take into account the strength of this biased belief—in fact 35-50 percent of poor women in India still believe decreasing fluid intake is the best treatment. A policy intervention then needs to carefully work to educate individuals about the flaws in this belief.

Social and cultural norms, especially those regarding gender, are also important to consider in the context of development. One study investigated some reasons why maternal mortality rates remain very high in sub-Saharan Africa.[14] The authors find that in Zambia, a gendered superstition about pregnancy impacts both male and female perceptions about maternal risk. For example, many believe that the primary cause of health issues in pregnancy and birthing is due to marital infidelity. Because of this belief, many women may actually underestimate their real risks of maternal mortality, believing that if they did not participate in any infidelity they are at lower risk, and therefore seek out less care. Similarly, women experiencing complications may be discouraged from seeking healthcare due to fear of stigma that they will be accused of infidelity. This social and cultural norm helps to explain why in Zambia, despite increasing access to care, maternal mortality remains high.

Another example of the importance of gender norms is that of women's labor force participation in India. Despite rapid development in India, female labor force participation has remained low at around 35%. Researchers found that gender norms play a very large part in explaining why this is the case despite demand for jobs from women. Economist Jayati Ghosh answers this puzzle by examining the role of patriarchal norms in India.[15] She explains that despite many paid work opportunities, women's participation in the labor force has remained low and even declined in recent years. She finds that this is in part due to the social and cultural norms rooting from

[13] Datta, S. and Mullainathan, S. (2014), Behavioral Design: A New Approach to Development Policy. Review of Income and Wealth, 60: 7-35. doi:10.1111/roiw.12093

[14] Ashraf, Nava, Erica Field, Giuditta Rusconi, Alessandra Voena, and Roberta Ziparo. 2017. "Traditional Beliefs and Learning about Maternal Risk in Zambia." American Economic Review, 107 (5): 511-15.

[15] Ghosh, Jayati. "Women Are the Engings of the Indian Economy But Our Contribution Is Ignored." The Guardian, July 2016. https://www.theguardian.com/global-development-professionals-network/2016/jul/16/womens-workforce-participation-declining-india

patriarchy in which women's work is much more likely to be in the household, in caretaking, and in the informal economy. Understanding the role of patriarchal norms in the economy is important not only for understanding the persistence of low labor participation rates for women, but also for considering policies and programs that support the household and informal economy.

3. UNDERSTANDING THE PSYCHOLOGY OF INEQUALITY

Wealth and income inequality in the United States have generally been increasing in recent decades.[16] However, many studies in behavioral economics show that in experiments like the dictator and ultimatum games, people tend to actually prefer relatively equal distributions (See Box 1 on the tendency toward more equal distributions in experimental games).[17] Why is it that despite our distaste for inequality, we are living in a deeply unequal economy? Can behavioral economics garner some insights to this contradiction? Can behavioral approaches also help us to understand how inequality shapes us? What about potential policies to ameliorate inequality?

This section will cover some of our psychological predispositions to persisting inequality, examples of how inequality shapes us psychologically, and how behavioral economics can inform policies to ameliorate issues of inequality and build a more equal society.

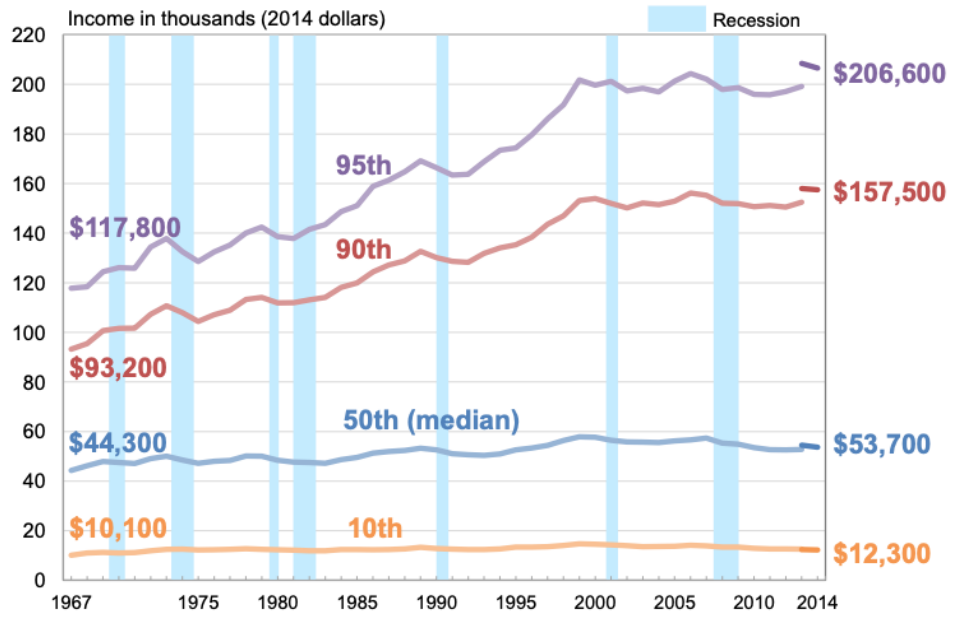
3.1 Our Perceptions of Inequality

The U.S. is notable as a developed country, but with high levels of both wealth and income inequality. Recent studies have shown a trend toward increasing inequality, with divergence in both wealth and income growth between those at the top of the distribution and those at the bottom. From this, narratives regarding the "Top 1%" and the "Bottom 99%" are commonplace in much of our political discourse, reflecting the rising concerns about growing inequality. But do our perceptions of inequality necessarily align with the facts?

Figure 2 illustrates the dynamics of income inequality. This graph, compiled by the Census Bureau, shows real household income growth from 1967 to 2014, with recessions shaded in blue. This figure compares real household income growth between the bottom 10th percentile of households, middle 50th percentile or median, the upper 90th percentile of households, and the very top 95th percentile of households. As shown, income earners at and below the median income level have experienced very limited real household income growth since 1967, while those at the top of the income distribution have experienced vast growth. For the top 5% of earners, real household incomes nearly doubled from 1967 to 2014.[18] For wealth, the numbers are even more disparate, with the top 1% holding an estimated 38.5% of net personal wealth in 2014, while the bottom 50% actually reported negative net personal wealth due to debt. [19]

[16] Piketty, Thomas and Emmanuel Saez. "Income Inequality in the United States, 1913–1998." *The Quarterly Journal of Economics* 118, no. 1 (/02/01, 2003): 1-41.
[17] Fehr, Ernst, and Klaus M. Schmidt. "A Theory of Fairness, Competition, and Cooperation." *The Quarterly Journal of Economics* 114, no. 3 (1999): 817-68.
[18] U.S. Census Bureau, Current Population Survey, 1968 to 2015 Annual Social and Economic Supplements.
[19] World Inequality Database. Accessed December 3, 2019. https://wid.world/country/usa/

Figure 2. *Real Household Income at Selected Percentiles: 1967 to 2014*

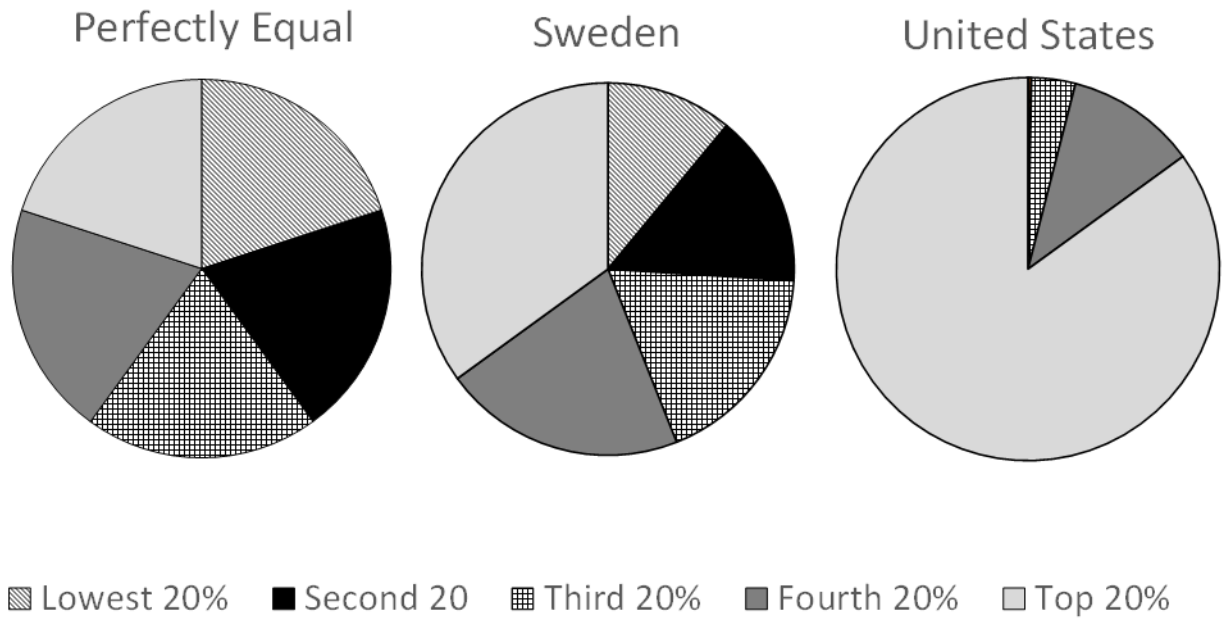


Source: U.S. Census Bureau, Current Population Survey, 1968 to 2015 Annual Social and Economic Supplements.
Note: The 2013 data reflect the implementation of the redesigned income questions. See Appendix D of the P60 report, "Income and Poverty in the United States: 2014," for more information. Income rounded to nearest $100.

Despite these data being widely available, economists have found that people greatly underestimate actual wealth and income inequality. One study, by Michael Norton and Dan Ariely, showed that individuals not only underestimate the actual levels of wealth inequality in the U.S. economy, but their ideal distributions were also far more equal than the actual distribution.[20] In surveying respondents, they asked for their preferences between three unlabeled wealth distributions—they were actually the distributions of Sweden, the United States, and a perfectly equal distribution. In the survey, 92% of Americans actually preferred the Swedish wealth distribution, and results were similar across gender, political affiliations, and even income (see Figure 3).

[20] Norton, Michael I., and Dan Ariely. "Building a Better America—One Wealth Quintile at a Time." *Perspectives on Psychological Science* 6, no. 1 (January 2011): 9–12.

Figure 3.*Distribution of Wealth for United States and Sweden, and a Perfectly Equal Distribution*



Source: Replicated from Norton, Michael I., and Dan Ariely. "Building a Better America—One Wealth Quintile at a Time." Perspectives on Psychological Science 6, no. 1 (January 2011): 9–12. Figure 2.

This result suggests that people actually prefer a much more equal distribution of wealth, but not completely equal. Next, the researchers gathered data on individual's beliefs about the actual distribution of wealth in the United States. They asked respondents to estimate how wealth was distributed across quintiles in the United States. In general, respondents estimated that the actual distribution of wealth was much more equal than it actually is. Some economists call this phenomena "belief in a just world". [21] The researchers also reported the differences in wealth distribution preferences and beliefs by the participants' actual income levels, as well as their gender and political affiliation. They found that even across income distributions, backgrounds, and the political spectrum, participants still believed the distribution of wealth to be more equal than it really is, and generally preferred a more equal—though not perfectly equal—distribution.

3.1.1 Cognitive Dissonance, Confirmation Bias, and Inequality Aversion

Despite evidence to the contrary, we want to believe the world looks more equal and more like our preferences than it really does. A psychologist may refer to this as **cognitive dissonance**.[22] Cognitive dissonance refers to a psychological tendency to ignore or not believe something due to its unpleasantness or contradiction with your internal worldview. A political economist may also relate this concept to the idea of false consciousness. Could cognitive dissonance in part explain

[21] Bénabou, Roland and Jean Tirole. "Belief in a Just World and Redistributive Politics." *The Quarterly Journal of Economics* 121, no. 2 (2006): 699.
[22] Festinger, Leon. *A Theory of Cognitive Dissonance* Stanford University Press, 1957.

the persistence of inequality and belief in a just world? The concept is similar and related to that of **confirmation bias,** which is our tendency to selectively believe information that confirms our priors or preferences.[23] Confirmation bias is in part the basis of anchoring our expectations, as discussed in prospect theory.

Exploring this contradiction between our preferences, beliefs, and the actual state of inequality in the world, behavioral economists Ernst Fehr and Klaus Schmidt have investigated the puzzling results found in many economic experiments. Why is it that people in some situations choose to be competitive and self-interested as economic theory might predict, but in other situations cooperation and fairness emerge? Fehr and Schmidt pose their own theory of fairness, competition, and cooperation to answer this question using experimental evidence.[24] Contrary to the neoclassical assumptions of self-interest and utility maximization, they pose that most of us display **inequality aversion**, and place value on minimizing inequity when making decisions. In other words, we generally try to avoid inequality, and prefer more equal outcomes. According to their theory, our aversion to inequality helps us to cooperate in many situations, instead of just free-riding.

Another explanation for the disconnect between actual inequality and our aversion to inequality, is the **empathy gap.** Behavioral economist George Loewenstein has studied how different situations impact our preferences and decisions.[25] In doing so, he coined something called "the hot-cold empathy gap". His research shows that depending on our states of being, we react differently, perceive differently, and make different decisions. In other words, our decisions are "state dependent". A "hot" state is a visceral state—one that involves discomfort or stress, like having your hand in freezing cold water. Despite the counterintuitive setup, in Loewenstein's example, a cold state is one where you are not distressed or comfortable.

It turns out, people in a cold state often fail to predict how their preferences will be when they are in a hot state, and tend to assume their preferences will be stable across those states. The example in Loewenstein's study is putting one's hand in freezing cold water. When asked if one could stand a minute in the cold water, many participants respond that they could, but they are in a cold state, not experiencing distress. When they put their hand in freezing cold water, most failed to keep it there for a minute. In this "hot" state of distress, their decision about remaining in the water was drastically different than their prediction.

In short, we don't always realize how our emotional states will impact our decisions, and it's called an empathy gap since we do not always relate to or empathize with our own selves, or others, when in different emotional states. For example, the empathy gap can be extended to understanding the decisions of others experiencing various visceral states such as poverty, stress, violence, and so on. This empathy gap concept then may allude to why it is that many accept high levels of

[23] Wason, P. C. "On the Failure to Eliminate Hypotheses in a Conceptual Task." *Quarterly Journal of Experimental Psychology* 12, no. 3 (July 1, 1960): 129-140.
[24] Fehr, Ernst, and Klaus M. Schmidt. "A Theory of Fairness, Competition, and Cooperation." *The Quarterly Journal of Economics* 114, no. 3 (1999): 817-68.
[25] Loewenstein, George. "Hot–Cold Empathy Gaps and Medical Decision Making." *Health Psychology*, no. 4 Suppl (2005): S49

inequality, despite not preferring the current distribution. Policy makers and those not in "hot" states of economic distress may not fully understand the behaviors as well as the needs of those in economic need. This understanding then points to the need to design policy that both closes the empathy gap, and better understands the behavioral contexts of "hot" states.

3.2 Evidence on the Persistence of Inequality and Bias

Despite our seeming innate aversion to inequality, it persists and even increases. Beyond cognitive dissonance and confirmation bias, there may be additional tendencies in our psychology that facilitates the persistence of inequality, including inequality by race and gender. We now explore this issue further.

3.2.1 Testing Implicit Bias

Structural inequalities and prejudiced beliefs about groups by race, ethnicity, gender, and other categories impact the decisions and outcomes observed in experimental settings. **Implicit bias** refers to the unconscious biases or prejudices observed in behaviors and decision-making. Implicit bias is referred to as such, since it is bias that is implied by our actions and decisions, rather than explicitly stated. While the historical and structural impacts of racism remain large issues in society today, behavioral and experimental studies can illustrate the extent to which these biases occur, even when participants claim no explicit bias against other groups.

Some researchers seek to understand how implicit bias impacts trust and decision-making.[26] In one study, participants were first asked to take an Implicit Association Test, which attempts to measure implicit attitudes about race and ethnicity.[27] After the test, participants were given a score that measured their implicit racial bias. The version of the Implicit Association Test used in the study measured simple associations between photos of black and white male faces and concepts of pleasantness and unpleasantness to determine a measure of racial bias.

The researchers then measured the outcomes of two decisions: the participants' explicit evaluation of a person's trustworthiness and then their actual decision around trusting another person of various backgrounds. In one part of the experiment, participants were given photos of individuals of different backgrounds, and then asked to rate their trustworthiness. What the researchers found is that implicit racial biases predict how individuals rate the trustworthiness of a person. Those who held biases, as measured by the test, were more likely to give a lower trustworthiness score to individuals of non-white backgrounds, and gave higher scores to white individuals.

Next, participants were asked to play a series of trust games and given a photograph of their partner. In the game, the participant chose an offer to make to the partner and were told the partner will receive four times the offer. They were told that each partner already had decided whether or

[26] Stanley, Damian A., Peter Sokol-Hessner, Mahzarin R. Banaji, and Elizabeth A. Phelps. "Implicit Race Attitudes Predict Trustworthiness Judgments and Economic Trust Decisions." *Proceedings of the National Academy of Sciences of the United States of America* 108, no. 19 (-5-10, 2011): 7710-7715.

[27] A similar Implicit Association Test developed by scholars at Harvard University's Project Implicit is available online for anyone to take. It can be accessed at: https://implicit.harvard.edu/implicit/takeatest.html

not they would keep the entire offer or split it with the participant. So, each participant had to judge whether or not they believed their partner was fair and trustworthy, or selfish. Again, the results confirmed the role of bias. While there was little difference in the amount offered between groups ($0-$10), individuals with high levels of measured implicit bias were more likely to offer more money to white partners than to black partners.

What this study shows is that even when we are not explicitly claiming a racial bias, individuals holding implicit racial biases acted on those biases, and those biases influenced their decisions around trust. Similar studies show that gender biases also influence decision-making and outcomes.[28] What these studies capture is that even in controlled environments, biases still influence decisions. This sort of experimental evidence then can inform the ways in which we design and use policies to subvert these biases and to promote equality. Given the growing body of research on implicit bias in the contexts of racial and ethnic inequality, gender inequality, and other forms, researchers have suggested a number of ways this can translate to policy. Some suggestions include the use of blind review in job applications, increasing visibility of marginalized groups to combat negative stereotypes, as well as acknowledging that bias exists as a baseline assumption in policy design.[29] Similarly, some businesses and organization have begun including implicit bias trainings to acknowledge these forms of discrimination and draw awareness to how these biases create and contribute to inequality.

3.3 How Inequality Shapes Us

In addition to how biases, cognitive dissonance, and the empathy gap contribute to inequality, there is evidence that being in an unequal environment itself shapes how we behave**.** One study used an experimental survey that included a "real stakes giving opportunity", researchers found that relative inequality shapes our norms around generosity. Researchers asked participants to complete a survey on various topics including their household income and other demographic information, but then show simulated data on the levels of inequality in their home state. They were then asked to allocate raffle tickets for a $500 bonus payment to other participants in the study. In their results, higher inequality levels were associated with less generosity amongst the higher-income brackets, yet at lower levels of inequality there was no association between generosity and income level.[30] These results suggest that high levels of inequality may make high-income earners less generous, therefore contributing to persisting inequality. Other studies show that high levels of inequality are associated with high levels of risk taking and risky behaviors such as crime, high debt, and gambling, which are likely behavioral responses to being in an unequal environment with inadequate resources.[31]

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[28] Buchan, Nancy R., Rachel T. A. Croson, and Sara Solnick. "Trust and Gender: An Examination of Behavior and Beliefs in the Investment Game." *Journal of Economic Behavior & Organization* 68, no. 3 (December 1, 2008): 466-476.

[29] Payne, B. Keith, and Heidi A. Vuletich. "Policy Insights From Advances in Implicit Bias Research." Policy Insights from the Behavioral and Brain Sciences 5, no. 1 (March 2018): 49–56.

[30] Côté, Stéphane, Julian House, and Robb Willer. "High Economic Inequality Leads Higher-Income Individuals to be Less Generous." *Proceedings of the National Academy of Sciences* 112, no. 52 (-12-29 00:00:00, 2015): 15838-15843.

[31] Payne, B. Keith, Jazmin L. Brown-Iannuzzi, and Jason W. Hannay. "Economic Inequality Increases Risk Taking." *Proceedings of the National Academy of Sciences* 114, no. 18 (-05-02 00:00:00, 2017): 4643-4648.

Experiencing inequality, bias, and discrimination can also have complex impacts on individuals. One interpretation of how experiencing discrimination and biases impact behaviors can be found in *Identity Economics*, which argues that people may make seemingly irrational decisions based on their internalization of certain stereotypes.[32] Another view on this is the idea of **stereotype threat.** Stereotype threat is a concept applied to issues such as achievement gaps by race, ethnicity, and gender.[33] The idea is that for groups that face certain stereotypes about behaviors and achievement, students experience immense anxiety around the threat of either conforming too much to a stereotype or not conforming enough. This anxiety then results in reduced achievement, stress, and other negative impacts.[34] Stereotype threat relates closely to the idea of **internalized oppression**, which is the way in which we may internalize negative stereotypes and biases about ourselves, all of which may compound inequality.[35] For example, women may internalize the stereotype of being less competent in mathematics. When tested for ability in mathematics, being told that they are being tested for ability may illicit the threat of being revealed as "less competent" per the stereotype. This threat then may induce anxiety that depletes achievement or deters women from pursuing the subject further.

3.4 Conditional Altruism, Reciprocity, and Fairness: Experimental Evidence to Inform Policy

In understanding the behavioral and experimental evidence on inequality, there are some clear contradictions. We are often inequality averse, yet actual wealth and income inequality remains very high, even when our ideal world looks more equal. In laboratory experiments, we show a taste for more equal distributions of resources, yet in the realm of politics efforts to redistribute through government policy can be contentious. One insight from behavioral economics can help us to understand this tension, and possibly point to ways to inform redistributive politics and policy. Economist Samuel Bowles and co-authors trace behavioral and experimental evidence to understand inequality and redistribution in *The New Economics of Inequality and Redistribution*.[36] Recall back to Box 1 where we discussed how, contrary to the assumptions of neoclassical economics, experimental and behavioral economics reveals that people are not necessarily perfectly calculating, utility-maximizing, selfish rational actors. Experiments show that people tend to value equality alongside one other very important factor: fairness. According to Bowles and his co-authors, a distribution of wealth, income, or other resources is favorably viewed not just if it is relatively equal, but also if it is considered fair. This is called **conditional altruism**, as our predisposition to give to others without benefit to ourselves is often conditional on the perception of the transaction being fair. Fairness though is a value shaped by our social norms, culture, and other societal factors that influence what we view as being fair or unfair. Bowles and

[32] Akerlof, George A. and Rachel E. Kranton. *Identity Economics: How our Identities Shape our Work, Wages, and Well-Being* Princeton, N.J. : Princeton University Press, 2010.
[33] Steele, C. M. and J. Aronson. "Stereotype Threat and the Intellectual Test Performance of African Americans." *Journal of Personality and Social Psychology* 69, no. 5 (November, 1995): 797-811.
[34] Steele, Claude M. "A Threat in the Air: How Stereotypes Shape Intellectual Identity and Performance." *American Psychologist* no. 6 (1997): 613.
[35] David, E. J. R. and Annie O. Derthick. "What is Internalized Oppression, and so what?" In , 1-30. New York, NY, US: Springer Publishing Co, 2014.
[36] Bowles, Samuel, Christina M. Fong, Herbert Gintis, and Ugo Pagano. 2012. *The New Economics of Inequality and Redistribution*. Federico Caffè Lectures. Cambridge University Press.

co-authors then suggest that economists and policy makers need to focus on not just reducing inequality, but also how to foster a sense of fairness for such policies.

For example, experimental economist Christine Fong ran an experiment to understand how people view social safety net programs such as welfare. The experiment was run as a multi-player dictator game with one set of players deciding whether or not to share some allotment with another group of recipient players who were actually real-life welfare recipients. Prior to the experiment, welfare recipients were given a survey about their work preferences, which were shared with the dictator players right before the game began. Fong found that dictators gave more to those recipients who expressed strong work preferences.[37] This result was interpreted as putting a value on fairness, in that dictators viewed those with strong work preferences as more deserving. Similar studies show that dictators give nearly three times as much when told that the recipient was the American Red Cross, as opposed to an anonymous recipient, reflecting views that known charitable organizations are more deserving.[38] Other studies cited by Bowles and Fong use public goods games to understand what encourages and what hinders cooperation between individuals.

These examples, along with many others, contribute to the argument of Bowles and Fong that under the right conditions, policies can foster more equality and cooperation. Recall that in a public goods game, participants are given an initial amount of money or resources, and asked to contribute to a common pot. In the end, the common pot is divided up amongst participants, regardless of who contributed and how much. According to standard economics, *Homo econimcus* should free-ride by contributing nothing to maximize their individual payout. But, in experiments, people usually tend to give about half of their money. Repeated runs with the same group asking each to contribute tends to foster cooperation, but if one player begins to free-ride, this cooperation decays. Researchers who introduce punishment to the game find that participants punish free riders even when the punishment is ineffective in promoting more common pot contributions.[39] For Bowles and Fong, these experiments show that people generally value equality and fairness, and are willing to "incur a cost to punish" those who act unfairly in public goods games.

Bowles and Fong also focus on **reciprocity**—behavior where people mutually give to one another or respond to one action with an equivalent action (for example, punishing free-riders). They argue that policies should be designed to promote redistribution and equality while also fostering fairness and strong reciprocity for mutual benefit. They recommend policies that foster socially admired behaviors such as hard work, savings, credit access for entrepreneurial activities, and education.

> "But egalitarian policy interventions need not await a change in citizens' beliefs about what kinds of things deserve reciprocation. Among these in the US today would be saving (when one's income allows), working hard both in schooling and on the job, and taking risks in productive endeavors. Persistent poverty is often the result of low returns on these socially admired behaviors: low wages for hard work,

[37] Fong, Christina M. 2007. "Evidence from an Experiment on Charity to Welfare Recipients: Reciprocity, Altruism and the Empathic Responsiveness Hypothesis." *The Economic Journal* 117 (522): 1008.
[38] Eckel, Catherine C., and Philip J. Grossman. 1996. "Altruism in Anonymous Dictator Games." *Games and Economic Behavior* 16 (2): 181–91.
[39] Andreoni, James. 1995. "Cooperation in Public-Goods Experiments: Kindness or Confusion?" *The American Economic Review* 85 (4): 891

> a low rate of return on savings, costly access to credit for those wishing to engage in uncertain entrepreneurial activities (or even outright credit-market exclusion), and educational environments so adverse as to frustrate even the most diligent student. Policies designed to raise the returns on these activities when undertaken by the less well-off would garner widespread support." (157)

3.4 Critiques and Questions

While behavioral and experimental economics can illuminate our predispositions to living in an unequal world and the extent to which biases reinforce these inequalities, it is important to step back and note these same biases and structural inequalities may impact behavioral and experimental research itself. Feminist economist Julie Nelson raises this important question in regards to experimental and behavioral research on gender differences and the notion that women are less risk averse than men.[40] Nelson's work shows by re-evaluating the empirical results of prominent studies that many of these results are less empirically supported than originally claimed, and raises questions about how to study such differences and biases in the experimental setting without being based on researchers' own confirmation biases and prior held beliefs on gender. For example, what are the implications of using behavioral economics to confirm the stereotype that women are less risk-taking than men? Are economists subjecting themselves to a form of confirmation bias within their own research in creating research design that confirm their own priors about gender? Is it the case that studies showing their preconceived difference are more likely to be published than those showing no differences or more risk-taking by women? Nelson argues that the behavioral economics role in persisting such stereotypes is important to consider, and that behavioral findings should not be taken as fundamental truths about behavior.

Nelson's critique raises an important critique of studying these issues through the lens of individual psychology. As always, it is important to view economics and economic research within the context of the economy and society as a whole. Nelson suggests one way to avoid these issues of confirmation bias, persisting stereotypes, and publication bias is to have the dialogue and research of behavioral economics be as diverse as the society and economy in which we live in—with researchers, research settings, and methodologies from many perspectives.

Nevertheless, behavioral and experimental approaches can offer some important insights into our psychological predispositions to persisting inequality, as well as ideas for how to ameliorate biases in our behaviors and decisions.

4. BEHAVIORAL FINANCE, HISTORICAL PERSPECTIVES, AND THE FINANCIAL CRISIS

As a subfield of behavioral economics, behavioral finance links psychological concepts to the world of finance, money, and banking. Many of the subfield's insights show how individuals and financial institutions may not always be perfectly rational when it comes to assessing risks, credit, and expected returns on investments. This broad field ranges from experimental research on what

[40] Nelson, Julie A. "The Power of Stereotyping and Confirmation Bias to Overwhelm Accurate Assessment: The Case of Economics, Gender, and Risk Aversion." *Journal of Economic Methodology* 21, no. 3 (2014): 211-231

influences stock trading, to broader research on consumer and investor psychology.[41] In this section, we will discuss behavioral finance in historical perspective, apply behavioral concepts to understanding the 2007-2008 financial crisis, and consider policies for financial institutions and consumer protections.

4.1 Behavioral Finance in Historical Perspective

Behavioral finance has a long history, with influential economists such as John Maynard Keynes laying the foundations for core concepts around risk taking under conditions of **uncertainty**, **herd behavior**, and **anchoring**. Keynes's writings largely seek to explain why crises emerge in capitalist economies. In Keynes's time, the Great Depression was a formative event, which was largely brought on by a stock market bubble and crash in 1929. For Keynes, classical theory that assumes economic agents are perfectly rational does not explain why business cycles and crises like the Great Depression emerge. To understand how and why crises occur, Keynes focused on the ways in which our psychological predispositions may lead to unstable markets. Keynes describes **animal spirits** as driving the behavior of economic agents—investors, consumers, and governments. He writes:

> Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits — of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities. [42]

Animal spirits is Keynes's term for the general instincts, heuristics, rules of thumb, emotional responses, confidence, and impulses that he believes drive changes in markets.

Keynes, like later behavioral economists, did not necessarily believe that all individuals and institutions in the economy acted with perfectly calculating rationality and economic foresight. In fact, Keynes emphasized that a core reality of the economy is **fundamental uncertainty**. Fundamental uncertainty asserts that in the present, economic agents know essentially nothing about how the future will actually be, but instead simply make forecasts and predictions based on the present conditions, with a tendency to overvalue the present instead of careful analysis of historical data. In the words of behavioral and experimental economists, Keynes believed we have a tendency to **anchor** ourselves in the present. For Keynes, the future is unknown and subject to change with every decision made in the present. As he puts it more bluntly, "We simply do not know."[43]

So how do people cope with the reality of not actually knowing the future? Throughout his writings, Keynes describes that consumers and investors in the economy act based on **conventions** and **expectations**, rather than actual knowledge about the future. [44] His description of conventions,

[41]Thaler, Richard H. *Advances in Behavioral Finance*. Roundtable Series in Behavioral Economics. Princeton University Press, 2005.
[42] Keynes, John Maynard. 1964. *The General Theory of Employment, Interest, and Money.* USA: First Harvest/Harcourt. pp 161.
[43] Keynes, John Maynard. "The General Theory of Employment". *The Quarterly Journal of Economics*. February 1937. pp 214.
[44] Keynes, John Maynard. 1964. *The General Theory of Employment, Interest, and Money.* USA: First Harvest/Harcourt. Chapter 12.

largely described in Chapter 12 of *The General Theory*, is strikingly similar to that of **heuristics**—or rules of thumb that individuals use to assess a decision. Chapter 12 also describes another similar concept crucial to the Keynesian understanding of the economy—**expectations** and **confidence**. For Keynes, if we have great confidence in what we expect the future to look like, this confidence drives our decisions. If however, investors begin seeing signs of an economic downturn, this may reduce the confidence individuals have in their expectations of the future. The crisis of confidence is what leads to reduced investment, depleted consumer demand, and economic recessions.

Keynes describes **herd behavior** as another means of coping with uncertainty. In economics, herding describes how individuals make decisions based on what they perceive others are choosing. For example, if a particular stock is gaining popularity, additional investors may enter the market to buy it, using its popularity as a signal of potential return. Keynes compares this behavior to that of how people tend to rank beauty contestants. As Box 2 explains, people herd together towards the contestants they perceive as being most beautiful to others. Another term for herding is group-think. Keynes sees herding as one coping strategy we use to make decisions about a fundamentally uncertain world, but what are the consequences of this behavior? Keynes observes that herding behavior can potentially lead to speculative bubbles, booms, and busts in the economy.

BOX 2: THE KEYNESIAN BEAUTY CONTEST

The **Keynesian Beauty Contest** is a concept developed by Keynes to understand how price fluctuations in the stock market occur and what determines prices. In Keynes's time, newspapers often ran beauty contests, in which photos of contestants were published and the readers were asked to rank the photos by which contestant they saw as most beautiful. Keynes observed that often people did not rank the photos based on whether or not they actually found the contestants in the photos attractive or beautiful, but rather ranked them by how they *perceived others* would most likely rate the beauty of the contestant. In other words, people tended to choose the photo that they believed the majority of people in general would also rank as most beautiful. In this way, the beauty contest is more of a contest correctly guessing public perceptions of beauty.

Keynes then applied this observation to the stock market to hypothesize that prices in the stock market are less of a signal about the fundamental value of a particular stock or company, but rather a reflection of how investors think other investors value the stock. Keynes's insight is that in some markets, pricing may primarily reflect the social perception of the value of something, rather than its fundamental or intrinsic value. This theory continues to inform many economists' thinking of how things like speculation and price bubbles occur in markets.

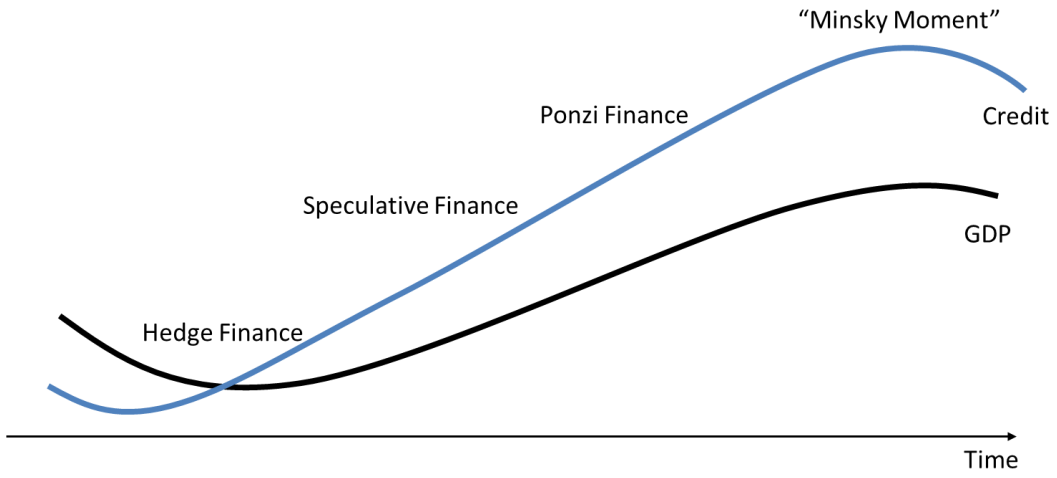
Similar to Keynes, Hyman Minsky wrote several decades later about the irrationality and instability inherent in many financial markets, particularly when it comes to speculation. For Minsky, the uncertainty of markets combined with the profiteering tendency to speculate creates

boom and bust dynamics, and thus instability in the macroeconomy.[45] As investors herd to speculate in markets, they drive up prices, leading others to also enter the market. Fueled by credit and hedging their bets to make a profit, investors will eventually begin selling off in the market, triggering a collapse—called a **Minsky moment**.

Minsky names these phases: hedge finance, speculative finance, Ponzi finance, and the eventual Minsky moment. Figure 4 below stylizes Minsky's theory. The Minsky Cycle begins with hedge finance, where banks lend against some secured asset or collateral. In the Minsky Cycle though, this asset's value continues to rise leading to economic growth, such as during the housing bubble. Because of this, lenders take on greater risks since they anticipate asset prices to continue rising. This leads to higher leveraged financial institutions, and increased lending itself causes prices to rise in the phase of speculative finance. As the bubble continues, speculative finance then turns into Ponzi finance, with the hope that asset prices rise indefinitely, enabled by practices like lax lending regulations and ratings. But, given that the underlying assets are in a price bubble, this borrowing pattern inevitably faces a reckoning, since asset prices artificially have risen above their actual value. The moment of reconciling overleveraged credit with falling asset prices is called a Minsky Moment.

In the collapse, markets adjust back to looking more like actual economic growth or output, rather than the speculative bubble. In *The General Theory*, Keynes compared this sort of dynamic to a game of musical chairs, where investors late to sell off bear the losses while those early movers make speculative profits. This dynamic leads to potential instability in the economy, leading it to be referred to as Minsky's financial instability hypothesis.

Figure 4. *Stylized "Minsky" Cycle*



Source: MSIM Global Multi Asset Team Analysis[46]

[45] Minsky, Hyman P. "The Financial Instability Hypothesis." Levy Economics Institute of Bard College Working Paper No. 74. May 1992. http://www.levyinstitute.org/pubs/wp74.pdf

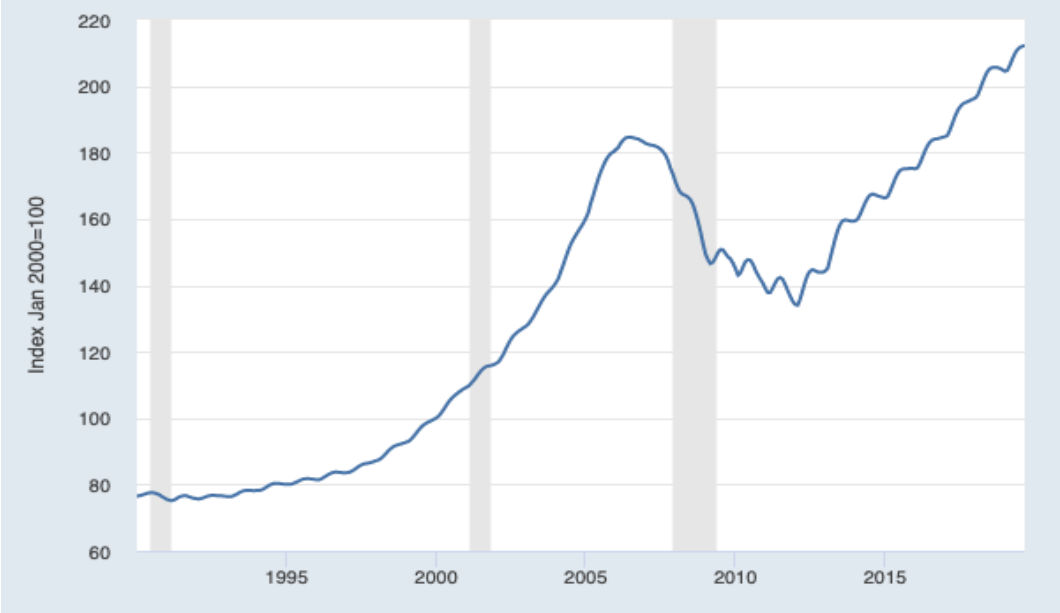
[46] Creative Commons License: https://commons.wikimedia.org/wiki/File:Stylized_Minsky_Cycle.PNG

4.2 Behavioral Insights for the 2007-2008 Financial Crisis

Even prior to the Financial Crisis of 2007-2008, many economists were adopting behavioral insights to understand stock market pricing and the macroeconomy. Nobel Prize winner Robert Shiller refuted the neoclassical assumption that markets reflect accurate prices—called the Efficient Market Hypothesis—by drawing on evidence from behavioral economics.[47] The housing bubble and 2007-2008 financial crisis demonstrated yet again that investor psychology can cause economic havoc.

The 2007-2008 financial crisis was largely caused by the collapse of the housing bubble—the situation in which prices for housing boomed, but eventually crashed. Part of this crash was due to how credit facilitated the rise in housing prices. In part, since many investors and consumers believed that house prices would continue to increase, credit flowed easily into the market, with the belief that this would be a sound and secure investment. As more consumers demanded houses and believed that prices would continue to increase, leading to **herd behavior**, market prices inflated further. As seen in Figure 5, the home price index increased drastically throughout the early 2000s.

Figure 5. *S&P/Case-Shiller U.S. National Home Price Index*



Source: S&P Dow Jones Indices LLC, S&P/Case-Shiller U.S. National Home Price Index [CSUSHPINSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CSUSHPINSA, November 29, 2019.

[47] Shiller, Robert J. "From Efficient Markets Theory to Behavioral Finance." *The Journal of Economic Perspectives* 17, no. 1 (2003): 83-104.

With the flow of easy credit, many mortgage loans were made with pernicious terms and held very high risk (see Additional Resources for further reading on the perverse incentives around lending and credit during the housing bubble). When lenders realized many loans were going bad, the fire sell of mortgage backed securities and other credit-backed products led to the eventual bust in the market. This massively reduced consumer and investor confidence, and later caused the Great Recession (the period shaded in gray in Figure 5 from 2007-2009).

Building on Keynes's work, a behavioral economist's analysis of the 2007-2008 financial crisis would show the tendency of investors to herd into speculative investments and then to herd out of the market once signals turned negative. Recall that prospect theory teaches us that in different situations, we evaluate and view risk differently.[48] While many individuals may tend to be risk averse in experimental settings, in the situation of an emerging price bubble, our perceptions of seeing others herd into that investment may skew investors' perceived risk and lead to irrational risk-taking. Why? Because we actually *perceive* little or no risk while in the midst of the bubble.

Because many see stock market crashes and crises as low probability, once in a generation events, investors often ignore the risk or assign it zero probability. In his book, *How Markets Fail*, John Cassidy draws on behavioral economics to call this a "threshold heuristic", when many investors assign zero probability to a high-risk, but unlikely event.[49] Due to the **availability heuristic**, the probability of a financial collapse is difficult to imagine for many investors and consumers—we simply do not remember the last collapse or forsee another in the future. The inability to foresee a high-risk, but low probability event is sometimes referred to as an aspect of **myopia,** or lack of foresight[50]. This relates to our tendency to overvalue the present, and hyperbolically discount the future. Short time horizons and a tendency towards myopic thinking in part contribute to bubble dynamics and crises.

4.3 Building a Better Financial System?

Behaviorists, as well as historical thinkers like Keynes and Minsky, offer important insights into understanding how finance and markets are often unpredictable and subject to instability. But does behavioral economics have anything to offer in terms of policy applications for regulating financial markets and creating more stability?

4.3.1 Financial Transactions Tax

One issue identified as a potential source of fragility in financial markets, is the speed and number of trades that are capable of being made. In the modern age of algorithmic trading, this can potentially lead to issues such as flash crashes.[51] Being able to trade stocks, bonds, and other

[48] Kahneman, Daniel and Amos Tversky. "Prospect Theory: An Analysis of Decision Under Risk." *Econometrica* 47, no. 2 (1979): 263-291.
[49] Cassidy, John. 2010. *How Markets Fail : The Logic of Economic Calamities*. Picador.
[50] Gabaix, Xavier and David Laibson. *Myopia and Discounting*: National Bureau of Economic Research, 2017. http://www.nber.org/papers/w23254.
[51] U.S. Commodity Futures Trading Commission and the U.S. Securities & Exchange Commission. "Findings Regarding the Market Events of May 6, 2010: Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues." September 30, 2010. https://www.sec.gov/news/studies/2010/marketevents-report.pdf

financial instruments quickly in part facilitates speculation—especially when traders believe they can very quickly turn a profit. Similarly though, if traders are buying and selling based on impulses—or Keynes's animal spirits—fast trading may also facilitate speculative bubbles and crashes.

Because of this, many economists and policy makers see the idea of a **financial transactions tax** as a policy that can impose a small cost to high frequency trading, which may then force sellers to trade less frequently and therefore with less impulsive behaviors. A small cost to trading may force investors to have longer time horizons for their investment planning and reduce speculative trading. One experimental economics study that simulated the trading environment shows that depending on the design, financial transactions taxes could have some unintended consequences for market volatility, but other similar studies show potential for increasing stability and output by disincentivizing impulsive high-speed transactions.[52]

BOX 3: BEHAVIORAL FINANCE IN POST-2008

The 2008 financial crisis raised great concern about the financial system and its stability, as well as around consumer protections for financial products, such as mortgages, student loans, and credit cards. Passed in 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act was a response to the financial crisis. The bill created the U.S. Consumer Financial Protection Bureau (CFPB), where behavioral economist Sendhil Mullainathan served as the CFPB's first head of research. The bill included many reforms aimed at increasing financial stability, accountability, and transparency, though many economists note the light touch of these regulations and lack of change in the organization of the financial system after the implementation of Dodd-Frank. Some recommend that financial regulations going forward incorporate behavioral finance through research, regulation, enforcement (such as supervision informed by behavioral insights), using systemic risk assessments that factor in behavioral biases, and through improved communication from central banks on monetary policy. For example, economist Alan Blinder's research shows the importance of how and when a central bank communicates to the financial industry in influencing investor behavior and confidence, much like the observations noted by Keynes.

Sources: Blinder, Alan S., Michael Ehrmann, Marcel Fratzscher, Jakob De Haan, and David-Jan Jansen. "Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence." *Journal of Economic Literature* 46, no. 4 (2008): 910-45. Accessed January 24, 2020. www.jstor.org/stable/27647085.

Khan, Ashraf. "A Behavioral Approach to Financial Supervision, Regulation, and Central Banking." IMF Working Paper. WP/18/178. 2018.

[52] Huber, Jü, Michael Kirchler, Daniel Kleinlercher, and Matthias Sutter. "Market Versus Residence Principle: Experimental Evidence on the Effects of a Financial Transaction Tax." *The Economic Journal* 127, no. 605 (2017): F610-F631.; Burman, Leonard E., William G. Gale, Sarah Gault, Bryan Kim, Jim Nunns, and Steve Rosenthal. "Financial Transaction Taxes in Theory and Practice." *National Tax Journal* 69, no. 1 (2016): 171-216.

4.3.2 Consumer Finance and Behavioral Insights

On the consumer side of financial markets, consumers make decisions around debt, including auto loans, mortgages, credit cards, student loans, and so on. Behavioral economics can offer solutions to provide better transparency for consumers taking on such debts, especially when those debts may be related to a price bubble or other dynamic.[53] For example, during the housing bubble, many mortgages were advertised to consumers as having low upfront costs—the so-called "balloon mortgage". These mortgages lured in consumers by offering very low initial interest rates and small down payments. The catch, however, was that after a short period of time—say a few years—the interest rate and monthly payments would increase drastically, or "balloon".

These types of mortgages directly draw on our tendency to overvalue the present and discount the future, but in this case, putting many consumers in a precarious financial position.[54] Consumer protections that require lenders to clearly outline these terms, emphasize the lifetime interest costs and payments, or even limit the extent to which "balloon" structures can be used would ameliorate the extent to which lenders can exploit consumer behavioral tendencies.

4.4 Behavioral Economics and the Future of Finance

This section gives a short introduction to the world of behavioral finance, which continues to be a developing field for research. We have discussed that many insights of behavioral economics can actually be traced back to the contributions of economists like John Maynard Keynes and Hyman Minsky. These insights on investor psychology help us to understand how phenomenon like price bubbles, market crashes, and crises emerge in the economy. Drawing on behavioral economics, we can also consider ways in which to regulate markets and design consumer policies that prevent such volatility.

5. BEHAVIORAL INSIGHTS FOR ENVIRONMENTAL AND CLIMATE ECONOMICS

Economists typically frame environmental problems as issues of **common property resources**. Such resources are those that are available to everyone but subject to degradation if use levels become unsustainable. For example, the atmosphere is considered a common property resource because it is available to all as a repository of air pollutants such as carbon dioxide, but if pollution levels exceed the atmosphere's absorptive capacity then ecosystems and human health will be harmed. Other examples of common property resources include drinking water sources, fisheries, forests, and soils.

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[53] Bertrand, Marianne, Sendhil Mullainthan, and Eldar Shafir. 2006.
"Behavioral Economics and Marketing in Aid of Decision Making Among the Poor." Journal of Public Policy and Marketing 25 1: 8-23.
[54] Dudley, Kelli. "Behavioral Economics in the Mortgage Lending and Mortgage Foreclosure Contexts. The John Marshall Law School Fair and Affordable Housing Commentary. 2006.
https://jmls.uic.edu/clinics/fairhousing/pdf/commentary/behavioral-economics.pdf

Economic theory indicates that unregulated common property resources will often be exploited. The problem is that each user has an incentive to use a resource that is freely available, while no individual has a strong incentive to conserve the resource. As each user seeks to profit from a resource as long as it is available, use levels can eventually reach unsustainable levels. You may be familiar with this situation being referred to as the **tragedy of the commons**.

As climate change and environmental degradation become important economic issues impacting everyone, behavioral economics can offer insights to understanding how these problems arise and offer policy suggestions that take into context our psychological predispositions. In fact, the American Psychological Association created a Task Force in 2008 to compile research on the role psychology as a discipline will have in understanding and addressing global climate change.[55] International organizations like the OECD (Organization for Economic Cooperation and Development) have also published reports calling for consideration of insights from behavioral economics in developing policies to mitigate and adapt to global climate change. [56]

In this section we will explore how we can use behavioral economics to understand issues like climate change, and consider to what extent behavioral economics can help us in moving towards a more sustainable economy.

BOX 4: THE PUBLIC GOODS GAME AND ENVIRONMENT

Experimental economics, as a subfield of behavioral economics, attempts to capture dynamics of human behavior and decision-making using controlled laboratory games. These games allow researchers to carefully document people's decision-making process under different scenarios. A public goods game is used to simulate the dynamics around public goods and common property resources. Public goods differ from common property resources in that they don't suffer from degradation regardless of use levels. Examples of public goods include national defense and over-the-air radio. Economic theory indicates that public goods will typically be under-supplied as people seek to benefit from public goods without paying for them, a problem known as free riding. An important environmental example is funding to address climate change. We all benefit from actions to reduce climate change, but each individual (or country) may have little incentive to act independently.

Setup: The public goods game has two or more players. Each player is given an initial allotment of tokens or money. The players can choose whether or not to contribute some portion of their money to the public good, keeping the rest for themselves. In doing so, the value of the public good contributions are multiplied by some factor (say a 20% rate of return so contributing $1 generates $1.20). The total pot of the public good is then divided evenly between the players, regardless of who contributed.

[55] "Psychology and Global Climate Change: Addressing a Multi-faceted Phenomenon and Set of Challenges." Report of the American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change. 2011. https://www.apa.org/science/about/publications/climate-change

[56] OECD. "Behavioural Economics and Environmental Policy Design." July 2012. https://www.oecd.org/env/consumption-innovation/Behavioural%20Economics%20and%20Environmental%20Policy%20Design.pdf

What would you do, if given the task of the public goods game? Say you are given an initial allotment of $100—how much would you contribute to the public good? All of it? Some portion? What would you expect *homo economicus*—the rational economic actor—to do? What do you think participants, on average, actually do?

Expected Results: The socially optimal result, maximizing the payout the everyone, requires cooperation between the players so that they all agree to contribute the maximum amount to the public fund. This results in the largest payout for everyone. However, for *homo economicus*, free riding—paying nothing to the public good—would be the rational choice. By contributing zero, each player theoretically maximizes his or her payoff regardless of what the other players choose. In other words, a free rider would keep all of his or her money, and get an equal share of the public goods pot.

Actual Results: In many experiments, people do tend to contribute some amount of their money to the public good, varying across different studies. Fehr and Schmidt's (2000) study sets up two different scenarios for the game: one in which players choose what to contribute to the public goods game freely, and another where punishment—or a cost to freeriding—is introduced for free-riders in the game over several rounds and with knowledge of each players' contributions. They find that in the no-punishment scenario, average contributions start off high, but over time decrease as players observe free riders, yet in the scenario with punishment costs imposed, contributions increase over time. This result shows a general aversion to freeriding and inequity, and that imposing costs to freeriding may be a solution for encouraging more cooperation amongst players. In an environmental context, this translates to policy levers such as carbon taxes, which act as the "punishment cost" tool to encourage cooperation and trust in contributing to a clean air environment. Similarly, these results match with Elinor Ostrom's work on developing principles of managing the commons, including clear group boundaries and rules that are carried out and enforced by the community members, and graduated sanctions and conflict resolution mechanisms.

Implications: These results show that people can cooperate to fund public goods and avoid the tragedy of the commons. The pioneering work of Elinor Ostrom, the first woman to win the Nobel Prize in Economics, showed that under certain conditions that foster cooperation—such as collective decision-making arrangements and conflict resolution resources—many groups and societies are able to sustainably manage public goods and common property resources, like pastures and fisheries.

Sources:

Fehr, Ernst, and Simon Gachter. 2000. "Cooperation and Punishment in Public Goods Experiments." *American Economic Review*, no. 4: 980.

Ostrom, Elinor. *Governing the Commons : The Evolution of Institutions for Collective Action*. Canto Classics. Cambridge University Press, 2015.

5.1 Applying Prospect Theory to Understanding Climate Change: Hyperbolic Discounting and Reference Points

Global climate change is an important environmental issue facing all people on the planet, posing potential costs to everyone. The vast majority of scientists indicate that global emissions of greenhouse gases, such as carbon dioxide, need to decline significantly in order to prevent considerable negative consequences including crop yield declines, spread of tropical diseases, and more extreme weather. Why is it then that we have yet to curb the carbon emissions responsible for impending climate change? As discussed in Box 5, individuals may not feel compelled to take costly action unless they have confidence that others will take similar actions.

Prospect theory can help us to understand why many governments have lagged in responding to global climate change. If you recall, prospect theory shows how people make decisions under conditions of uncertainty and with limited information. These decisions often deviate from the rational actor model, since we often overvalue losses and undervalue gains. These concepts from prospect theory can help us to come up with an understanding of our inadequate response to climate change.

5.1.1 Hyperbolic Discounting

Hyperbolic discounting is a concept drawing on element prospect theory that can help us to understand why the threats of global climate change may be undervalued. How do we value an amount of money today versus receiving that same amount in the future? Do we value $1 today the same as $1 a year from now? The answer is that our normal preference for the present plays an important role in how we value future outcomes. In behavioral economics, hyperbolic discounting describes how our time preference for receiving rewards sooner leads us to undervalue, or discount, large rewards in the future as compared with small rewards closer to the present. It is described as hyperbolic because the discount rate is not constant over time. The discount rate is initially quite high, leading to significant discounting in the first few years, and then the discount rate declines over the time horizon.

How does hyperbolic discounting relate to climate change? Economists show that hyperbolic discounting is one way to understand current issues of inaction or lack of sufficient action for dealing with climate change. Economists who study hyperbolic discounting show that it leads to people undervaluing the long-run damages of carbon emissions and therefore also undervaluing the current benefits of reducing carbon emissions. Hyperbolic discounting then is one plausible explanation for understanding climate inaction. Economic policies can be used to overcome the problems of hyperbolic discounting. Such policies include a carbon tax or incentives and subsidies to encourage the adoption of clean energy technologies.

5.1.2 Reference Points

Reference points refer to the cognitive bias that we have to base our expectations about the future on some given piece of information. Thus our expectations of the future are often dependent on the information currently available. Many of us tend to anchor our reference points to our current situation. Anchoring in the present is perhaps one reason why many ignore impending significant

impacts of climate change, since in the present the impacts appear relatively minor. So we may not feel a sense of urgency despite the warnings of scientists because climate change doesn't seem that bad yet.

One paper suggests that our reference points for climate change matter for understanding how we adapt and mitigate.[57] According to prospect theory, people view equivalent gains and losses differently, when evaluated with respect to a common reference point. In particular, people tend to place greater value on losses than gains. As discussed earlier in the module, this is known as loss aversion. Therefore, if adjusting the reference point is possible, a gain could be made to appear as a loss, and thus become more valued.

In applying this tendency for loss aversion to climate change, the paper differentiates between presenting future climate damages in a low-emissions scenario relative to current damages, or relative to some future high-emissions scenario. Relative to a high-emissions scenario, the low-emissions scenario appears as a gain. But relative to current damages, the low-emissions scenario appears as a loss, as damages are still increasing (albeit at lower rate). Thus people may tend to place more value on policies to mitigate damages if their reference point is the present.

5.2 Behavioral Environmental Policy Tools: Framing, Defaults, Norms, and Commitment Devices

Many governments and organizations have begun integrating behavioral insights into environmental and climate policy. Many of these interventions focus on ways to change consumer behavior in order to shift consumption towards more sustainable production methods and resources. Literature on the effectiveness of these policy tools maps out a number of ways behavioral interventions can be used to design more effective and environmental friendly policy.[58] Here we will discuss just a sample of these, including framing, default options, social norms and comparisons, commitment devices, and nudges.

5.2.1 Framing and Default Options

Behavioral economics shows that **framing** has a significant impact in how we perceive information and therefore the decisions we make. Framing is defined as a cognitive bias based on how information is presented to us—or in other words, how it is framed.

Framing a particular choice as a **default option** has been shown to have a significant effect on people's choices. A default option is a choice that is made by someone unless they specifically opt-out to select an alternative choice. For example, a default choice may be that an employee is automatically enrolled in a particular company retirement plan unless he or she actively chooses a

[57] Osberghaus, Daniel. "Prospect Theory, Mitigation and Adaptation to Climate Change." *Journal of Risk Research* 20, no. 7 (July 2017): 909–30.
[58] Byerly, Hilary, Andrew Balmford, Paul J. Ferraro, Courtney Hammond Wagner, Elizabeth Palchak, Stephen Polasky, Taylor H. Ricketts, Aaron J. Schwartz, and Brendan Fisher. 2020. "Nudging Pro-Environmental Behavior: Evidence and Opportunities." *FRONTIERS IN ECOLOGY AND THE ENVIRONMENT* 16 (3): 159–68.

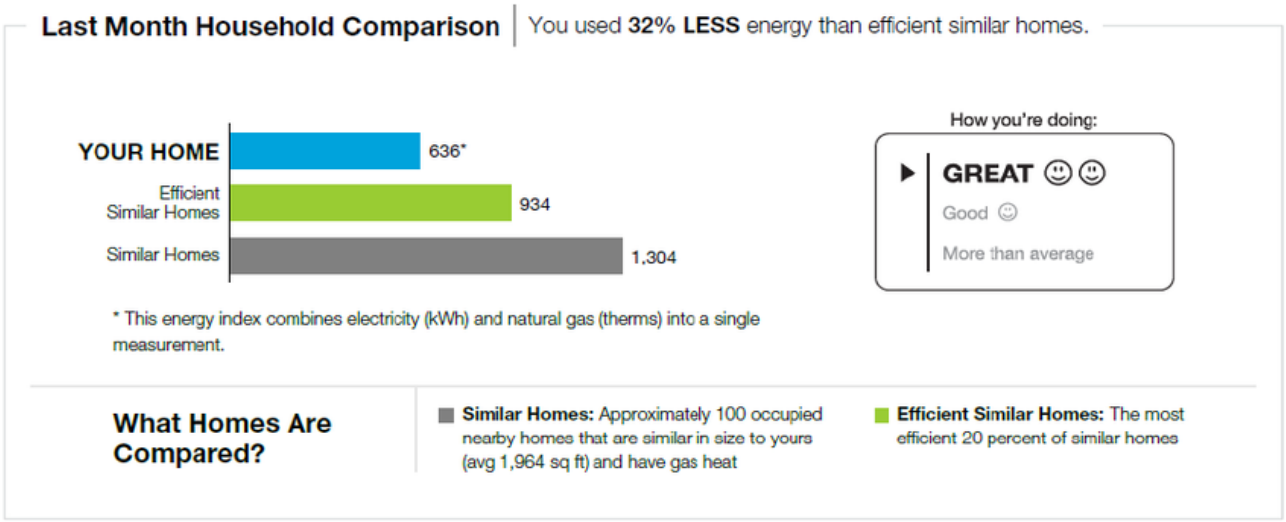
different plan. We know from behavioral economics that people tend to stick with the default option, with few people selecting to opt-out.[59]

One study tested the impact of default options on households' energy choices. Many households have the option to purchase some or all of their energy from renewable sources such as wind or solar, although this choice typically increases energy costs. Contrasted to this "opt-in" scenario, researchers studied a real-world case of an energy provider making renewable energy the default choice, which was slightly more expensive than the standard energy supply. Despite the higher cost, 68% of participants with the default green option chose to stay with the green option, compared with 41% of those given the "grey" default who later opted into the green option.[60]. In short, the default sticks, and having environmentally-conscious default options may be a low-cost way of shifting consumption choices.

5.2.2 Social Norms and Comparisons

Another lesson from behavioral economics is that most people compare themselves relative to others when it comes to their consumption choices. In general, people like to be above average. These types of social comparisons can help motivate better environmental behaviors. An increasing number of energy providers send their customers home energy reports on how they compare with their neighbors regarding their energy usage. Figure 6 is a sample of the social comparison featured in these reports.

Figure 6. *Social Comparison Example*



Source: Data-Driven Innovation through Open Government Data - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Social-comparison-module_fig2_260929913 [accessed 4 Feb, 2020]

[59] Beshears, John, James J Choi, David Laibson, and Brigitte C Madrian. 2006. "The Importance of Default Options for Retirement Savings Outcomes: Evidence from the United States." *NBER Working Papers*, February, 1.

[60] Pichert, Daniel, and Konstantinos V. Katsikopoulos. 2008. "Green Defaults: Information Presentation and pro-Environmental Behaviour." *Journal of Environmental Psychology* 28 (1): 63–73.

This behavioral intervention relies on social norms and comparisons, showing how a customer ranks relative to their neighbors. People tend to use social norms as cues for their own consumption. This creates a norm by describing the usage patterns for neighbors and similar homes. This new social norm motivates people to reduce their consumption to conform to the norm.

One evaluation of these energy reports found that social comparisons led to an overall 2% reduction in usage. Households initially using the most energy tended to reduce their consumption the most. In other words, comparing unfavorably to one's neighbors motivated people to significantly reduce their energy consumption. The results suggested that the impact of energy reports was equivalent to raising prices 11-20%.[61] Social comparisons may also be useful for reducing consumption of water, gasoline, and other natural resources.

5.2.3 Commitment Devices and Nudges

Behavioral economist Cass Sunstein and co-author Lucia Reisch argue that "nudging" can be used encourage people to go "automatically green". [62] **Nudging** refers to the small, indirect ways that a policy design impacts the behavior of individuals. The authors argue that while traditional economists rely on mechanisms like regulation and pricing, behavioral design may offer a more effective tool for changing consumption patterns.

A **commitment device** is an example of a nudge. Commitment devices include explicit pledges to change a particular behavior.[63] A study in Costa Rica asked households to commit to a plan to reduce their water usage. The plan involved them setting a specific water reduction target, and to indicate whether they would undertake specific changes such as using less water while gardening and turning off the tap while brushing teeth. The results showed that households making these plans reduce water use about 5% relative to those who did not make plans.

Conceptually, other environmental policies draw on the idea of a commitment device. For example, some argue that taxing carbon or establishing a carbon budget (a limit on the quantity of emissions) effectively commits society to mitigating carbon emissions.[64] Other experimental resource extraction games have shown that having a costly commitment device—such as an initial investment in solar energy—can lock in commitment to using that form of energy.[65]

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[61] Allcott, Hunt. "Social Norms and Energy Conservation." *Journal of Public Economics* 95, no. 9–10 (October 2011): 1082–95.
[62] Sunstein, Cass R., and Lucia A. Reisch. 2014. "Automatically Green: Behavioral Economics and Environmental Protection." *Harvard Environmental Law Review*, no. Issue 1: 127
[63] Saugato Datta, Matthew Darling, Karina Lorenzana, Oscar Calvo Gonzalez, Juan Jose Miranda, and Laura de Castro Zoratto. 2015. "A Behavioral Approach to Water Conservation: Evidence from a Randomized Evaluation in Costa Rica." Ideas 42, World Bank.
[64] Reeves, Richard. 2015. "Carbon Taxes as Commitment Devices." Brookings Institution Op-Ed. https://www.brookings.edu/opinions/carbon-taxes-as-commitment-devices/
[65] Dengler, Sebastian, Reyer Gerlagh, Stefan T. Trautmann, and Gijs van de Kuilen. 2018. "Climate Policy Commitment Devices." *Journal of Environmental Economics and Management* 92 (November): 331–43.

5.3 Concluding Ideas: Are Nudges and Behavioral Interventions Enough?

The OECD released a report in 2012 outlining areas in which behavioral economics could be applied to environmental and climate policy research. These include:

- Reference points and peer pressure as policy instruments
- Ways to facilitate collective action to manage natural resources
- Risk communication and cognitive biases
- Perceptions of environmental pricing
- Reference points and status quo bias
- Commitment devices
- The impact of policies on preferences for conservation
- Does environmental pricing (such as pricing carbon) crowd out social norms?
- How important is framing?
- Green defaults and consumer choices

This list offers an overview of some potential areas of future research and policy implementation for behavioral economics and environmental policy. For example, the report suggests that there are many under-explored ideas coming from behavioral economics that may be useful for applied environmental policy. For example, could real-time water or fuel usage reporting reduce consumption to more sustainable levels? How can governments facilitate collective action to maintain natural resources and common pool resources? The report also suggests further exploring the use of commitment devices, such as deposit-refund schemes for hazardous waste, and tariff structures for different forms of energy. Other ideas include the use of lotteries and permits to limit traffic congestion and encourage environment conservation. The OECD also suggests that green defaults may be an effective way to change consumer choices, for example, by having maps report walking or public transit routes by default, having restaurants offer tap water by default, having cars that use fuel efficient start-stop systems as the default, and having green default settings on building thermostats.

While behavioral economics has been effective in uncovering some powerful tools to help facilitate changes in consumption—such as framing effects and default options—it is important to ask: are nudges enough? Many of the behavioral policies covered in this section focus on changing consumer behavior around energy and the environment, with less focus on some of the larger structural questions regarding a fossil fuel-based economy with many extractive industries. Some recent research has also pointed to the limits of nudging, suggesting nudges may not be enough to deal with the scale of global environmental degradation and climate change. Further, some even question the ethics of nudges in a society that values freedom of choice. [66]

Nevertheless, behavioral economics can still offer a more realistic baseline model of individual behavior and decision-making that is important to consider when designing and implementing policies around the environment and climate.

[66] Schubert, Christian. 2017. "Green Nudges: Do They Work? Are They Ethical?" *Ecological Economics* 132 (February): 329–42.

6. CONCLUSION TO BEHAVIORAL ECONOMICS AND ITS POLICY APPLICATIONS

In this module, we build a basic toolkit of concepts, insights, and methods from behavioral and experimental economics. Through understanding prospect theory, the psychology of scarcity, implicit bias, and nudges, we have explored how behavioral economics can help us understand issues of economic development, inequality, finance and financial stability, and the environment and climate. In doing so, we also explored using these behavioral insights to design real policy solutions that account for the economic, social, and psychological contexts of policy in everyday life.

KEY TERMS AND CONCEPTS

Altruism: behavior of giving to others or acting in concern of others without self-interest

Animal spirits: the emotions and impulses that drive economic decision-making

Anchoring: the psychological bias towards an initial reference point that influences subsequent decisions or judgments

Biased Beliefs: beliefs that are affected by the context of that belief, such as tradition, culture, and social norms

Choice architecture: the different ways in which choices are presented to economic agents

Cognitive dissonance: psychological tendency to ignore or outright not believe something due it its unpleasantness or not matching up with your internal worldview

Cognitive tax: the idea that under conditions of financial stress or poverty can create a burden to cognition

Commitment device: a choice that restricts one's set of choices in the future intentionally

Common property resources: a good that is available to everyone, but degradable if overused

Confirmation bias: tendency to selectively believe information that confirms our priors or preferences

Default option: the automatically selected option

Developing country: a country undergoing the processes of economic development in terms of industrialization, growth, and structural change

Dictator game: game in which one player unilaterally allocates resources amongst all players

Empathy gap: cognitive bias in which we misestimate the role of state-dependent emotional responses in decision-making

Experimental economics: a method of studying behavioral economics, often using games or computer simulations as experiments to record data on economic decision-making

Framing: the effect that the way information is presented has on decision-making

Fundamental uncertainty: Keynes's conception that all economic decisions are subject to the reality of not knowing future outcomes

Herd behavior: the tendency to make decisions based on the perception of what others will decide

Heuristics: psychological rules of thumb for decision-making

Human Development Index: a composite measure of education, health and well-being, and income

Implicit bias: underlying, unconscious stereotypes and attitudes towards another social group

Inequality aversion: the general distaste or preference against unequal distributions of resources, income, wealth, and so on

Internalized oppression: the idea that members of oppressed groups may take on or believe negative stereotypes about that group

Loss aversion: tendency to be more psychologically impacted by losses than similar gains, therefore disliking losses

Minsky moment: the sudden collapse of a market or asset values in the Minsky credit cycle or business cycle

Myopia: lack of foresight or long-term time horizons in economic decision-making

Nudging: using choice architecture to prod small changes in behavior or decisions

Prospect theory: set of concepts grounded in psychology describing how people make decisions in scenarios of different outcome probabilities and risks

Public goods game: game in which players are asked to allocate between a private resource and a pooled, public resource

Rationality assumption: the assumption in neoclassical economics that economic agents always calculate perfectly utility maximizing decisions

Reciprocity: responding to an individual's action with an equivalent action

Reference points: point of comparison from which people make decisions i.e. a status quo reference point

Risk aversion: generally reluctant to choose perceived risky options

Social and cultural norms: beliefs and practices held by a collective group

Stereotype threat: the situation in which people feel at risk of conforming to a particular social group stereotype often resulting in anxiety or distress

Time discounting: valuing sums in the present greater than the far future

Tragedy of the commons: a scenario in which a public good or shared common pool resource is depleted due to self-interest

Ultimatum game: game in which one player offers an allocation of resources amongst all players, but it must be accepted by the other players

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Forsythe, Robert. 1994. Fairness in Simple Bargaining Experiments. *Games and Economic Behavior* 6, no. 3:347-369.

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DISCUSSION QUESTIONS

1. In the introduction, we named many examples of heuristics and other behavioral tendencies—anchoring, framing effects, loss aversion, time discounting, and so on. Can you identify examples of these in your life or experience? Try to identify at least two examples of situations where these principles apply.

2. What implications do you think behavioral economics has for economic policy? How do you think that more realistic assumptions about altruism and social preferences may lead to different policy recommendations? Discuss.

3. Consider the list of scarcities outlined by Datta and Mullainathan. Do you believe that this is a comprehensive list? Can you think of examples of these scarcities in everyday life in your country? What are the policy implications of accepting that poverty and economic conditions can create cognitive scarcities?

4. The section on development covered a few examples of how biased beliefs, social and cultural norms impact development. Find and discuss additional examples.

5. Looking at the figures from Norton and Ariely's study in the section on inequality, which income distribution would you prefer and why? Why do you think it is that people generally prefer some inequality, as opposed to complete equality?

6. Issues of discrimination and bias are deeply structural to society and cannot be simply reduced to psychological bias. Given that, do you think that behavioral economics can contribute to ameliorating these inequalities? What contributions do you believe could be made through behavioral and experimental economics?

7. Finance and debt continue to be important issues in the macroeconomy. What insights do you think behavioral economics has to understand these issues and find solutions? For example, how would a behavioral economist interpret the emergence of rising student debt in the United States?

8. After reading about the 2007-2008 financial crisis do you think that behavioral economists could have designed policies to prevent the crisis? Why or why not?

9. Climate change and environmental issues are large, global issues impacting all people. Behavioral economics offers some insights into understanding the development of these issues. How would you evaluate the usefulness of behavioral economics in designing policy for ameliorating climate and environmental issues? What are its strengths? What are the potential limits?

10. Framing and default options can have a powerful influence on consumer decisions. Discuss the results of the green-electricity default study. Why do you think the default option sticks? In what circumstances might that not be the case? Can you think of other examples where a green or sustainable default option could yield impactful results?

11. One tension for behavioral economics is the ethical concern that nudges and other intervention limit or influence people's choices. What are your views on this? Are behavioral approaches too paternalistic or not?