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Inequality and Decision Making: Imagining a New Line of Inquiry

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Abstract

The substantial increase in inequality in the United States over the past three decades has provoked considerable debate, with some analysts characterizing rising inequality as among the greatest threats facing the nation and others dismissing it as little more than a hiccup – or even celebrating it as a favorable development – in the progress of American capitalism. Despite numerous claims in popular venues that high inequality has slowed growth, precipitated financial instability, and profoundly distorted the nation's political system, our review of the literature finds no academic consensus on the *consequences* of inequality for the health of the economy or the democracy, or for nearly any other macro-level outcome. With the academic community reaching inconclusive and conflicting findings, we suggest that careful empirical study of possible *mechanisms* by which income inequality may exert macro-level effects is warranted. We suggest further that that one potential mechanism that may be especially worthy of investigation relates to possible effects of high or rising inequality on individual decision making. Drawing on nascent research, we examine a handful of pathways through which inequality may plausibly influence individual decisions. Finally, we propose ways that these and other pathways might be productively explored and assessed through behavioral experiments. By bringing together what are today two separate areas of research – decision making and inequality (or social disparity) – this new line of inquiry could help to break the stalemate that has, until now, characterized the study of inequality and its consequences.

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1. Introduction

It is by now well known that the United States has seen a large shift in its distribution of income over the past three decades. The most widely accepted estimates suggest that from 1980 to 2010, the income share (including capital gains) of the top 1% of Americans doubled, rising from 10% to 20%, while the income share of the "bottom" 90% of Americans fell from 65% to 52%.[1] Based on such data, it is difficult to deny that the nation has experienced a distributional sea change.

What is less clear is how this sea change has affected American society. Although there appears to be a strong connection between inequality of income and inequality of other *individual* outcomes, such as health or longevity, there is little if any agreement on broader (macro-level) consequences.[2] For example, there is little consensus on whether greater income inequality affects the rate of GDP growth, the magnitude of spending on public goods, the stability of the financial system, the strength of *average* health or educational outcomes, or the quality or tilt of political representation.

There are many possible reasons why such macro-level consequences have not yet been nailed down. The first and most obvious is simply that inequality may not exert any important effects on the economy, the political system, or the society, and that the search continues only because it is difficult to prove a negative. Alternatively, it is possible that the effects are there, but that the nature of the phenomenon makes it challenging to show clear correlations (especially across multiple countries) and even tougher to demonstrate compelling causal links. If, for instance, different types, levels, or paths of inequality generated substantially different effects, or if the effects varied greatly across institutional contexts, then empirical studies that lacked adequate specification could easily fail to identify significant consequences of inequality, even when they existed.

One way of cutting through the thicket would be to focus greater attention on *mechanism*, both for its own sake and as a means of further refining large-sample studies in the future. Why exactly might high or rising inequality exert macro-level effects? And for each potential mechanism, can we anticipate what types and levels of inequality would likely exert the largest effects, in what direction, and under what conditions?

One potential mechanism that is especially worthy of investigation relates to the impact that high or rising inequality could have on individual decision making and behavior. Behavioral psychologists and economists have taught us a great deal about biases (such as optimistic bias and availability bias) that can affect decision making under uncertainty, particularly as a result of heuristics gone awry. *The question that we pose in this paper is whether certain types, levels, or paths of inequality may affect individual decision making in comparable ways.* If so, then some of the broader potential consequences of inequality – economic, social, and political – might come into clearer focus.

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[1] Piketty and Saez (2003), table A3, updated through 2010.

[2] We are grateful to Lane Kenworthy for highlighting this distinction. See also, e.g., Lynch et al (2000) and Subramanian and Kawachi (2004). We are indebted as well to Bruce Western for encouraging us, more broadly, to explore the lack of consensus on the consequences of inequality. See e.g. Morris and Western (1999, p. 650).

Psychologists have long recognized the importance of reference effects in human behavior. People respond not only to absolute levels (of consumption, for example) but also to differences relative both to past experience and to the experience of others. The same gadget (say, an iPhone) may produce more enjoyment if the consumer is the first on his block to have it, rather than the last. And the same mild temperature in Boston may produce more happiness or excitement in February than in May – again, because the deviation from one's frame of reference is larger.[3]

If a change in income inequality affects frames of reference, it thus has the potential to affect decision making. One of the pioneers in the study of reference effects within economics, Robert Frank, has suggested that high inequality can trigger "expenditure cascades" (and ultimately increase the incidence of financial distress), as each of us feels the need to spend more to keep up with those just above us on the income ladder.[4]

One can also imagine numerous other causal mechanisms running through decision making. It has been suggested, for example, that higher inequality may provoke greater self-enhancement, raising individuals' already exaggerated assessments of their own qualities.[5] A closely related possibility is that inequality influences individuals' degree of optimistic bias, or their perceptions of risk and their appetite for risk taking. Any of these effects could significantly affect broader economic outcomes. Similarly, particular forms of inequality may sway individuals' feelings of social affinity for those above or below them on the income ladder, as well as their perception of their own chances of moving up or down the ladder, both of which could influence individual voting behavior and thus political outcomes.[6]

Focusing on possible causal mechanisms that run through individual decision making is sensible not only because many of the hypotheses (see Section 4) resonate with experience, but also because it is possible to test them directly through lab experiments. Behavioral experiments are hardly perfect tests in this regard, since many things can happen (or be made to happen) in a laboratory environment that do not commonly happen outside of the lab. Still, if simulations consistently showed that certain types of inequality elicited particular behaviors or biases, these results could be enormously powerful, especially in combination with other forms of "real world" evidence. Such findings in the lab could also prove invaluable in informing the design of future large-sample studies.

In the pages that follow, we will survey the literature on consequences of inequality and consider a range of hypotheses involving possible effects of inequality on individual decision making and behavior. This is an exploratory essay. The goal is not to prove or disprove a particular consequence of inequality, but rather to suggest a line of inquiry that focuses on mechanism and that is amenable to alternative research methods, including experiments in the lab. Our hope is that such an approach may be productive in its own right and, ultimately, help to foster greater precision in the study of inequality and its social consequences going forward.

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[3] In the psychology literature, the classic reference is Helson (1964). See also Frank (1989, pp. 80-85).

[4] Frank, Levine, and Dijk (2010).

[5] Loughnan et al. (2011, p. 1254).

[6] See Kristov, Lindert, and McClelland (1992); Lupu and Pontusson (2011).

2. Consequences of Income Inequality: Surveying the Literature

Much has been written about the consequences of income inequality, most notably its effects on economic growth, public health, political outcomes, and, most recently, financial crises. A brief survey of the academic literature on these topics, however, reveals that the scholarly community has yet to achieve meaningful consensus on what consequences, if any, arise from varying levels of income inequality.[7]

Economic Growth

Despite decades of empirical research on the relationship between income inequality and economic growth, the existing literature is characterized by considerable disagreement on whether inequality affects growth positively, negatively, or at all. Views on the relationship, moreover, have evolved over time.

Voitchovsky (2010) finds that through the late 1990s "empirical analyses commonly concurred that inequality hinders growth prospects."[8] This is supported by Bénabou (1996), who summarizes the empirical findings of twenty-three cross-sectional studies of the links between income inequality and economic growth (or investment) and concludes that the regressions "deliver a consistent message: initial inequality is detrimental to long-run growth," though the results are notably sensitive to regional dummies and sample selection.[9]

Barro (2000) suggests that the theories underlying many of these studies, mainly from the 1980s and 1990s, can be classified into three broad categories: political economy, borrowing constraints, and social unrest.[10] First, in the political economy category, there are numerous variations on the theory that income inequality, by yielding a mean income above that of the median voter, creates significant demand for redistribution, which reduces investment and therefore impedes broader economic growth.[11] The second category, regarding borrowing constraints, posits that if high inequality is associated with imperfect capital markets, human capital investments will generally be limited to those in the upper parts of the income distribution, which in turn implies that the distribution of resources will affect aggregate investment in human capital and thus economic growth.[12] Finally, in the social unrest category, the theories suggest that income inequality creates incentives for the poor to engage in crime and

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[7] Although we focus our review on these four primary sub-literatures, the lack of consensus on the consequences of inequality extends well beyond these areas. There may be a few exceptions, however. For example, one area where a rough consensus may have emerged concerns possible causal connections between income inequality and violent crime. See esp. Kelly (2000); Fajnzylber, Lederman, and Loayza (2002, 2002a); and Wilkinson (2004). Even here, however, there are contrary views; see esp. Neumayer (2005).

[8] Voitchovsky (2010, p. 3).

[9] Bénabou (1996, p. 13).

[10] Barro (2000) also offers a fourth category, related to savings, but does not identify any recent papers that rely on this channel. Kenworthy (2004, 45) highlights yet another channel through which inequality may impact growth by distorting incentives. He explains, "High levels of inequality may be viewed by those at the middle and bottom of the income distribution as excessively unfair, thereby reducing worker motivation and workplace cooperation." See also Section 4 below.

[11] See Perotti (1993); Bertola (1993); Alesina and Rodrik (1994); Persson and Tabellini (1994).

[12] See Galor and Zeira (1993); Loury (1981); Scheinkman and Weiss (1986); and Banerjee and Newman (1991).

other outside-the-market activities, which may ultimately impede growth by fostering uncertainty regarding the legal and political environment and thus adversely affect productivity.[13]

Beginning in the late 1990s, however, much of the earlier cross-country empirical evidence was increasingly challenged, in part due to improved availability of relevant data for a larger set of countries and over a longer time span, as well as more sophisticated econometric techniques. Banerjee and Duflo (2003) note that based on the refined and more comprehensive inequality dataset compiled by Deininger and Squire (1996), studies by Benhabib and Spiegel (1997), Li and Zou (1998), and Forbes (2000) raise significant questions about the earlier work – particularly regarding "omitted country specific effects that bias the [original] OLS estimates"[14] – and tend to find a positive relationship between inequality and growth. Barro (2000), meanwhile, finds little *overall* relationship between inequality and economic growth in his eighty-four country sample, but discerns that inequality has a negative relationship to growth in poor countries and a positive relationship in rich countries.[15] Banerjee and Duflo (2003) further complicate the picture by employing a non-linear model to estimate the relationship, finding that "the growth rate is an inverted U-shaped function of net changes in inequality" such that "changes in inequality (in any direction) are associated with reduced growth in the next period." They also observe that their paper "is probably best seen as a cautionary tale: Imposing a linear structure where there is no theoretical support for it can lead to serious misinterpretations."[16]

By the time of the financial crisis in 2008, therefore, the literature remained highly unsettled. In an effort similar to that of Bénabou (1996), De Dominicis, Florax, and De Groot (2008) reviewed 37 studies on the relationship between inequality and growth and found that "no general consensus has emerged so far. Conclusions seem to depend on theoretical preferences and as far as empirical studies go, on the econometric method employed, the countries considered, and the type of income distribution data used."[17] In sum, despite improvements in data quality and analytical techniques, the academic literature remained far from agreement on this critical question.

In the years since the financial crisis, the argument that high inequality hampers growth has seen a minor resurgence. A number of authors, including Stiglitz (2012a), have revived the Keynesian argument that high inequality undercuts aggregate demand by concentrating income among those with the lowest marginal propensity to consume. "In some sense," Stiglitz writes, "the entire shortfall in aggregate demand – and hence in the U.S. economy – today can be blamed on the extremes of inequality."[18] Berg and Ostry (2011), meanwhile, suggest that taking a new perspective on the data helps bring the relationship into focus. Citing insufficient attention in the existing literature to the *duration* of growth spells and "the hills, valleys, and plateaus of

[13] See Alesina and Perotti (1996); Gupta (1990); Hibbs (1973); Venieris and Gupta (1983); Venieris and Gupta (1986); and Benhabib and Rustichini (1996).
[14] Banerjee and Duflo (2003, p. 267).
[15] Barro (2000). See also, Galbraith and Kum (2003) and Castelló-Climent (2010).
[16] Banerjee and Duflo (2003, pp. 267, 268).
[17] De Dominicis, Florax, and De Groot (2008, p. 655).
[18] Stiglitz (2012a, p. 85).

growth," they find that "longer growth spells are robustly associated with more equality in the income distribution."[19]

Nevertheless, despite these late breaking developments in the literature, it remains impossible to conclude at this point that there exists anything even remotely resembling an academic consensus on the relationship between inequality and economic growth.

Population Health

There have been numerous academic studies over the past few decades that empirically assess whether the distribution of income in a society is a meaningful determinant of the health of its population. As in the case of income inequality and economic growth, the results are anything but conclusive, as summarized by John Lynch et al. (2004):

> Overall, there seems to be little support for the idea that income inequality is a major, generalizable determinant of population health differences within or between rich countries. Income inequality may, however, directly influence some health outcomes, such as homicide in some contexts. The strongest evidence for direct health effects is among states in the United States, but even that is somewhat mixed.[20]

Subramanian and Kawachi (2004) cite the widely acknowledged argument that "*individual* income is a powerful determinant of *individual* health," and that "the relation between individual income and health status is concave, such that each additional dollar of income raises individual health by a decreasing amount" – a finding emphasized by Preston (1975).[21] The conclusion would seem to imply that transferring a set amount of income from a rich individual to a poor one would result in an overall improvement in average health, because the health improvement of the poor individual would more than offset the loss in health of the rich one. This individual-level framework, based on absolute levels of income, forms a key theoretical basis of the hypothesized aggregate-level relationship between income distribution and health outcomes, leading Preston (1975) to conclude that "the distribution of incomes is clearly a likely source of variance in the basic relation between national life expectancy and average national income…."[22] Based on this model, Rodgers (1979) found the level of income inequality to be a significant predictor of life expectancy in regressions involving 56 countries.

More recently, researchers have hypothesized that perceptions relating to one's position in the income distribution (i.e., *relative* income) could affect health directly, particularly as a result of stress apparently associated with higher levels of inequality. According to Leigh and Jencks (2007), "The most frequently suggested physical mechanism linking relative deprivation to mortality is chronic stress, which appears to lower resistance to many forms of disease in a variety of species." The authors acknowledge, however, that "many studies of relative

[19] Berg and Ostry (2011, p. 3). See also Berg, Ostry, and Zettelmeyer (2012).
[20] Lynch et al. (2004, p. 5).
[21] Subramanian and Kawachi (2004, p. 79); Preston (1975). See also Lynch and Kaplan (2000) and Davey Smith and Lynch (2004).
[22] Preston (1975, p. 242).

deprivation suggest that social comparisons are most stressful when they involve people who have a lot in common, such as co-workers, relatives, and neighbors."[23]

On the whole, empirical studies testing whether differences in levels of income inequality help to explain differences in indicators of population health have yielded decidedly mixed results. In assessing 26 international aggregate studies, Lynch et al. (2004) found that "15 support the income inequality hypothesis, six find no association, and another five offer mixed support."[24] The studies showing mixed or negative results were largely conducted after 1995, "presumably using better-quality data," and several studies failed to replicate well-regarded previous work by Rodgers (1979) and Wilkinson (1992).[25]

On the other hand, in summarizing 24 aggregate studies conducted within the United States, Lynch et al. (2004) found that "there is a reasonably robust association between income inequality and some indicators of population health, such as mortality and homicide."[26] Meanwhile, a "meta-analysis of cohort studies including around 60 million participants," reported in Kondo et al. (2009) found that "people living in regions with high income inequality have an excess risk for premature mortality independent of their socioeconomic status, age, and sex."[27]

Nevertheless, a review article on health and economic inequality, published in the *Oxford Handbook of Economic Inequality* in 2009, concluded that

> although there are plausible reasons for anticipating a relationship between inequality and health (in either direction), the empirical evidence for such a relationship in rich countries is weak. A few high-quality studies find that inequality is negatively correlated with population health, but the preponderance of evidence suggests that the relationship between income inequality and health is either non-existent or too fragile to show up in a robustly estimated panel specification. The best cross-national studies now uniformly fail to find a statistically reliable relationship between economic inequality and longevity. Comparisons of American states yield more equivocal evidence.[28]

Thus, even after extensive research on possible connections between income inequality and population health, the evidence on a causal relationship remains anything but clear.

Political Outcomes

Edward Glaeser (2005) summarizes three ways in which income inequality could affect political outcomes in a democracy:

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[23] Leigh and Jencks (2007, p. 4).
[24] Lynch et al. (2004, p. 48).
[25] Ibid. See also: Wilkinson (1992). In more recently published work, Wilkinson and Picket present evidence of correlations between income inequality and a range of physical and mental health outcomes. See Wilkinson and Pickett (2009, pp. 63-102).
[26] Lynch et al. (2004, p. 49).
[27] Kondo et al. (2009, p. 7).
[28] Leigh, Jencks, and Smeeding (2009, p. 386).

> First, rising inequality should impact [politics] even within a median voter framework, where rising inequality leads to a greater desire for redistribution. Second, higher inequality might reduce redistribution and public good provision because economic resources determine not only preferences, but the ability to influence political outcomes as well. Third, economic inequality might influence the whole structure of political institutions (like democracy) themselves.[29]

Providing the seminal application of the median voter hypothesis to distributional issues, Meltzer and Richard (1981) concluded that greater inequality should provoke increased redistribution:

> With majority rule the voter with median income among the enfranchised citizens is decisive. Voters with income below the income of the decisive voter choose candidates who favor higher taxes and more redistribution; voters with income above the decisive voter desire lower taxes and less redistribution. The decisive voter chooses the tax share. When the mean income rises relative to the income of the decisive voter, taxes rise, and vice versa.[30]

This theory would suggest that with the United States experiencing a significant rise in income inequality over the past three decades, the median voter would inevitably support distributive policy outcomes that would reduce inequality. However, as Hacker and Pierson (2010) note, "The vast majority of Americans have fallen further and further behind a tiny superrich segment of society. If people care about their relative economic standing in the way that these theories suggest they should, we should already have seen a major increase in government redistribution."[31] Yet, as the authors suggest, the opposite has occurred over the same time period.

One explanation for the incongruity could be that income inequality creates asymmetrical political power for the top end of the distribution, which sufficiently offsets the predicted behavior of the median voter. Hacker and Pierson contend that the rise in income inequality resulted, at least in part, from "the relentless effectiveness of modern, efficient organizations" mobilized by a business community that "learned how to work together to achieve shared political goals."[32] Galbraith (2012) finds that "states with higher inequality tend to have lower turnout of potentially eligible voters in presidential elections," a result he argues is "consistent with the idea that in high-inequality states wealthier voters have a strong interest in restricting access to the ballot among the poor."[33] Glaeser, Scheinkman, and Shleifer (2003) also find that inequality of resources can lead to the manipulation of political institutions, specifically judicial outcomes in instances where judicial systems are weak. Campante (2011) finds that income inequality increases the share of campaign contributions originating from wealthy individuals, and Gilens (2005) finds that "when Americans with different income levels differ in their policy

[29] Glaeser (2005, p. 9).
[30] Meltzer and Richard (1981, p. 924).
[31] Hacker and Pierson (2010, p. 78).
[32] Ibid., 115, 118.
[33] Galbraith (2012, p. 16).

preferences, actual policy outcomes strongly reflect the preferences of the most affluent but bear virtually no relationship to the preferences of poor or middle-income Americans."[34]

At the same time, empirical evidence from Ansolabehere, de Figueiredo, and Snyder (2002) find "little relationship between money and legislator votes."[35] And Bredemeier (2010) reports that "empirical evidence regarding the link between income skewness and redistribution is anything [but] clear…. While a positive relation between income skewness and redistribution is indeed observed in some empirical studies, there are also studies which report the opposite." Summarizing several key facets of the literature, Bredemeier writes:

> Cross-country studies find evidence supporting the Meltzer-Richard hypothesis (Easterly and Rebelo 1993; Lindert 1996; Milanovic 2000; Mohl and Pamp 2009) as well as contradictory results (Keefer and Knack 1995; Perotti 1996; Bassett, Burkett, and Putterman 1999). Cross-sectional studies within one country reveal evidence in favor of the hypothesis at the municipality level (Alesina, Baqir, and Easterly 2000 for the US, Borge and Rattsø 2004 for Norway) or comparing Brazilian states (Mattos and Rocha 2008) but also rejecting findings at the level of US states (Gouveia and Masia 1998; Rodríguez 1999).
>
> Concerning time-series evidence, the study by Meltzer and Richard (1983) supports the theoretical prediction. … Subsequent studies on similar questions arrive at the contrary (Rodríguez 1999; Kenworthy and McCall 2008).[36]

Thus, more than 30 years after the emergence of the Meltzer-Richard hypothesis, the academic community remains divided regarding both its accuracy and the true nature of the effect (if any) of income inequality on political outcomes.

Financial Crises

The recent global financial crisis rejuvenated interest in the nature of the relationship between income inequality and financial stability; but as with other potential consequences of inequality, there remains little academic consensus on the topic.

Fitoussi and Saraceno (2010) outline a possible causal pathway relating to household indebtedness and asset bubbles:

> [A]t the outset there is an increase in inequalities which depressed aggregate demand and prompted monetary policy to react by maintaining a low level of interest rate, which itself allowed private debt to increase beyond sustainable levels. On the other hand the search for high-return investment by those who benefited from the increase in inequalities led to the emergence of bubbles. Net wealth became overvalued, and high asset prices gave the false impression that high levels of debt were sustainable. The crisis revealed itself when

[34] Gilens (2005, p. 778). See also Gilens (2012) and Schlozman, Verba, and Brady (2012).
[35] Ansolabehere, de Figueiredo, and Snyder (2002, p. 2).
[36] Bredemeier (2010, p. 7).

> the bubbles exploded, and net wealth returned to normal level. So although the crisis may have emerged in the financial sector, its roots are much deeper and lie in a structural change in income distribution that had been going on for twenty-five years.[37]

Similarly, Reich (2011), citing the "giant bubbles" of both the 2000s and 1920s, asserts that "[i]n both eras, had the share going to the middle class not fallen, middle-class consumers would not have needed to go as deeply into debt in order to sustain their middle-class lifestyle. Had the rich received a smaller share, they would not have bid up the prices of speculative assets so high."[38]

Kumhof and Rancière (2010) lay out a more formal case, developing a model to simulate what happens when the economy experiences a long-term shock to the income distribution in favor of top earners. They find that "investors use part of their increased income to purchase additional financial assets backed by loans to workers. By doing so, they allow workers to limit their drop in consumption following their loss of income, but the large and highly persistent rise of workers' debt-to-income ratios generates financial fragility which eventually can lead to a financial crisis."[39] Rajan (2010), on the other hand, argues that increased household indebtedness in the U.S. was driven by the government, as politicians, increasingly polarized and unable to tackle rising income inequality through taxation or redistribution, turned to credit as a means to improve the spending power of low-income households.[40]

Others have contested these arguments. Acemoglu (2011) questions Rajan's hypothesis, claiming that "if there was a time for appeasing the bottom of the distribution that was falling behind it was the 1980s, not the 2000s," and he cites evidence from Bartels (2008) in arguing that government is responsive to high- rather than low-income voters.[41] Krugman (2010) questions whether the relationship between inequality and financial fragility is one of correlation or causation, suggesting that both may be the common result of a third causal factor: politics.

In a broad empirical analysis of twenty-five countries over a century, Atkinson and Morelli (2010) find that crises were preceded by rising inequality in ten cases and falling inequality in

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[37] Fitoussi and Saraceno (2010, p. 3). Others have also highlighted the same or similar pathways in their analyses to explain how inequality can generate financial instability. See Milanovic (2011); Galbraith (2012); Stiglitz (2012); Stiglitz (2012a); Thaker and Williamson (2012). Stiglitz (2012a, p. 33) writes: "The UN Commission on Reforms of the International Financial and Monetary System, which I chaired, argued that inequality played an important role in creating the crisis. The link is simple and clear: increasing inequality effectively redistributes income from those with a high marginal propensity to consume to those with a low marginal propensity to consume. This reduces aggregate demand. If the economy is to remain at full employment, the resulting reduced aggregate demand has to be compensated for somehow. The route chosen by the United States (and, historically, by other countries) is low interest rates and lax regulation. This led to a bubble, which did sustain consumption for a while. But it was inevitable that the bubble would eventually break. And it was inevitable that when it broke, the economy would go into a downturn."

[38] Reich (2011, p. 25).

[39] Kumhof and Rancière (2010, p. 3). Building off of this work, Kumhof et al. (2012) extend the model in Kumhof and Rancière (2010) to an open economy setting and incorporate financial liberalization shocks.

[40] Rajan (2010, p. 31). For a further discussion of the available empirical literature in support of Rajan's hypothesis, see Van Treeck (2012).

[41] Acemoglu (2011, quote on slide 16). On the debate between Rajan and Acemoglu, see also "The Beautiful and the Damned: The Links Between Rising Inequality, the Wall Street Boom and the Subprime Fiasco," *Economist*, January 20, 2011[http://www.economist.com/node/17957107].

seven – a mixed result that "does not provide overwhelming support" for the hypothesis that rising inequality leads to financial crises.[42] They contend that "the level of the top income shares, but not the Gini coefficient, has predictive content," but caution that "the availability of data is a serious limitation."[43] Bordo and Meissner (2012) similarly find "very little evidence linking credit booms and financial crises to rising inequality" in a panel of 14 countries from 1920 to 2008.[44] In sum, while quite a number of scholars have focused on the question of whether income inequality contributes to financial fragility and crises, there again remains little in the way of academic consensus on the issue.

3. Focus on Mechanism

With the academic community reaching inconclusive and conflicting findings on which consequences, if any, result from income inequality across a range of outcomes, we believe a serious empirical study of the *mechanisms* by which income inequality may have consequences is warranted and, to date, has been largely underutilized. According to Eltser (1989), mechanisms are the "nuts and bolts, cogs and wheels" that link causes and effects. "To explain an event is to give an account of why it happened," he continues. "Usually, and always ultimately, this takes the form of citing an earlier event as the cause of the event we want to explain, together with some account of the causal mechanism connecting the two events."[45] More specifically, Gambetta (1998) defines mechanisms as "hypothetical causal models that make sense of *individual* behavior" and maintain the following form: "Given certain conditions *K*, an agent will do *x* because of [mechanism] *M* with probability *p*."[46] They are the "minimal assumptions about agents' makeup that we require to deduce how they both interact with one another and respond to external conditions."[47]

Inequality and Mechanism in the Academic Literature: Financial Crises

While numerous studies on the effects of income inequality have considered mechanisms in their analyses, many of these – while important – have significant limitations. A few examples from the literature on inequality and financial crises, covered in the previous section, may be instructive. We will focus on two: first, Kumhof and Rancière (2010), who proposed a model on inequality, bargaining power, debt, and financial instability; and second, Rajan (2010), who offered an institutional explanation for the rise in household indebtedness – and therefore financial fragility – that runs through government and ultimately to inequality.

Kumhof and Rancière's model consists of "two groups of households, referred to as investors and workers, and of a production technology that combines the inputs provided by investors and

[42] Atkinson and Morelli (2010, p. 57).
[43] Ibid., pp. 57-58. Atkinson and Morelli (2011) further develop the analysis presented in Atkinson and Morelli (2010).
[44] Bordo and Meissner (2012, p. 2148).
[45] Elster (1989, p. 3).
[46] Gambetta (1998, p. 102).
[47] Ibid., p. 103.

workers."[48] Households are divided into a top 5 percent income group – "investors"– who "derive all of their income from their ownership of the physical capital stock and from interest on loans to workers," and the remaining 95 percent – "workers" – who earn income through wage labor. While workers derive utility from consumption, investors derive utility from both consumption and wealth.[49] Utility from consumption is "subject to a subsistence, or minimum acceptable, level of consumption," which implies that "a precipitous drop in consumption would be disastrous" and strongly resisted by households.[50] Wages are determined by a bilateral bargaining process between investors and workers, which is subject to shocks, and investors allocate any increase in income gained at the expense of workers to some combination of higher consumption and higher wealth, which could be physical or financial investment.[51]

In their closed-economy model simulation, a decline in workers' bargaining power in the first ten years depresses real wages, while increasing the return to capital. Workers' consumption "declines by only around two thirds of the decline in wage income, as workers borrow the shortfall from investors, who have surplus funds to invest following their increase in bargaining power."[52] These patterns consequently create an increased need for financial services and intermediation, which increases the size of the financial sector. Together with the increased household leverage of poor and middle-income households, this leads to greater financial fragility over time and a higher probability of financial crises.

Kumhof and Rancière's development of a formal model and simulation distinguishes it from several other works speculating on the consequences of income inequality. Notably, the authors identify the re-lending of increased disposable income from the top 5 percent to the bottom 95 percent as the "key mechanism" within the model.[53] Yet this appears to refer not to a mechanism itself, at least as we have defined it, but rather a process by which an underlying mechanism generates social and economic outcomes. The true mechanisms of their model are the behavioral parameters calibrated for two groups, and Kumhof and Rancière acknowledge that, for the purpose of highlighting the connection between inequality and leverage, the model "has been kept deliberately simple."[54] Behavior patterns are separated into the top 5 and bottom 95 percent, and all behavior is assumed to be rational. But might individuals in particular subgroups – for example, those in the 99th percentile or the 20th percentile – have different utility functions, different concepts of subsistence consumption, or different propensities to seek leverage as compared to those elsewhere in the distribution? Or, even more fundamentally, might actors in the real world respond to rising inequality (and changing frames of reference) in ways that are not strictly rational? All of this is not to suggest that the calibration parameters of the Kumhof and Rancière model are not carefully considered, but rather that it is difficult to tease out mechanisms at an individual level when models are constructed based on an aggregation of observed stylized facts rather than micro-level analysis of individual behaviors and responses to stimuli.

[48] Kumhof and Rancière (2010, p. 8).
[49] Ibid., pp. 8-10.
[50] Ibid., p. 9.
[51] Ibid.
[52] Ibid., p. 15.
[53] Ibid., p. 3.
[54] Ibid., p. 21.

In another example, Rajan (2010) proposes a different causal chain, or rough mechanism, connecting rising income inequality and increased household indebtedness, particularly among lower income segments:

> Growing income inequality in the United States stemming from unequal access to quality education led to political pressure for more housing credit. This pressure created a serious fault line that distorted lending in the financial sector. Broadening access to housing loans and home ownership was an easy, popular, and quick way to address perceptions of inequality. Politicians set about achieving it through the agencies and departments they had set up to deal with the housing-debt disasters during the Great Depression. Ironically, the same organizations may have helped precipitate the [recent] housing catastrophe.[55]

The evidence Rajan marshals in support of this argument includes an assessment of political constraints and a review of recent government housing policy. First, citing McCarty et al. (2006), Rajan contends that "growing income inequality has made Congress much more polarized and much less likely to come together on matters of taxation and redistribution."[56] Thus, he argues, policymakers have "looked for other ways to improve the lives of their voters," with cheap credit being "the most seductive answer," as it "pushes up house prices, making households feel wealthier, and allows them to finance more consumption" and "creates more profits and jobs in the financial sector."[57] Next, Rajan surveys federal housing credit policy since the 1930s, including the creation and role of agencies such as the Home Owners' Loan Corporation (HOLC), the Federal Housing Authority (FHA), Fannie Mae, and Freddie Mac.[58] He cites several government initiatives to expand home ownership through the 1990s – particularly for low-income groups – including mandates for affordable housing, cuts in the minimum down payment required for borrowers to qualify for FHA guarantees, and increases in the maximum size of guaranteed mortgages.[59] Rajan claims that "these actions set the stage for a boom in low-income housing construction and lending," and were furthered by the Bush Administration and its "Ownership Society" in the 2000s, with subprime lending firmly established as a "market driven largely by government, or government-influenced, money."[60]

A number of economists, while accepting both the rise in income inequality and increased indebtedness among lower-income households, dispute Rajan's causal linkages. As discussed in Section 2 above, Acemoglu (2011) questions Rajan's chronology, noting that the right time for the government to address the bottom of the income distribution would have been in the 1980s, when in actuality there were several efforts to *marginalize* Fannie and Freddie during those years. In addition, Acemoglu questions Rajan's contention that policymaking in this context has been driven by the needs of low-income voters, pointing to Bartels (2008) – which found that Senators were in fact highly responsive to high-income voters – and citing campaign

[55] Rajan (2010, p. 43).
[56] Ibid., p. 31.
[57] Ibid.
[58] Ibid., p. 32.
[59] Ibid., 37.
[60] Ibid., pp. 37-38.

contributions, political action committees, and lobbying as alternative explanations for legislative action.

In response, Rajan (2011) insists that politicians respond to the "vocal middle class," where inequality has "expanded steadily over the last 25 years," and offers possible explanations for the time lag in response, acknowledging that "all this is, of course, conjecture."[61] Rajan also argues that Acemoglu's point about policy being driven by financial elites "is overstated – the primary factor in much of the economic policy calculation today is unemployment."[62]

Glaeser (2010), meanwhile, disputes the significance Rajan attributes to easy credit in the housing bubble, citing his research with Gottlieb and Gyourko (2010), which finds that cheap credit "can explain only one-fifth of the [53 percent] rise in [real housing] prices from 1996 to 2006."[63] Rajan responds that they "could have a long and interminable debate about the role of credit supply and how much effect it had on house prices."[64]

Notably, both Kumhof and Rancière (2010) and Rajan (2010) are proposing mechanisms that link the same outcomes: rising income inequality and rising household indebtedness, particularly among lower income groups. Where Kumhof and Rancière develop a formal model, Rajan proposes a strong narrative supported by rather coarse and circumstantial evidence. In both cases, the underlying reasons why individuals in the lower parts of the income distribution would choose to take on substantially (and, in many cases, progressively) more debt during a long period of rising inequality and stagnant wages are either assumed away or left out altogether. With respect to Rajan in particular, moreover, other scholars question the accuracy of his proposed mechanism by offering counterevidence, to which Rajan responds with a differing opinion on the accuracy, relevance, or applicability of the counterevidence. In the end, it is challenging if not impossible to verify a mechanism when it is proposed in such a manner – namely, as a plausible explanation of observed outcomes but without hard evidence of causal links. The mechanism itself is perhaps at too high a level of generality to be fully useful or verifiable.

4. Inequality and Decision Making

With the existing academic literature largely inconclusive regarding the possible macro-level consequences of rising income inequality, and with potential mechanisms remaining largely unexplored (especially on the individual level), we propose to focus on one class of potential mechanisms that we believe is particularly worthy of further inquiry: individual decision making.

As an example of the importance of decision making in this discussion, recall that Kumhof and Rancière (2010) and Rajan (2010), in different ways, both aimed to explain the rise of household indebtedness in the United States and its connection to financial fragility. Yet, even if the connection is accepted as given, the behavior that drives rising indebtedness remains largely

[61] Rajan (2011).
[62] Ibid.
[63] Glaeser, Gottlieb, and Gyourko (2010, abstract).
[64] Rajan (2011).

unexplained. As cited earlier, Kumhof and Rancière note that in their model, "[w]orkers' consumption declines by only around two thirds of the decline in wage income, as workers borrow the shortfall from investors," and "[o]ver the 30 years prior to the outbreak of the crisis, loans more than double to bring workers' leverage, or debt-to-income ratio, from 64% to around 140%."[65] Available aggregate-level data support this premise, but why do individuals behave this way? What drives workers not to reduce consumption more in the face of declining or stagnant wages, or investors to continue to finance loans whose risk profile continues to worsen?

Focusing on the political realm, Rajan contends that politicians, "always sensitive to their constituents," have "facilitat[ed] the flow of easy credit to those left behind" but are "much less likely to come together on matters of taxation and redistribution."[66] Yet if politicians are truly responsive to the demands of middle- and low-income voters, why would those voters demand credit – a far riskier way to rectify income inequality – rather than redistributive policies, as the Meltzer-Richard model would imply? Rajan suggests (following McCarty et al [2006]) that inequality drives political polarization, which in turn renders increased redistribution impossible. But that only begs the question of why inequality might cause political polarization, if indeed it does.

At least one potential strategy for addressing these questions brings us back to inequality and decision making. Is it possible that changes in inequality at the societal level could affect decisions about borrowing or risk taking or political orientation at the individual level? Just as heuristics appear to play an important role in decision making under uncertainty, is it possible that they play an important role with respect to inequality as well?

Consider, for example, the question of how people assess their own performance and how they decide how hard to push themselves to achieve a particular goal. It is often said that elite runners perform best when placed in heats with their fastest competitors. Yet most of the rest of us would probably not achieve our best times running against Olympic champions. Why might this be? Perhaps we take clues from those around us – including how close or far away from us they are – about what we're capable (or incapable) of and how hard to try. If so, then the increased distance associated with heightened income inequality could have implications for how we assess our own capabilities and how we decide the amount of effort to expend – and the level of risk to assume – in pursuing any particular challenge or undertaking.[67]

Of course, individuals may use such clues in many other ways as well, and there could be significant differences if the decision is to be made in an organizational, institutional, or political context, as opposed to a household context. For example, why do most business managers say that there are limits on how far they can raise particular salaries (of the highest performers) without wreaking havoc on the organization? While some research has indicated that pay for

[65] Kumhoff and Rancière (2010, p. 15).
[66] Rajan (2010, pp. 23, 31).
[67] On interpersonal income comparisons and their potential influence on individual happiness, satisfaction, and behavior, see esp. Clark and Oswald (1996); Ferrer-i-Carbonell (2005); Luttmer (2005); Brown et. al. (2008); and Daly, Wilson, and Johnson (2012). In recent years, researchers have begun to investigate both the direction and intensity of these income comparisons. See for example Bygren (2004); Senik (2009); Knight, Song, and Guantilaka (2009); Clark and Senik (2010); Clark, Senik, and Yamada (2013); and Goerke and Pannenberg (2013).

performance creates strong incentives for greater work effort and productivity,[68] other research has suggested that intra-firm inequality can be perceived as unfair,[69] undermine cooperation,[70] or weaken firm cohesiveness.[71] Clarifying the size and scope of any relevant behavioral effects (and thus the externalities associated with certain compensation strategies) could significantly help managers deal with what appears to be an especially delicate balance in the workplace.

Although inequality could conceivably affect individual decision making in an endless variety of ways, we begin by examining a handful of areas where nascent research suggests particular promise: self-perception, consumption and saving, working hours, risk tolerance, and social capital and trust.[72] Below, we briefly highlight some of the most intriguing findings in these areas and then suggest the considerable potential value of a new experimental research agenda on inequality and decision making.

Inequality and Self-Perception

If we perceive ourselves to be superior to or luckier than our peers, how might that affect our decisions regarding our investments or health? The "better-than-average effect" – or, as described by Guenther and Alicke (2010), the "tendency for people to evaluate themselves more favorably than an average peer" – is described as "one of social psychology's staple findings."[73] A related finding, described by Helweg-Larsen and Shepperd (2010) as "[a]mong the most robust findings on social perceptions and cognitions," is optimistic bias, or the "tendency for people to report that they are less likely than others to experience negative events and more likely than others to experience positive events."[74]

Recent research from Loughnan et al. (2011) suggests that societies with greater income inequality tend to exhibit greater self-enhancement.[75] Self-enhancement, or "the pervasive tendency to see oneself in a favourable light,"[76] is identified by Shepperd et al. (2002) as one of several "desired end-states" that could help to explain optimistic bias: simply put, "optimistic predictions are gratifying."[77] Loughnan et al. (2011) observe that with social status particularly

[68] Lazear and Rosen (1981).
[69] Akerlof and Yellen (1990).
[70] Ibid.
[71] Levine (1991). Recent research by Card et al. (2012, p. 2981) offers evidence that "job satisfaction depends on relative pay comparisons," and Larkin, Pierce, and Gino (2012, pp. 1200-1202) review studies in economics, psychology, and strategy that investigate a broad range of effects deriving from comparisons of unequal pay. A number of studies have used professional sports teams as a medium for examining the relationship between wage inequality and team performance, but have generated conflicting findings. See: Sommers (1998); Depken (2000); Frick, Prinz and Winkelmann (2003); Berri and Jewell (2004); Mondello and Maxcy (2009); Franck and Nüesch (2011); Simmons and Berri (2011).
[72] While the research we highlight in this section offers suggestive evidence of a range of possible mechanisms through which inequality may influence decision making, some of these pathways are clearer than others, and in most cases tight causal connections have not yet been demonstrated in the literature.
[73] Guenther and Alicke (2010, p. 755).
[74] Helweg-Larsen and Shepperd (2001, p. 74).
[75] Loughnan et al. (2011, p. 1254).
[76] Hoorens (1993, p. 113 [abstract]).
[77] Shepperd et al. (2002, p. 3)

salient in unequal societies, "individuals are strongly motivated to stand out as superior to others," which may take the form of increased competitiveness.[78] A study by Takata (2003) finds that Japanese participants – traditionally shown to exhibit less self-enhancement (and less optimistic bias) than North Americans – exhibit as much self-enhancement as their counterparts when placed in competition with others over a prize.[79] If income inequality in fact strengthens self-enhancement (and perhaps also optimistic bias) by making social standing and status more salient, or by heightening individuals' competitive drives, this could have significant implications for how individuals make critical decisions, including fundamental assessments of how much risk to assume.

Inequality and Consumption / Savings

Is our consumption (and savings) behavior driven by our assessment of relative rather than absolute income? Duesenberry (1949), building on Veblen (1934), proposes a relative income hypothesis in which the utility an individual derives from consumption depends on his status *relative* to that of others, rather than on its absolute level. Although other scholars have disputed this view – most notably Friedman (1957), who argues that households, regardless of income status, spend constant proportions of their "permanent income" – Schor (1998) supports the relative income hypothesis, finding that an individual's income position relative to that of her reference group (such as friends, coworkers, or relatives) has "a very large impact" on her personal saving.[80]

More recently, Frank, Levine, and Dijk (2010) bolster "the link between context and evaluation" in consumer behavior, finding that "rapid income growth concentrated among top earners in recent decades has stimulated a cascade of additional expenditure by those with lower earnings."[81] The authors note that their hypothesis "suggests a plausible answer to the question of why aggregate savings rates have fallen even though income gains have been largely concentrated in the hands of consumers with the highest incomes."[82] Bertrand and Morse (2012) offer evidence of the cascade effect, finding that "up to a quarter of the decline in the savings rate over the last three decades [can] be attributed to trickle-down consumption," or what Stiglitz (2012a) calls "trickle-down behaviorism."[83]

Interestingly, Bertrand and Morse (2012) also find evidence that inequality may affect political decisions regarding credit. Specifically, they show that the level of inequality within Republican congressional districts is predictive of the votes of congressmen from those districts on several notable bills to facilitate credit to low- and middle-income households, with Republican congressmen in high inequality districts more likely to support these bills.[84] Bertrand and Morse

[78] Loughnan et al. (2011, p. 1255). Significantly, they also suggest that "it is unlikely that economic inequality directly leads to biased self-perception" but rather that "it seems more likely that there are intervening factors that result from socioeconomic differences" (1257).
[79] See also Heine, Kitayama, and Hamamura (2007).
[80] Schor (1998, p. 75).
[81] Frank, Levine, and Dijk (2010, p. 3).
[82] Frank et al. (2010), pp. 25.
[83] Bertrand and Morse (2012, p. 0); Stiglitz (2012a, p. 104).
[84] Bertrand and Morse focused on Republicans because virtually all Democrats voted for the bills in question.

characterize this evidence as consistent with the "view that rising income inequality in a geographic market translates into more demand for credit by middle income households (and median voter) and, subsequently, higher financial duress."[85]

Inequality and Working Hours

In a highly unequal society, are we motivated to work more or less? Bowles and Park (2005) find that "increased inequality induces people to work longer hours."[86] Notably, their results are "consistent with the hypothesis that social comparisons are upwards to a richer reference group and [are] inconsistent with the alternative hypothesis that social comparisons are downward-looking, people's consumption and work choices reflecting a desire to distance themselves from a poorer reference group."[87] Bell and Freeman (2001), in comparing the differences in hours worked between Germans and Americans, reach a similar conclusion.

In related work, Neumark and Postlewaite (1998) suggest that a woman's decision about whether to enter employment depends in part on the income and employment status of other women. In a clever empirical test based on comparisons to sisters and sisters-in-law, they find that (1) "there is a positive effect of sister-in-laws' employment on women's own employment, after taking account of the explanatory variables suggested by the neoclassical model" and (2) women with non-working sisters are "more likely to be employed if their husbands earn less than their sisters' husbands."[88] Both findings, the authors suggest, are consistent with the relative income hypothesis.

Inequality and Risk

Do income inequality and our perspective on where we stand in the income distribution affect our tolerance for and willingness to engage in risk? Citing a finding by LaFleur and LaFleur (2003) that between 1964 and 2003 the average expected return on a dollar spent on lottery tickets was only $0.53, Haisley, Mostafa, and Loewenstein (2008) wonder why lotteries remain popular among the poor, "who play the most but can least afford to play."[89] They find that "implicit comparisons with other income classes lead low income individuals to view playing the lottery as one of the few means available to attempt to 'correct' for their low relative income status."[90]

Similarly, Kuziemko et al. (2011) argue that "last place aversion" can induce riskier behavior. In one set of experiments, subjects are randomly given specific dollar amounts and shown their relative position in the "distribution."[91] They are then given the choice between receiving a payment with a probability of one or playing a lottery which, if they win, will typically allow

[85] Bertrand and Morse (2012, p. 3).
[86] Samuel Bowles and Yongjin Park (2005, p. F410). See also Oh, Park, and Bowles (2012).
[87] Bowles and Park (2005, p. F398).
[88] Ibid.
[89] Haisley, Mostafa, and Loewenstein (2008, p. 283).
[90] Ibid., p. 284.
[91] Kuziemko et al. (2011, p. 2).

them to move up in the distribution. The authors find that "the probability of choosing the lottery is uniform across the distribution except for the two lowest-placed players, who choose the lottery more often. These results match the Nash equilibrium of the game when players are last-place averse: the last-place player is willing to bear the risk of the lottery for the possibility of moving up in rank, and the second-to-last-player is willing to do the same in order to defend his position."[92]

Inequality and Social Capital / Trust

In highly unequal societies, are we less likely to join social groups or trust other individuals? Putnam (2000) suggests that "great disparities of wealth and power are inimical to widespread participation and broadly shared community integration," though he acknowledges that the causal arrows may also point in the other direction.[93] Costa and Kahn (2003) contend that "more-homogeneous communities foster greater levels of social-capital production," with income used as one of their measures of heterogeneity.[94] They also note that "high income inequality … predict[s] low [organizational] membership across some, though not all, western European countries."[95] In a cross-sectional study of U.S. states, Kawachi et al. (1997) find "that the size of the gap between the rich and the poor is powerfully and negatively related to [the] level of social capital."[96] These findings are further supported by Alesina and La Ferrara (2000), who suggest that in the United States, "income inequality…reduce[s] the propensity to participate in a variety of social activities including recreational, religious, civic, and educational groups."[97] In a related study, La Ferrara (2002) finds that in rural Tanzania, "inequality at the village level has a negative impact on the likelihood that the respondents [of the study] are members of any group," with the observed effect "particularly significant for relatively wealthier people, both when relative wealth is 'objectively' measured, and when it is 'subjectively' defined."[98]

Wilkinson and Picket (2009) and Pryor (2012) offer evidence of a relationship between higher levels of inequality and lower levels of trust in cross-national comparisons.[99] Uslaner and Brown (2005) contend that "[i]nequality is a significant determinant of trust," and suggest that "inequality's most important consequence may be in its effects on depressing trust and political cooperation."[100] They argue that income inequality affects trust by reducing optimism and making it less likely that people in different socioeconomic groups will "have a sense of shared fate."[101]

[92] Ibid.
[93] Putnam (2000, p. 359).
[94] Costa and Kahn (2003, pp. 103, 105).
[95] Ibid., p. 107.
[96] Kawachi et al. (1997, p. 1495).
[97] Alesina and La Ferrara (2000, pp. 870, 889).
[98] La Ferrara (2002, p. 235).
[99] See Wilkinson and Pickett (2009, pp. 49-62); Pryor (2012).
[100] Uslaner and Brown (2005, p. 889).
[101] Ibid., p. 870. See also Uslaner (2012) and Uslaner (2002).

The Promise of the Lab

In each of the areas just surveyed, there exists suggestive evidence – in some cases, strongly suggestive evidence – that the nature of inequality may affect individual decision making on questions ranging from how much to borrow to how much trust to place in others. Although there are some notable exceptions, most of the relevant studies involve ex-post analyses of survey data and are thus beset, at least to a degree, by the problem of confounding variables. Comparable findings in the lab, conducted under far more controlled conditions, would represent powerful confirming evidence. Experiments of this sort, evaluating decision making under varying conditions of inequality, would also allow for greater precision in identifying the circumstances under which particular behavioral responses are more or less likely.

Researchers have already begun to take steps in this direction, investigating ways in which unequal conditions of various kinds affect behaviors exhibited in the lab. Two studies referenced above – Haisley, Mostafa, and Loewenstein (2008) and Kuziemko et al. (2011) – both fit this description. In fact, numerous canonical lab experiments have endowed subjects with specific quantities of money and then tracked how they decide to use that money within the predefined rules of a laboratory game. As initially designed, many of these games (such as public goods games) granted subjects equal endowments. But researchers have since introduced heterogeneous endowments as a design modification, allowing them to compare the decisions that equally and unequally endowed subjects make. By uncovering ways in which unequal endowments affect behaviors in the lab,[102] this work has laid a foundation on which further laboratory research might build.[103]

A few studies have even employed experimental frameworks that involve introducing unequal distributions and varying them across groups of subjects, thus enabling researchers to observe the effects of different levels of inequality.[104] For example, Anderson, Mellor, and Milyo (2008) find that when inequality is induced and made salient to subjects participating in a public goods game, "the presence of inequality itself reduces contributions to the public good for all group members, regardless of their relative position."[105] Inducing and varying inequality in the same way, Anderson, Mellor, and Milyo (2006) find that when subjects play a canonical trust game, the "individuals who [receive] the median payment in an unequal distribution [are] not affected by the inequality." And yet, those subjects in the tails of the distribution (those who are relatively

[102] For heterogeneous endowments in public goods games, see Marwell and Ames (1979); Marwell and Ames (1981); Buckley and Croson (2006); Van Dijk and Grodzka (1992); Visser (2007); Hofmeyr, Burns, and Visser (2007). For heterogeneous endowments in trust games, see Greiner, Ockenfels, and Werner (2012). For heterogeneous endowments in ultimatum games, see Armantier (2006).

[103] While some of these studies are careful to claim only that they are investigating the impact of endowment heterogeneity, others more loosely claim to test the effects of *inequality* because the endowments that they give subjects are *unequal*. However, because these studies do not vary the level of inequality that they induce, they are not in fact testing the impact of inequality per se. That is, the effects that they report are not the effects of inequality per se, but rather the effects of the particular allocation of endowments they choose to deploy in their experimental designs.

[104] In some of these papers inequality is induced by manipulating fixed payments subjects receive at the beginning of the experiment and in others by manipulating the endowments subjects are given in each round of the experiment. See esp. Bagnoli and McKee (1991); Chan et al. (1996); Sadrieh and Verbon (2006); Anderson, Mellor, and Milyo (2006); Anderson, Mellor, and Milyo (2008).

[105] Anderson, Mellor, and Milyo (2008, p. 1011).

rich or poor in the experimental context) show reduced levels of trust.[106] These studies are examples of what is possible, demonstrating the promise that carefully constructed lab experiments hold for advancing understanding of decision making under conditions of inequality.

Unfortunately, the body of research that *varies* inequality in the lab, while illuminating, is extremely small – almost vanishingly small. When compared to the scope of research employing non-experimental methods to study the consequences of inequality, experimental tools appear vastly underutilized.

There is of course already a thriving cross-disciplinary literature on decision making, much of it based on innovative lab experiments;[107] and, as we have repeatedly noted, there is also an extensive (if inconclusive) literature on inequality and its consequences. *We believe that building a bridge between these two fields – bringing the methods of behavioral research to bear on the critical questions of inequality scholarship – could prove enormously productive.* Specifically, new research might explore:

- how individual decision patterns shift, if at all, as the degree or nature of inequality changes in experimental populations;

- the extent to which decision making is contingent on an individual's location within an experimental distribution; and

- whether any potential differences in decision making by location across experimental distributions might themselves change as the distributions change.

For example, by varying the distribution of economic resources within a lab setting, researchers could explore if risk-taking behavior changes, on average, as inequality becomes more or less extreme. They could also examine whether different risk-taking behaviors are consistently associated with different parts of a distribution, and whether different risk-taking behaviors pop up in particular portions of a distribution when it is skewed in one way or another. Kuziemko et al. (2011) demonstrated that experimental subjects placed in the bottom two rungs of a six-rung ladder exhibited a willingness to take riskier gambles than those on the other rungs. In this setup, the person on each rung received exactly 25 cents more than the person on the rung below him, with the person on the top rung receiving $3.00 and the person on the bottom rung receiving $1.75. A natural next question that arises is *whether changes in the distribution would induce changes in behavior*. For instance, if the distribution were stretched out such that the top rung was pushed far above the others (i.e., in terms of the amount of initial endowment), and the remaining five were spaced close together at the bottom, would the subjects on rungs 2-4 continue to take the same gambles as the subject on rung 1, or would one or more of them begin showing a preference for riskier (or less risky) gambles? Our suspicion is that even those near the top in an ordinal ranking might begin exhibiting behavior resembling "last place aversion" if positioned far away from the top, and close to the bottom, in a cardinal ranking.

[106] Anderson, Mellor, and Milyo (2006, p. 231).
[107] For a recent survey of how behavioral research has informed thinking about public policy across numerous domains, see Shafir (2013).

An experimental setup in which subjects are assigned to different parts of a distribution, and in which the distribution is varied across groups of subjects, would allow researchers to explore a broad spectrum of questions pertaining to inequality and its potential effects on individual decision making. Well-designed experiments could shed much needed light not only on whether and how inequality influences risk preferences, but also on whether and how it affects self-perception and optimistic bias, trust in others, altruism, willingness to cooperate, degree of support for redistribution or investment in public goods, consumption and savings behavior, and so on. Lab experiments could be used to investigate these questions in generic settings as well as in simulated institutional contexts, such as a workplace environment or a classroom.

Naturally, experiments of this sort could never be expected to represent the final word on the consequences of inequality, even if dramatic findings emerged, because laboratory settings are inherently contrived situations. But such experiments could still be tremendously useful in filtering and refining hypotheses, and perhaps offering sufficient validation regarding particular mechanisms to encourage new rounds of real-world empirical investigation. In fact, empirical studies could potentially be more precisely constructed and targeted if informed by rich experimental findings. While there is no way of knowing what would come from applying experimental methods to the study of inequality, we believe that the scattered evidence on inequality and decision making, surveyed earlier in this section, provides a sufficient rationale for moving forward.

Conclusion

The substantial increase in inequality in the United States over the past three decades has provoked considerable debate, with some analysts characterizing rising inequality as among the greatest threats facing the nation and others dismissing it as little more than a hiccup – or even celebrating it as a favorable development – in the progress of American capitalism.[108] While high quality academic research on the consequences of inequality might reasonably be expected to resolve this debate, or at least provide some useful input, the research to date remains maddeningly inconclusive. Despite numerous claims in popular venues that high inequality has slowed growth, precipitated a major financial crisis, and profoundly distorted the nation's political system, there exists no academic consensus on the *consequences* of inequality for the health of the economy or the democracy, or for nearly any other macro-level outcome. Higher inequality of income is likely a cause of other types of inequality, such as health inequality. But at best the agreement stops there, if it even reaches that far.

This lack of academic consensus could mean one of two things: either that there are no significant adverse consequences of rising inequality or, alternatively, that such consequences do exist but that efforts to identify them convincingly have so far fallen short. Some skeptical observers might conclude that if any important consequences did exist, they surely would have been conclusively identified by now, given the enormous effort already invested in trying to find them. Yet past experience suggests that inquiries of this sort can take a very long time to reach

[108] For popular expressions of these two competing views, see e.g. Stiglitz (2012a) on the dangers of high inequality and Conard (2012) on the advantages of high inequality.

fruition. For example, although the dangers of tetraethyl lead appeared within just a few years of its introduction as an additive to gasoline in the 1920s, scientific proof that it represented a serious public health hazard would have to wait for half a century or more. In fact, as late as 1958, the U.S. Surgeon General confidently announced that "there has been no sign that the average individual in the U.S. has sustained any measurable increase in the concentration of lead in his blood or in the daily output of lead in his urine." The fact that lead posed a particularly grave threat to pregnant women and children had not yet been discerned.[109]

Similarly, in the case of inequality today, there a number of reasons why cause and effect – even if it existed – could be difficult to establish empirically. In particular, studies that look across countries, states, or time in order to isolate possible effects of inequality are inevitably handicapped by two challenges: (1) inequality itself takes many different forms and thus may not be easily comparable across jurisdictions or time merely on the basis of simple metrics such as Gini coefficients or 90-10 ratios, and (2) the institutional context (through which inequality would presumably exert its effects, if any) can differ dramatically across jurisdictions and time – again creating serious problems of comparability. Given these challenges, it is perhaps not altogether surprising that large-sample empirical work focused on the consequences of inequality has yet to produce any definitive findings.

Indeed, it is for this reason that we believe it could be productive to refocus attention on the question of mechanism. If inequality does exert effects on macro-level variables such as the growth rate of GDP or the stability of the financial system, what exactly might the mechanism or mechanisms be? While there are no doubt many promising avenues to explore with regard to mechanism, we have suggested that behavioral research on possible links between inequality and individual decision making could prove particularly valuable. A smattering of existing studies, many of them survey based, already point to some specific potential links – with respect to self-perception, risk-taking, and trust, for example. Modern behavioral research seems especially well suited to test the validity of such links, and perhaps decipher new ones, through carefully designed experiments in the lab. Bringing together what are today two separate areas of research – decision making on the one hand, and inequality (or social disparity) on the other – could be just what is needed to break the logjam that has, until now, characterized the study of inequality and its consequences. The stakes could hardly be larger or the time more ripe.

[109] Lewis (1985, p. 18).

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